



University of Zagreb
Trg Republike Hrvatske 14, HR-10000 Zagreb



Croatian Defence Academy "Dr. Franjo Tudman"
Ilica 256b, HR-10000 Zagreb

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2020/2021

Course Catalogue – Undergraduate Study



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Croatian Defence Academy "Dr. Franjo Tuđman"
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Preface



Prof. Damir Boras, Ph.D.

Rector, the University of Zagreb

University of Zagreb, with its faculties and the Croatian Defence Academy "Dr. Franjo Tuđman" participate in the undergraduate university study programme Military Leadership and Management and undergraduate university study programme Military Engineering. Exceptionally high level of interest of candidates, that confirms the quality of the program, makes us particularly proud, but also committed to the further development of study programmes.

We will continue to develop these programmes, their contents and the quality of teaching in line with international and European standards, but respecting the Croatian particularities. In this context, the University of Zagreb will provide strong support for the establishment of the academic training of officers, and further improve and assist in setting up the system of education of Croatian officers.

I wish all students and teachers a lot of success!



Lieutenant General Mate Pađen

Commandant of Dr. Franjo Tuđman Croatian Defence Academy

First of all, I would like to greet you as the members of Dr. Franjo Tuđman Croatian Defence Academy, and as the students of the undergraduate university study programmes of Military Engineering (ME) and Military Leadership and Management (ML&M).

In cooperation with the University of Zagreb, we launched these undergraduate study programmes according to the Bologna Process and have thereby integrated them into the European system of higher education. Our aim is to educate the officers who will possess the competencies, capabilities and skills necessary for responding to future challenges, and who will also be presented with various opportunities of working in an international environment.

Bachelors of Military Engineering and Military Leadership and Management and future officers are provided with steady jobs in the Croatian Army on their first officer duties, as well as with professional development, including the advancement and lifelong learning.

Upon the completion of the undergraduate study programme, all cadets are given the opportunity to continue their education within the university graduate programmes of Military Engineering and Military Leadership and Management. In that manner, we also want to take part in your further academic development.

I believe that you will find those study programmes, tailored for the needs of the Croatian Armed Forces, both motivating and challenging. Military training contents will certainly be of great help as an equally important element in the development process of young officers. We wish that mastering and acquiring of new academic and military knowledge became the guiding principles in your educational endeavours.



Prof. Ivica Smojver, Ph.D.

Head of the University Undergraduate Study Programme in Military Engineering,
Faculty of Mechanical Engineering and Naval Architecture, University of Zagreb

In the academic year 2019/2020 the undergraduate study programme in Military Engineering has acquired full maturity, after experiences gained in the procedure of successful defence of the final theses, by which cadets have acquired the right to be conferred the first officer's rank and the first commanding officer's duty within the organization of the Croatian Armed Forces. This is a result of exceptional efforts devoted by teachers of the 11 constituent units of the University of Zagreb, Dr. Franjo Tuđman Croatian Defence Academy and by cadets alike. Consequently, cadets have been successfully prepared to carry out all future tasks to be placed before them by the General Staff of the Croatian Armed Forces and the Ministry of Defence of the Republic of Croatia.

The unique study in the Republic of Croatia, through polytechnic concept of the military university education, offers integral knowledge defined in conformity with the defence system and needs of the Republic of Croatia. It includes mastering complex military technology that the Croatian Army has at its disposal, monitoring modern trends in a very demanding and dynamic environment of the use of modern military technology, as well as knowledge necessary to integrate successfully and efficiently into activities of NATO and other international institutions. Future officers of this study programme have been prepared for the roles of leaders – competent and sovereign front-runners in the tactics and techniques of utilizing military assets, equipment and systems.

Therefore, numerous teaching tasks await us in the new academic year, so as to ensure that cadets in a military and in civilian security system – as academic citizens – make important contribution to the security and prosperity of the entire Republic of Croatia.

I am confident that students will successfully master all academic and military tasks placed before them by this demanding, but exceptionally stimulating study.



Prof. Lidija Kos-Stanišić, Ph.D.

Head of the University Undergraduate Study Programme in Military Leadership and Management,
Faculty of Political Sciences, University of Zagreb

Welcome to the Military Leadership and Management studies! The programme in front of you is unique in many ways. Apart from the latest insights from numerous areas, you will learn first-hand from experienced Croatian experts who have gained extensive experience. Many of them have significant international experience and modern approach to teaching and working with students, and you will recognize it very quickly. In this region, there is no study like this one. The entire team of people that created it has designed a programme providing the best segments of similar studies that have existed for many years in some of the most influential world scientific institutions. Each student in this study programme will have a unique opportunity to develop his or her knowledge and skills, together with top-class lecturers and professors from the University of Zagreb, its respective components and from Dr. Franjo Tuđman Croatian Defence Academy. You, cadets, are in the heart of our programme. Besides knowledge and skills we wish to teach you, this programme will direct and encourage you to become leaders, instigators of the development of Croatia, people with vision and responsibility. Therefore, I encourage you to be alert to all incentives you will receive from your professors and associates. Be proud students of this unique educational programme!



Colonel Andrija Kozina

Dean of the Croatian Defence Academy "Dr. Franjo Tuđman"

Dear cadets, I congratulate you on your decision to pursue military education in the undergraduate university study programs "Military Engineering" or "Military Leadership and Management". We are glad that you have chosen this honorable call to serve the homeland. Although the study programs are mainly focused on the technical and social fields, they are interdisciplinary, with numerous common subjects, laboratory and field exercises, and specialized military training activities that include staying in camps. We want you to achieve the best possible quality and acquire key competences that you need in order to perform officer duties in the Croatian Army. Therefore, teaching is conducted by eminent professors selected from 11 constituents of the University of Zagreb, the Police Academy and the Croatian Defence Academy. In addition to the academic content, the program of university study programs also includes training activities and represents a comprehensive structure that is necessary for professional military education. Military professional practice is performed by the most experienced officers from the Armed Forces of the Republic of Croatia, together with teachers and associates from the Dr. Franjo Tuđman Croatian Defence Academy. In this way, we greatly contribute to the quality and recognizability of the university program.

Upon completion of the undergraduate study, you will acquire the academic title of Bachelor (baccalaureus) of Military Engineering or Bachelor (baccalaureus) of Military Leadership and Management and the first rank, that of second lieutenant. Therefore, dear cadets, I hope that you will responsibly perform all teaching and military tasks in this academic year and successfully complete your education. I believe that you will use this unique opportunity to acquire the competences of the first officer duties in the Croatian Army.

Study programme

Undergraduate Study Programme in Military Engineering

Qualification awarded: University Bachelor of Military Engineering
(univ. bacc. ing. milit.)

Military Engineering study program is an interdisciplinary program. It is the first of this kind initiated in the Republic of Croatia what makes it unique in the labor market in the public sector, especially in the fields of defence and the armed forces, including the fields of protection and rescue of people and assets, civil protection and other institutions providing assistance in crisis situations and natural or man-made disasters. Knowledge, skills and competencies acquired by military engineers are required to operate within national and international frameworks, ranging from modernization, maintenance and overhaul of combat systems and weapons, fire suppression systems and equipment, vessels and aircraft to participation in international missions and operations providing logistics and technical support.

The study program is compatible with the mission of the University of Zagreb and pursuant to the 2012 Annual Report on Defence System Readiness adopted by the Croatian Parliament and approved development guidelines for the upcoming period which address the need to initiate undergraduate and graduate university study programs as a model of integrated civilian and military education designed to meet the requirements of the Croatian Armed Forces.

Military Engineering study program enables students to acquire knowledge, skills and competencies in accordance with international and NATO standards, both in Croatian and in a foreign language.



First year

1st semester, 1st year					
	ECTS	Required courses	Eng. Lev.	Study Hours	Sem.
ME	4.0	Academic Writing and Research Methods (128905) Bovan, K.	Lo	45 (20+10+15)	1
ME	3.0	Calculus I (141684) Burić, T.	Lo	45 (30+0+15)	1
ME	2.0	English I (129213) Majhut, S.; Glavaš, T.	Lo	30 (15+15+0)	1
ME	5.0	International Law - Selected Chapters (129236) Šošić, T.	Lo	60 (30+30+0)	1
ME	4.0	Linear algebra (141683) Nakić, A.	Lo	60 (45+0+15)	1
ME	5.0	Military History (129238) Matić, Z.	Lo	60 (30+30+0)	1
ME	0.0	Physical Training I (129237) Vrkić, M.	Lo	30 (0+0+30)	1
ME	7.0	Physics I (129218) Pleslić, S.	L3	90 (45+30+15)	1
2nd semester, 1st year					
	ECTS	Required courses	Eng. Lev.	Study Hours	Sem.
ME	8.0	Calculus II (141685) Bukal, M.	Lo	105 (60+0+45)	2
ME	2.0	English II (129215) Majhut, S.; Glavaš, T.	Lo	30 (15+15+0)	2
ME	6.0	Mechanics (129225) Kodvanj, J.	Lo	75 (45+30+0)	2
ME	8.0	Military Geography with Topography (129233) Pahernik, M.	Lo	105 (60+0+45)	2
ME	0.0	Physical Training II (129227) Vrkić, M.	Lo	30 (0+0+30)	2
ME	6.0	Physics II (129217) Pleslić, S.	Lo	75 (45+15+15)	2

Group of Courses Armour, Field Artillery, Engineers, Technical Support and Infantry

The second year of the study programme Military Engineering is common for five profiles of this study, i.e., for the Group of Courses: Armour, Field Artillery, Engineers, Technical Support and Infantry. For designation of individual courses of this Course Group the following abbreviations are used throughout this document:

- ME-M for designation of the whole Course Group,
- ARM for Armour,
- ART for Field Artillery,
- ENG for Engineers,
- TS for Technical Support and
- IN-E for Infantry course of the Military Engineering.

Students are allocated into this group by the discretion of the Croatian Defence Academy, and at the proposal of the Ministry of Defence and the study Council. The Ministry of Defence expresses the need for the number of students from each group of courses for each generation of students of the Military Engineering programme before their enrolment in the second year of the study. Proposal for allocation of students to each of the course groups of the second study year programme is prepared by the Council taking into account the expressed interest of the student, his success in the first year of study, as well as the total number of seats available for each course group.

Study programme of the third and fourth year is different for each course of study; hence, the division of students into final courses of the study programme is carried out at the entry of the third academic year in an analogous fashion. The Ministry of Defence expresses the need for the number of students of each course for each generation of students of the Military Engineering programme before their enrolment in the third year of the study. The proposal of students' allocation into the final courses is prepared by the study Council taking into account the expressed interest of the student, his success in the first two years of study, as well as the total number of seats available for each course. Based on this proposal, the Croatian Defence Academy prepares the final decision on the allocation.

In the event that in a particular year there are no needs for a particular group of courses, then in such year this course group will not be offered for enrolment in the second study year, hence the respective courses of this group will not be offered for enrolment in the third and the fourth study year as well. Also, if in a particular year there are needs only for certain courses of a group, then in that year only those courses will be offered for enrolment in the third and subsequently in the fourth study year.



Courses (second year of study)

3rd semester, 2nd year					
	ECTS	Required courses	Eng. Lev.	Study Hours	Sem.
	6.0	Electronics (129325) Krois, I.	Lo	75 (45+0+30)	3
	2.0	English III (129328) Majhut, S.; Prpić Đurić, I.	Lo	30 (15+15+0)	3
	6.0	Informatics and Programming (129330) Seder, M.; Sović Kržić, A.	Lo	75 (45+0+30)	3
	6.0	Materials (129336) Grilec, K.	Lo	75 (45+0+30)	3
	5.0	Military Leadership (141686) Barić, S.	Lo	60 (45+0+15)	3
	0.0	Physical Training III (129343) Ćurčić, D.	Lo	30 (0+0+30)	3
	5.0	Thermodynamics (129337) Boras, I.	Lo	60 (30+0+30)	3
4th semester, 2nd year					
	ECTS	Required courses	Eng. Lev.	Study Hours	Sem.
	6.0	Computer and Engineering Graphics (129347) Domitran, Z.	Li	65 (30+0+35)	4
	5.0	Decision Analysis (129338) Hunjak, T.; Begičević Redep, N.	Lo	60 (30+15+15)	4
	2.0	English IV (129340) Majhut, S.; Prpić Đurić, I.	Lo	30 (15+15+0)	4
	8.0	General Tactics (129342) Pahernik, M.	Lo	105 (60+15+30)	4
	5.0	Military Pedagogy (129356) Markić, I.	Lo	60 (30+15+15)	4
	4.0	Military Psychology (129359) Bratko, D.	Lo	45 (30+0+15)	4
	0.0	Physical Training IV (129350) Ćurčić, D.	Lo	30 (0+0+30)	4

Armour

Enrollment in the third year of study is not offered in the academic year 2020/2021.

Armour is a combat branch of the CAF that is characterized by great mobility, fire power and armoured protection. Today, armoured units are a basic branch of the army. It consists of tank and armoured-mechanized units.

The armoury branch is designed for conducting offensive operations, defence of the most significant directions on which operation of the opponent's main body is expected, particularly of the armour mechanized units, inflicting blows on flanks and in depth of the opponent, defence of the most important areas from landing, quick intervention on the battlefield and for supporting infantry operations. It can operate day and night, overcome water obstacles, be transported by airplanes, attack during movement and concentrate its impact strength and fire power on one place.

Armour units are organized from the level of tank (combat infantry vehicle) to guards armour mechanized brigade. Specialities in armour units are parts of the branch that comprise organizationally and technologically related jobs, that is, working places within one branch. Beside its general speciality, tank and armour mechanized specialities exist in armour units.

Armoury branch badge contains frontal silhouette of a tank. In the middle of the badge is a red square. Badge size is 27x22mm.



Courses

5th semester, 3rd year					
	ECTS	Required courses	Eng. Lev.	Study Hours	Sem.
ARM	5.0	Ballistics (129373) (Note: course not offered in this academic year.) Vrdoljak, M.	Lo	60 (45+15+0)	5
ARM	6.0	Communication and Information Systems (141692) (Note: course not offered in this academic year.) Šišul, G.; Ježić, G.	Lo	90 (60+15+15)	5
ARM	8.0	Design Elements (129539) (Note: course not offered in this academic year.) Vučković, K.; Jakopčić, M.	Lo	105 (60+0+45)	5
ARM	2.0	English V (129548) (Note: course not offered in this academic year.) Majhut, S.; Glavaš, T.	Lo	30 (15+15+0)	5
ARM	4.0	Management of Military Logistics Systems (129639) (Note: course not offered in this academic year.) Đukić, G.	Lo	60 (30+0+30)	5
ARM	5.0	Military Management (141688) (Note: course not offered in this academic year.) Domjančić, S.	Lo	60 (45+15+0)	5
ARM	0.0	Physical Training V (129626) (Note: course not offered in this academic year.) Rogalo, G.	Lo	30 (0+0+30)	5
6th semester, 3rd year					
	ECTS	Required courses	Eng. Lev.	Study Hours	Sem.
ARM	2.0	Basics of Structural Design of Armoured Combat Vehicles (129379) (Note: course not offered in this academic year.) Tomić, R.	Lo	45 (30+0+15)	6
ARM	5.0	Defence Systems and Technologies (129376) (Note: course not offered in this academic year.) Čosić, K.	Lo	60 (30+30+0)	6
ARM	5.0	Energy and Drive Systems (129544) (Note: course not offered in this academic year.) Tomšić, Ž.	Lo	60 (45+0+15)	6
ARM	2.0	English VI (129374) (Note: course not offered in this academic year.) Majhut, S.; Glavaš, T.	Lo	30 (15+15+0)	6
ARM	3.0	Ethics of Military Profession (129375) (Note: course not offered in this academic year.) Žunec, O.; Lucić, D.	Lo	45 (30+15+0)	6
ARM	4.0	Organization and Technology of Military Equipment Maintenance (129377) (Note: course not offered in this academic year.) Jakopčić, M.; Čurković, P.	Lo	45 (30+0+15)	6
ARM	0.0	Physical Training VI (129382) (Note: course not offered in this academic year.) Rogalo, G.	Lo	30 (0+0+30)	6
ARM	5.0	Production Technologies (129380) (Note: course not offered in this academic year.) Jakopčić, M.; Garašić, I.	Lo	60 (30+0+30)	6
ARM	4.0	Rocket Technology (129381) (Note: course not offered in this academic year.) Smojver, I.	Lo	45 (30+0+15)	6
7th semester, 4th year					
	ECTS	Required courses	Eng. Lev.	Study Hours	Sem.
ARM	9.0	Armament and Ammunition in Armour (130107) Bojčetić, N.	Lo	135 (60+0+75)	7
ARM	10.0	Armoured Fighting Vehicles (130078) Šagi, G.	Lo	120 (75+0+45)	7
ARM	4.0	Environmental Protection (130095) Ljubas, D.	Lo	45 (30+10+5)	7

7th semester, 4th year					
	ECTS	Required courses	Eng. Lev.	Study Hours	Sem.
ARM	3.0	Fluid Mechanics (130097) Šavar, M.; Džijan, I.	Lo	45 (30+0+15)	7
ARM	4.0	Management for Engineers (130105) Car, Ž.	Lo	45 (30+0+15)	7
ARM	0.0	Physical training VII (130108) Šarlija, J.	Lo	30 (0+0+30)	7
8th semester, 4th year					
	ECTS	Required courses	Eng. Lev.	Study Hours	Sem.
ARM	15.0	Final BSc Thesis - Armour (129462)	Lo	180 (0+180+0)	8
ARM	0.0	Physical Training VIII (129455) Šarlija, J.	Lo	30 (0+0+30)	8
ARM	15.0	Practical Military Training - Armour (129459) Janić, M.	Lo	180 (0+0+180)	8

Field Artillery

The artillery is a combat support branch of the CAF with roles and tasks in the following combat functions: manoeuvre, fire support, intelligence activities, protection (mobility, anti-mobility, and survivability), air-defence, combat service support, command and control.

Artillery support uses three basic types of armed system: cannon artillery (self-propelled and towed, characterized by high readiness, accuracy, and possibility of permanent fire), rocket artillery (achieving intense barrage in a short time, use of sophisticated ammunition as well as vulnerability due to leaving condensation trail showing exactly where the barrage come from, ammunition and long range enable a blow to the targets in depth of a battlefield), long range rocket artillery (intended for attack on point and surface targets at long shooting range with sophisticated ammunition).

The artillery branch organizational structure includes fire support units within infantry units (mainly within a battalion), rocket artillery battalion within guard brigades and rocket artillery regiment.

Basic support task of the artillery is fire preparation, fire artillery in depth, counter-battery fire, suppression, illumination of the target, deceiving, barrage fire, smoke and covering fire, air defence suppression fire.

Field artillery branch badge contains two crossed cannon barrels at an angle of 90 degrees. In the middle of the badge is a red square. Badge size is 24x27mm.



Courses

5th semester, 3rd year					
	ECTS	Required courses	Eng. Lev.	Study Hours	Sem.
ART	5.0	Ballistics (129373) Vrdoljak, M.	Lo	60 (45+15+0)	5
ART	6.0	Communication and Information Systems (141692) Šišul, G.; Ježić, G.	Lo	90 (60+15+15)	5
ART	8.0	Design Elements (129539) Vučković, K.; Jakopčić, M.	Lo	105 (60+0+45)	5
ART	2.0	English V (129548) Majhut, S.; Glavaš, T.	Lo	30 (15+15+0)	5
ART	4.0	Management of Military Logistics Systems (129639) Đukić, G.	Lo	60 (30+0+30)	5
ART	5.0	Military Management (141688) Domjančić, S.	Lo	60 (45+15+0)	5
ART	0.0	Physical Training V (129626) Rogalo, G.	Lo	30 (0+0+30)	5
6th semester, 3rd year					
	ECTS	Required courses	Eng. Lev.	Study Hours	Sem.
ART	6.0	Artillery Weapons, Equipment and Ammunition (129387) Jakopčić, M.; Alar, Ž.	Lo	90 (30+0+60)	6
ART	5.0	Defence Systems and Technologies (129376) Čosić, K.	Lo	60 (30+30+0)	6
ART	5.0	Energy and Drive Systems (129544) Tomšić, Ž.	Lo	60 (45+0+15)	6
ART	2.0	English VI (129374) Majhut, S.; Glavaš, T.	Lo	30 (15+15+0)	6
ART	3.0	Ethics of Military Profession (129375) Žunec, O.; Lucić, D.	Lo	45 (30+15+0)	6
ART	4.0	Organization and Technology of Military Equipment Maintenance (129377) Jakopčić, M.; Čurković, P.	Lo	45 (30+0+15)	6
ART	0.0	Physical Training VI (129382) Rogalo, G.	Lo	30 (0+0+30)	6
ART	5.0	Production Technologies (129380) Jakopčić, M.; Garašić, I.	Lo	60 (30+0+30)	6
7th semester, 4th year					
	ECTS	Required courses	Eng. Lev.	Study Hours	Sem.
ART	5.0	Artillery Survey (130113) Bašić, T.	Li	60 (15+0+45)	7
ART	4.0	Environmental Protection (130095) Ljubas, D.	Lo	45 (30+10+5)	7
ART	7.0	Field Artillery Gunnery (130116) Hoić, M.	Lo	90 (30+0+60)	7
ART	7.0	Field Artillery Tactical Doctrine (130114) Hoić, M.	Lo	90 (45+0+45)	7
ART	3.0	Fluid Mechanics (130097) Šavar, M.; Džijan, I.	Lo	45 (30+0+15)	7
ART	4.0	Management for Engineers (130105) Car, Ž.	Lo	45 (30+0+15)	7

7th semester, 4th year					
	ECTS	Required courses	Eng. Lev.	Study Hours	Sem.
ART	0.0	Physical training VII (130108) Šarlija, J.	Lo	30 (0+0+30)	7
8th semester, 4th year					
	ECTS	Required courses	Eng. Lev.	Study Hours	Sem.
ART	15.0	Final BSc Thesis - Field Artillery (129465)	Lo	180 (0+180+0)	8
ART	0.0	Physical Training VIII (129455) Šarlija, J.	Lo	30 (0+0+30)	8
ART	15.0	Practical Military Training - Field Artillery (129464) Jakopčić, M.	Lo	180 (0+0+180)	8

Engineers

Enrollment in the third year of study is not offered in the academic year 2020/2021.

Engineer is a branch of combat support of the CAF trained and equipped for conducting main tasks of engineer combat support. It is a basic provider of the engineer support and carries out its tasks together with other units of the services, branches and service support elements. It also cooperates with specialized building constructors and other companies and it relies on natural benefits of terrain and on organized and prepared territory for warfare requirements.

Engineers branch badge contains stylized bridge and fort. In the middle of the badge is a red square. Badge size is 27x22mm.



Engineer combat support is a mission of the armed forces carried out by engineer and all other units at all levels of military operations and within timely organization of the territory for requirements of armed combat. Missions of the engineer combat support are to support counter-mobility, mobility, survival and general engineer support.

Engineer branch is supported by various specialities within its organizational structure such as: general engineer speciality, pioneer speciality, pontoon-amphibious speciality, bridge speciality and machine-building speciality. The above stated engineer's specialities define and form the types, organization and purpose of the engineer units so that engineer corps is organized from pioneer, bridge, pontoon, amphibious and engineer units.



Courses

5th semester, 3rd year					
	ECTS	Required courses	Eng. Lev.	Study Hours	Sem.
ENG	5.0	Ballistics (129373) (Note: course not offered in this academic year.) Vrdoljak, M.	Lo	60 (45+15+0)	5
ENG	6.0	Communication and Information Systems (141692) (Note: course not offered in this academic year.) Šišul, G.; Ježić, G.	Lo	90 (60+15+15)	5
ENG	8.0	Design Elements (129539) (Note: course not offered in this academic year.) Vučković, K.; Jakopčić, M.	Lo	105 (60+0+45)	5
ENG	2.0	English V (129548) (Note: course not offered in this academic year.) Majhut, S.; Glavaš, T.	Lo	30 (15+15+0)	5
ENG	4.0	Management of Military Logistics Systems (129639) (Note: course not offered in this academic year.) Đukić, G.	Lo	60 (30+0+30)	5
ENG	5.0	Military Management (141688) (Note: course not offered in this academic year.) Domjančić, S.	Lo	60 (45+15+0)	5
ENG	0.0	Physical Training V (129626) (Note: course not offered in this academic year.) Rogalo, G.	Lo	30 (0+0+30)	5
6th semester, 3rd year					
	ECTS	Required courses	Eng. Lev.	Study Hours	Sem.
ENG	5.0	Defence Systems and Technologies (129376) (Note: course not offered in this academic year.) Čosić, K.	Lo	60 (30+30+0)	6
ENG	5.0	Energy and Drive Systems (129544) (Note: course not offered in this academic year.) Tomšić, Ž.	Lo	60 (45+0+15)	6
ENG	2.0	English VI (129374) (Note: course not offered in this academic year.) Majhut, S.; Glavaš, T.	Lo	30 (15+15+0)	6
ENG	3.0	Ethics of Military Profession (129375) (Note: course not offered in this academic year.) Žunec, O.; Lucić, D.	Lo	45 (30+15+0)	6
ENG	3.0	Mine and Explosive Ordnance (129395) (Note: course not offered in this academic year.) Dobrilović, M.	Lo	45 (30+0+15)	6
ENG	4.0	Organization and Technology of Military Equipment Maintenance (129377) (Note: course not offered in this academic year.) Jakopčić, M.; Čurković, P.	Lo	45 (30+0+15)	6
ENG	0.0	Physical Training VI (129382) (Note: course not offered in this academic year.) Rogalo, G.	Lo	30 (0+0+30)	6
ENG	5.0	Production Technologies (129380) (Note: course not offered in this academic year.) Jakopčić, M.; Garašić, I.	Lo	60 (30+0+30)	6
ENG	3.0	River Crossing (129391) (Note: course not offered in this academic year.) Potočki, K.	Lo	45 (30+0+15)	6
7th semester, 4th year					
	ECTS	Required courses	Eng. Lev.	Study Hours	Sem.
ENG	4.0	Bridges (130145) Kušter Marić, M.	Lo	45 (30+0+15)	7
ENG	4.0	Environmental Protection (130095) Ljubas, D.	Lo	45 (30+10+5)	7
ENG	3.0	Fluid Mechanics (130097) Šavar, M.; Džijan, I.	Lo	45 (30+0+15)	7

7th semester, 4th year					
	ECTS	Required courses	Eng. Lev.	Study Hours	Sem.
ENG	5.0	Fortifying and Camouflage (130147) Sigmund, Z.; Šimić, M.	Li	60 (45+0+15)	7
ENG	6.0	Geoengineering (130144) Kovačević Zelić, B.	Lo	75 (45+0+30)	7
ENG	4.0	Management for Engineers (130105) Car, Ž.	Lo	45 (30+0+15)	7
ENG	0.0	Physical training VII (130108) Šarlija, J.	Lo	30 (0+0+30)	7
ENG	4.0	Roads (130140) Dragčević, V.	Lo	45 (30+0+15)	7
8th semester, 4th year					
	ECTS	Required courses	Eng. Lev.	Study Hours	Sem.
ENG	15.0	Final BSc Thesis - Engineers (129477)	Lo	180 (0+180+0)	8
ENG	0.0	Physical Training VIII (129455) Šarlija, J.	Lo	30 (0+0+30)	8
ENG	15.0	Practical Military Training - Engineers (129484) Dobrilović, M.	Lo	180 (0+0+180)	8

Technical Support

Technical service support is one of five services in the CAF providing logistic support to the CAF performing key functions, activities and tasks needed for sustainability of all its elements in conducting operations. The basic task of the technical service support is to provide logistic support to commands, units and temporary organizational units during planning, organizing and performing their following daily tasks:

- maintenance of technical means,
- procurement of the classes of supply: III (fuels and lubricants), V (explosive ordnance), VII (basic means) and IX (reserve parts, tools and equipment for maintenance of technical means)

Technical service support is one of the most complex and technologically demanding part of the CAF and due to its size and the complexity of combat and non-combat systems, it is divided into 13 specialties (armament, moto technique, classical explosive ordnance, fuel and lubricants, ship's power plants, ship's electro technical systems, ship's electronic systems, aircraft and engine, aircraft armament, aircraft instruments radio and electronics, missiles and missile systems, information and communication systems and radar systems).

Maintenance of technical means is a logistic function making the biggest part of total number of employees of all specialties of the technical service support with the purpose of ensuring permanent working order of technical means in order to execute combat activities of combat units and conduct everyday tasks during peacetime.

Maintenance of technical means comprises all activities undertaken to keep or return the equipment to the previous working order including assessment, testing, servicing, repair, overhaul, as well as procurement of reserve parts, tools, equipment and other material in order to keep the capabilities of forces for the execution of tasks.

The system of maintenance of technical means comprise all activities regarding planning, organization, implementation, reporting, training of employees, providing general, particular and special tools, maintenance facilities, reserve parts and expendables as well as technical and technological documentation needed for maintenance. The system of maintenance should meet all requirements for the maintenance of technical means needed for everyday life and work of units in military facilities and execution of war and military operations other than war within the wide range of the CAF operations both in the country and abroad.

Beside the supplies of reserve parts, tools, equipment and materials (class IX) needed for its main activity – maintenance of technical means, technical service support also deals with the procurement of fuel, oil and lubricants (class III), explosive ordnance (class V) and basic combat and non-combat means (class VII) without which there would not be sustainability of combat units in conducting war operations and peace time tasks. Technical service units in the CAF are organized from the maintenance squad level to the maintenance battalion level and are capable of maintaining complex technical means within the CAF services.

With the sophisticated modern military technologies that are used in the CAF as well as the ones with which the CAF plan to get equipped in future, the NCOs and officers of all specialties of the technical service are required to be highly professional and capable for lifelong education in order to maintain these means and use them for targeted tasks. In order to keep modern combat and non-combat systems, the CAF technical service employees should have high education and capability to apply their knowledge and experience during and after their military career.

Technical support branch badge contains stylized representation of gears and electronic systems. In the middle of the badge is a red square. Badge diameter is 27mm.



Courses

5th semester, 3rd year					
	ECTS	Required courses	Eng. Lev.	Study Hours	Sem.
TS	5.0	Ballistics (129373) Vrdoljak, M.	Lo	60 (45+15+0)	5
TS	6.0	Communication and Information Systems (141692) Šišul, G.; Ježić, G.	Lo	90 (60+15+15)	5
TS	8.0	Design Elements (129539) Vučković, K.; Jakopčić, M.	Lo	105 (60+0+45)	5
TS	2.0	English V (129548) Majhut, S.; Glavaš, T.	Lo	30 (15+15+0)	5
TS	4.0	Management of Military Logistics Systems (129639) Đukić, G.	Lo	60 (30+0+30)	5
TS	5.0	Military Management (141688) Domjančić, S.	Lo	60 (45+15+0)	5
TS	0.0	Physical Training V (129626) Rogalo, G.	Lo	30 (0+0+30)	5
6th semester, 3rd year					
	ECTS	Required courses	Eng. Lev.	Study Hours	Sem.
TS	5.0	Defence Systems and Technologies (129376) Čosić, K.	Lo	60 (30+30+0)	6
TS	5.0	Energy and Drive Systems (129544) Tomšić, Ž.	Lo	60 (45+0+15)	6
TS	2.0	English VI (129374) Majhut, S.; Glavaš, T.	Lo	30 (15+15+0)	6
TS	3.0	Ethics of Military Profession (129375) Žunec, O.; Lucić, D.	Lo	45 (30+15+0)	6
TS	6.0	Knowledge and Maintenance Technology of Classical and Missile Weapons (129419) Jakopčić, M.; Smojver, I.	Lo	90 (75+0+15)	6
TS	4.0	Organization and Technology of Military Equipment Maintenance (129377) Jakopčić, M.; Čurković, P.	Lo	45 (30+0+15)	6
TS	0.0	Physical Training VI (129382) Rogalo, G.	Lo	30 (0+0+30)	6
TS	5.0	Production Technologies (129380) Jakopčić, M.; Garašić, I.	Lo	60 (30+0+30)	6
7th semester, 4th year					
	ECTS	Required courses	Eng. Lev.	Study Hours	Sem.
TS	4.0	Corrosion and Protection (130157) Alar, V.	Lo	45 (30+0+15)	7
TS	4.0	Environmental Protection (130095) Ljubas, D.	Lo	45 (30+10+5)	7
TS	3.0	Fluid Mechanics (130097) Šavar, M.; Džijan, I.	Lo	45 (30+0+15)	7
TS	7.0	Knowledge and Maintenance Technology of Army Vehicles (130163) Tomić, R.	Lo	90 (60+0+30)	7
TS	4.0	Maintenance and Storage of Ordnance (130158) Bohanek, V.	Lo	60 (45+5+10)	7

7th semester, 4th year					
	ECTS	Required courses	Eng. Lev.	Study Hours	Sem.
TS	4.0	Management for Engineers (130105) Čar, Ž.	Lo	45 (30+0+15)	7
TS	4.0	Organization of Technical Services (130161) Štefanić, N.	Lo	45 (30+0+15)	7
TS	0.0	Physical training VII (130108) Šarlija, J.	Lo	30 (0+0+30)	7
8th semester, 4th year					
	ECTS	Required courses	Eng. Lev.	Study Hours	Sem.
TS	15.0	Final BSc Thesis - Technical Services (129608)	Lo	180 (0+180+0)	8
TS	0.0	Physical Training VIII (129455) Šarlija, J.	Lo	30 (0+0+30)	8
TS	15.0	Practical Military Training - Technical Services (129592) Ljevar, M.	Lo	180 (0+0+180)	8

Infantry

Not offered for enrolment in acc. year 2020/2021.

Infantry is the oldest and most numerous combat branch of a military force – armed, equipped and trained for combat operations on every terrain, in each part of the day and year and in all kinds of weather conditions.

The task of the infantry is to locate, approach, seize and destroy the enemy with fire and manoeuvre, and to repel the enemy assault by fire, close combat and counterattack.

The tasks are executed by manoeuvre, movement or blow, and unlike other branches and services, it is most capable for fast adaptation to newly arisen situations. Modern infantry forces are flexible, quick, highly trained for all types of military operations having sophisticated arms and equipment, firepower, psycho-physical readiness and capability of integrated operations. Due to its capability of quick and effective response to modern types of warfare, the infantry carries the main responsibility for combat operations and is a main force regarding the linear as well as asymmetrical warfare.

Highly sophisticated modern technology has profoundly changed the nature of conventional warfare. Asymmetrical battlefield has ousted the linear one; the infantry is becoming the leading branch due to its adaptability. The units of the infantry company and platoon level are becoming more and more independent and efficient in the implementation of non-traditional military tasks.

Infantry as a combat branch of the Croatian Army, and in accordance with its tasks, has several branch specialties: general, shooting, mortar, anti-armour and mechanized ones. Today's infantry has most frequently organized units at the level of squad, platoon, company, battalion and brigade/regiment.

Each member of the infantry, from soldier to officer is a shooter in the first place. Being the one, he has to master the basic skills (capabilities for battle): shooting, movement, communication, survival, and sustainability. When applied in a team or platoon these skills become combat skills.

Infantry branch badge contains stylized portrayal of two crossed rifles at an angle of 90 degrees. In the middle of the badge is a red square. Badge size is 24x27mm.



Courses

5th semester, 3rd year					
ECTS	Required courses	Eng. Lev.	Study Hours	Sem.	
5.0	Ballistics (129373) (Note: course not offered in this academic year.) Vrdoljak, M.	Lo	60 (45+15+0)	5	
6.0	Communication and Information Systems (141692) (Note: course not offered in this academic year.) Šišul, G.; Ježić, G.	Lo	90 (60+15+15)	5	
8.0	Design Elements (129539) (Note: course not offered in this academic year.) Vučković, K.; Jakopčić, M.	Lo	105 (60+0+45)	5	
2.0	English V (129548) (Note: course not offered in this academic year.) Majhut, S.; Glavaš, T.	Lo	30 (15+15+0)	5	
4.0	Management of Military Logistics Systems (129639) (Note: course not offered in this academic year.) Đukić, G.	Lo	60 (30+0+30)	5	
5.0	Military Management (141688) (Note: course not offered in this academic year.) Domjančić, S.	Lo	60 (45+15+0)	5	
0.0	Physical Training V (129626) (Note: course not offered in this academic year.) Rogalo, G.	Lo	30 (0+0+30)	5	
6th semester, 3rd year					
ECTS	Required courses	Eng. Lev.	Study Hours	Sem.	
4.0	Ammunition and Explosive Materials (129389) (Note: course not offered in this academic year.) Dobrilović, M.	Lo	45 (30+0+15)	6	
5.0	Defence Systems and Technologies (129376) (Note: course not offered in this academic year.) Čosić, K.	Lo	60 (30+30+0)	6	
5.0	Energy and Drive Systems (129544) (Note: course not offered in this academic year.) Tomšić, Ž.	Lo	60 (45+0+15)	6	
2.0	English VI (129374) (Note: course not offered in this academic year.) Majhut, S.; Glavaš, T.	Lo	30 (15+15+0)	6	
3.0	Ethics of Military Profession (129375) (Note: course not offered in this academic year.) Žunec, O.; Lucić, D.	Lo	45 (30+15+0)	6	
2.0	Introduction to Infantry Tactics and Weapon (129390) (Note: course not offered in this academic year.) Jakopčić, M.	Lo	45 (30+0+15)	6	
4.0	Organization and Technology of Military Equipment Maintenance (129377) (Note: course not offered in this academic year.) Jakopčić, M.; Čurković, P.	Lo	45 (30+0+15)	6	
0.0	Physical Training VI (129382) (Note: course not offered in this academic year.) Rogalo, G.	Lo	30 (0+0+30)	6	
5.0	Production Technologies (129380) (Note: course not offered in this academic year.) Jakopčić, M.; Garašić, I.	Lo	60 (30+0+30)	6	
7th semester, 4th year					
ECTS	Required courses	Eng. Lev.	Study Hours	Sem.	
5.0	Armoured Infantry Fighting Vehicles and Armament (130118) (Note: course not offered in this academic year.) Ilinčić, P.	Lo	75 (45+0+30)	7	
4.0	Environmental Protection (130095) (Note: course not offered in this academic year.) Ljubas, D.	Lo	45 (30+10+5)	7	

7th semester, 4th year					
	ECTS	Required courses	Eng. Lev.	Study Hours	Sem.
IN-E	3.0	Fluid Mechanics (130097) (Note: course not offered in this academic year.) Šavar, M.; Džijan, I.	Lo	45 (30+0+15)	7
IN-E	8.0	Infantry Tactics (130120) (Note: course not offered in this academic year.) Jakopčić, M.; Hoić, M.	Lo	105 (60+15+30)	7
IN-E	6.0	Infantry Weapons With Fire Conduct (130006) (Note: course not offered in this academic year.) Vučković, K.	Lo	90 (45+15+30)	7
IN-E	4.0	Management for Engineers (130105) (Note: course not offered in this academic year.) Car, Ž.	Lo	45 (30+0+15)	7
IN-E	0.0	Physical training VII (130108) (Note: course not offered in this academic year.) Šarlija, J.	Lo	30 (0+0+30)	7
8th semester, 4th year					
	ECTS	Required courses	Eng. Lev.	Study Hours	Sem.
IN-E	15.0	Final BSc Thesis - Infantry (129470) (Note: course not offered in this academic year.)	Lo	180 (0+180+0)	8
IN-E	0.0	Physical Training VIII (129455) (Note: course not offered in this academic year.) Šarlija, J.	Lo	30 (0+0+30)	8
IN-E	15.0	Practical Military Training - Infantry (129468) (Note: course not offered in this academic year.) Kosanović, K.; Vujadinović, L.	Lo	180 (0+0+180)	8

Group of Courses Signals, Monitoring and Guidance and Air Defence

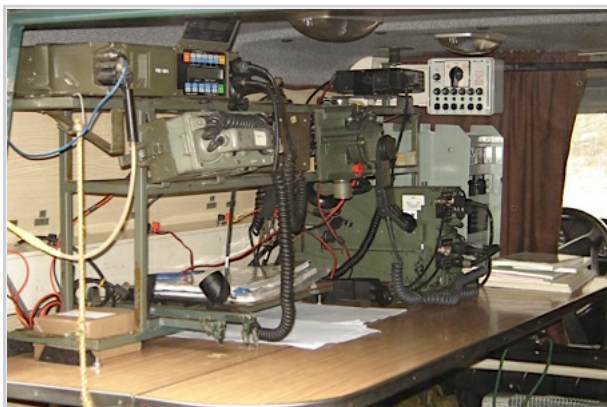
Analogously as for the first Course Group, the second year of the study programme Military Engineering is common for the second Course Group comprised of three courses: Signals, Monitoring and Guidance and Air Defence. For designation of individual courses of this Course Group the following abbreviations are used throughout this document:

- ME-E for designation of the whole Course Group,
- SIG for Signals,
- MG for Monitoring and Guidance and
- AD for Air Defence.

Students are allocated into this group by the discretion of the Croatian Defence Academy, and at the proposal of the Ministry of Defence and the study Council. The Ministry of Defence expresses the need for the number of students from each group of courses for each generation of students of the Military Engineering programme before their enrolment in the second year of the study. Proposal for allocation of students to each of the course groups of the second study year programme is prepared by the Council taking into account the expressed interest of the student, his success in the first year of study, as well as the total number of seats available for each course group.

Study programme of the third and fourth year is different for each course of study; hence, the division of students into final courses of the study programme is carried out at the entry of the third academic year in an analogous fashion. The Ministry of Defence expresses the need for the number of students of each course for each generation of students of the Military Engineering programme before their enrolment in the third year of the study. The proposal of students' allocation into the final courses is prepared by the study Council taking into account the expressed interest of the student, his success in the first two years of study, as well as the total number of seats available for each course. Based on this proposal, the Croatian Defence Academy prepares the final decision on the allocation.

In the event that in a particular year there are no needs for a particular group of courses, then in such year this course group will not be offered for enrolment in the second study year, hence the respective courses of this group will not be offered for enrolment in the third and the fourth study year as well. Also, if in a particular year there are needs only for certain courses of a group, then in that year only those courses will be offered for enrolment in the third and subsequently in the fourth study year.



Courses (second year of study)

3rd semester, 2nd year					
	ECTS	Required courses	Eng. Lev.	Study Hours	Sem.
	6.0	Electronics (129325) Krois, I.	Lo	75 (45+0+30)	3
	2.0	English III (129328) Majhut, S.; Prpić Đurić, I.	Lo	30 (15+15+0)	3
	6.0	Informatics and Programming (129330) Seder, M.; Sović Kržić, A.	Lo	75 (45+0+30)	3
	6.0	Materials (129336) Grilec, K.	Lo	75 (45+0+30)	3
	5.0	Military Leadership (141686) Barić, S.	Lo	60 (45+0+15)	3
	0.0	Physical Training III (129343) Ćurčić, D.	Lo	30 (0+0+30)	3
	5.0	Probability and Statistics (129378) Brnetić, I.	Lo	60 (30+0+30)	3
4th semester, 2nd year					
	ECTS	Required courses	Eng. Lev.	Study Hours	Sem.
	5.0	Decision Analysis (129338) Hunjak, T.; Begičević Redep, N.	Lo	60 (30+15+15)	4
	6.0	Digital Logic (129364) Kalafatić, Z.	Lo	75 (60+0+15)	4
	2.0	English IV (129340) Majhut, S.; Prpić Đurić, I.	Lo	30 (15+15+0)	4
	8.0	General Tactics (129342) Pahernik, M.	Lo	105 (60+15+30)	4
	5.0	Military Pedagogy (129356) Markić, I.	Lo	60 (30+15+15)	4
	4.0	Military Psychology (129359) Bratko, D.	Lo	45 (30+0+15)	4
	0.0	Physical Training IV (129350) Ćurčić, D.	Lo	30 (0+0+30)	4

Signals

Enrolment to the Signals course in the fourth study year is not offered in acc. year. 2020/2021.

Signals is a branch in the CAF that has a peacetime and wartime mission to provide quality, quick and safe transmission of data, notifications and orders in the system of leadership and command of the armed forces.

The signals system in Croatian Armed Forces is a functional system designed for the execution of CIS tasks (Communication Information Systems) within combat functions of the command and control in the CAF.

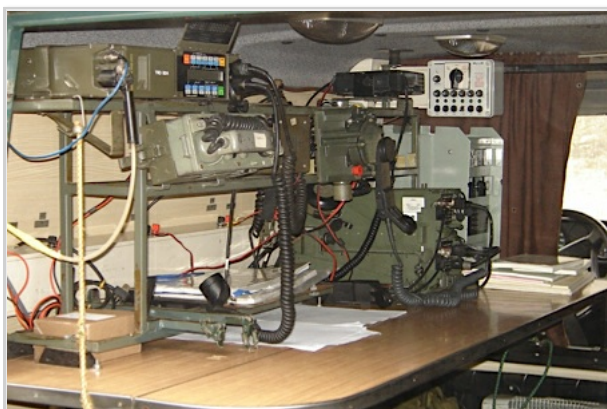
The signals system of the Armed Forces includes the following elements (stations, centres and signal nodes that are linked with connecting routes) that, together with signals documents and crypto protection, represent an organizational and technical-technological entirety trained for transmission and protection of information.

Signals units are organizational entities of the signals branch that is unique as a branch for all services of the CAF (Army, Navy, Air Force & Air Defence) and are deployed to organizational components of the armed forces. Their purpose is to provide proper functioning of the signals system, protection of the communications and information, staff work of the officers in charge and information support.

Four specialities have been established within the signals branch: general, radio, telecommunication and computer speciality.

Units of the signals branch carry out their tasks by combination of the stationary and mobile elements of the signals system.

Signals branch badge contains of two stylized lightnings crossed at an angle of 132 degrees. In the middle of the badge is a red square. Badge size is 17x27mm.



Courses

5th semester, 3rd year					
	ECTS	Required courses	Eng. Lev.	Study Hours	Sem.
	5.0	Ballistics (129373) Vrdoljak, M.	Lo	60 (45+15+0)	5
	6.0	Communication and Information Systems (141692) Šišul, G.; Ježić, G.	Lo	90 (60+15+15)	5
	5.0	Computer Architecture and Operating Systems (129892) Jelenković, L.; Hofman, D.	Lo	60 (45+0+15)	5
	2.0	English V (129548) Majhut, S.; Glavaš, T.	Lo	30 (15+15+0)	5
	3.0	Introduction to Systems and Automatic Control (129898) Matika, D.; Seder, M.; Petković, T.	Li	45 (30+0+15)	5
	4.0	Management of Military Logistics Systems (129639) Đukić, G.	Lo	60 (30+0+30)	5
	5.0	Military Management (141688) Domjančić, S.	Lo	60 (45+15+0)	5
	0.0	Physical Training V (129626) Rogalo, G.	Lo	30 (0+0+30)	5
6th semester, 3rd year					
	ECTS	Required courses	Eng. Lev.	Study Hours	Sem.
	4.0	Data Structures, Software Engineering and Software Design (129416) Pribanić, T.; Seder, M.	Lo	60 (45+0+15)	6
	5.0	Defence Systems and Technologies (129376) Čosić, K.	Lo	60 (30+30+0)	6
	5.0	Energy and Drive Systems (129544) Tomšić, Ž.	Lo	60 (45+0+15)	6
	2.0	English VI (129374) Majhut, S.; Glavaš, T.	Lo	30 (15+15+0)	6
	3.0	Ethics of Military Profession (129375) Žunec, O.; Lucić, D.	Lo	45 (30+15+0)	6
	4.0	Organization and Technology of Military Equipment Maintenance (129377) Jakopčić, M.; Čurković, P.	Lo	45 (30+0+15)	6
	0.0	Physical Training VI (129382) Rogalo, G.	Lo	30 (0+0+30)	6
	5.0	Production Technologies (129380) Jakopčić, M.; Garašić, I.	Lo	60 (30+0+30)	6
	2.0	Safety and Protection of Communication Information Systems (129414) Malarić, K.	Li	45 (30+0+15)	6
7th semester, 4th year					
	ECTS	Required courses	Eng. Lev.	Study Hours	Sem.
	6.0	Computer and Telecommunication Devices, Systems and Networks (130152) (Note: course not offered in this academic year.) Vuković, M.; Možnik, D.	Lo	75 (45+0+30)	7
	5.0	Electronic Warfare (130148) (Note: course not offered in this academic year.) Bonefačić, D.; Matika, D.	Lo	60 (45+0+15)	7
	4.0	Environmental Protection (130095) (Note: course not offered in this academic year.) Ljubas, D.	Lo	45 (30+10+5)	7
	4.0	Management for Engineers (130105) (Note: course not offered in this academic year.) Car, Ž.	Lo	45 (30+0+15)	7

7th semester, 4th year					
	ECTS	Required courses	Eng. Lev.	Study Hours	Sem.
SIG	0.0	Physical training VII (130108) (Note: course not offered in this academic year.) Šarlija, J.	Lo	30 (0+0+30)	7
SIG	5.0	Process Modelling and Design of IS (130146) (Note: course not offered in this academic year.) Vrček, N.	Lo	75 (45+15+15)	7
SIG	6.0	Radio Devices and Systems (130154) (Note: course not offered in this academic year.) Bonefačić, D.	Lo	90 (45+0+45)	7
8th semester, 4th year					
	ECTS	Required courses	Eng. Lev.	Study Hours	Sem.
SIG	15.0	Final BSc Thesis - Signals (129489) (Note: course not offered in this academic year.)	Lo	180 (0+180+0)	8
SIG	0.0	Physical Training VIII (129455) (Note: course not offered in this academic year.) Šarlija, J.	Lo	30 (0+0+30)	8
SIG	15.0	Practical military training - Signals (129486) (Note: course not offered in this academic year.) Štambuk, I.	Lo	180 (0+0+180)	8

Monitoring and Guidance

Not offered for enrolment in acc. year 2020/2021.

Air surveillance is a combat support branch of operational importance in the CAF. It is intended for continual control of the air and maritime area, early acquisition, tracking, interception and control of the unidentified ships and airplanes as well as ships and airplanes that have unknown intentions. In that manner, Air Surveillance (MIN) participates in protection of integrity of the Republic of Croatia and contributes to the defence of the NATO territory.

The purpose of control of the maritime and air space is to increase efficiency of the military operations by promoting capabilities of the air forces, naval forces, land forces and special operations for operation in an efficient, integrated and flexible manner with minimal interference and without violation of restriction and risks for friendly forces and non-combat users of the air and maritime area.

Surveillance of the air and maritime area provides to a commander of the operation operational flexibility for the effective employment of the forces.

The basic tactical unit of the Air Surveillance is a radar station designed for centralized control of the maritime and air space and distribution of data to command operational centres. The unit is equipped and trained for regular, corrective and preventive maintenance in the first degree of the main and auxiliary weapon systems.

In the system of decentralized radar control of the sea and air space, Air Surveillance has its area of responsibility, reporting and radar support to naval, air forces and air defence forces in conduct of the operation.

Monitoring and Guidance branch badge contains stylized representation of the radar screen and a compass rose with cardinal directions. In the middle of the badge is a red square. Badge diameter is 27mm.



Courses

5th semester, 3rd year					
	ECTS	Required courses	Eng. Lev.	Study Hours	Sem.
MG	5.0	Ballistics (129373) (Note: course not offered in this academic year.) Vrdoljak, M.	Lo	60 (45+15+0)	5
MG	6.0	Communication and Information Systems (141692) (Note: course not offered in this academic year.) Šišul, G.; Ježić, G.	Lo	90 (60+15+15)	5
MG	5.0	Computer Architecture and Operating Systems (129892) (Note: course not offered in this academic year.) Jelenković, L.; Hofman, D.	Lo	60 (45+0+15)	5
MG	2.0	English V (129548) (Note: course not offered in this academic year.) Majhut, S.; Glavaš, T.	Lo	30 (15+15+0)	5
MG	3.0	Introduction to Systems and Automatic Control (129898) (Note: course not offered in this academic year.) Matika, D.; Seder, M.; Petković, T.	LI	45 (30+0+15)	5
MG	4.0	Management of Military Logistics Systems (129639) (Note: course not offered in this academic year.) Đukić, G.	Lo	60 (30+0+30)	5
MG	5.0	Military Management (141688) (Note: course not offered in this academic year.) Domjančić, S.	Lo	60 (45+15+0)	5
MG	0.0	Physical Training V (129626) (Note: course not offered in this academic year.) Rogalo, G.	Lo	30 (0+0+30)	5
6th semester, 3rd year					
	ECTS	Required courses	Eng. Lev.	Study Hours	Sem.
MG	5.0	Defence Systems and Technologies (129376) (Note: course not offered in this academic year.) Čosić, K.	Lo	60 (30+30+0)	6
MG	5.0	Energy and Drive Systems (129544) (Note: course not offered in this academic year.) Tomšić, Ž.	Lo	60 (45+0+15)	6
MG	2.0	English VI (129374) (Note: course not offered in this academic year.) Majhut, S.; Glavaš, T.	Lo	30 (15+15+0)	6
MG	3.0	Ethics of Military Profession (129375) (Note: course not offered in this academic year.) Žunec, O.; Lucić, D.	Lo	45 (30+15+0)	6
MG	4.0	Organization and Technology of Military Equipment Maintenance (129377) (Note: course not offered in this academic year.) Jakopčić, M.; Ćurković, P.	Lo	45 (30+0+15)	6
MG	0.0	Physical Training VI (129382) (Note: course not offered in this academic year.) Rogalo, G.	Lo	30 (0+0+30)	6
MG	5.0	Production Technologies (129380) (Note: course not offered in this academic year.) Jakopčić, M.; Garašić, I.	Lo	60 (30+0+30)	6
MG	6.0	Radar Systems and Air Traffic Management (129444) (Note: course not offered in this academic year.) Bonefačić, D.; Juričić, B.	Lo	90 (60+0+30)	6
7th semester, 4th year					
	ECTS	Required courses	Eng. Lev.	Study Hours	Sem.
MG	6.0	Computer and Telecommunication Devices, Systems and Networks (130152) (Note: course not offered in this academic year.) Vuković, M.; Možnik, D.	Lo	75 (45+0+30)	7
MG	5.0	Electronic Warfare (130148) (Note: course not offered in this academic year.) Bonefačić, D.; Matika, D.	Lo	60 (45+0+15)	7

7th semester, 4th year					
	ECTS	Required courses	Eng. Lev.	Study Hours	Sem.
MG	4.0	Environmental Protection (130095) (Note: course not offered in this academic year.) Ljubas, D.	Lo	45 (30+10+5)	7
MG	4.0	Management for Engineers (130105) (Note: course not offered in this academic year.) Car, Ž.	Lo	45 (30+0+15)	7
MG	5.0	Network System (130170) (Note: course not offered in this academic year.) Podobnik, V.	Lo	75 (30+0+45)	7
MG	0.0	Physical training VII (130108) (Note: course not offered in this academic year.) Šarlija, J.	Lo	30 (0+0+30)	7
MG	6.0	Radio Location (130174) (Note: course not offered in this academic year.) Kos, T.	Lo	90 (45+0+45)	7
8th semester, 4th year					
	ECTS	Required courses	Eng. Lev.	Study Hours	Sem.
MG	15.0	Final BSc Thesis - Monitoring and Guidance (129630) (Note: course not offered in this academic year.)	Lo	180 (0+180+0)	8
MG	0.0	Physical Training VIII (129455) (Note: course not offered in this academic year.) Šarlija, J.	Lo	30 (0+0+30)	8
MG	15.0	Practical Military Training - Monitoring and Guidance (129632) (Note: course not offered in this academic year.) Mihanović, L.	Lo	180 (0+0+180)	8

Air Defence

Not offered for enrolment in acc. year 2020/2021.

Air Defence is a branch of the combat support in the CAF and it serves for shooting down enemy's military airplanes and projectiles from land and air during combat operations.

The basic mission of the AD Artillery Missile Unit is combat with the opponent's means of attack from air at distances of effective range of the Air Defence assets.

Air Defence units provide protection to the forces and key facilities on the territory against airplanes and missiles that operate from air and contribute to intelligence and information operations by gathering and distribution of the information about enemy's manner of conducting combat from air. Capabilities of the opponent's airplanes to carry out reconnaissance as well as command and control are also neutralized by AD units.

Air Defence forces are diversified, mobile and do battle through entire depth of the battlefield. Through aggressive planning and fully coordinated execution, Air Defence allows a Commander to take and maintain initiative at every level.

Commanders integrate AD operations into campaigns that are conducted at operational level, as well as battles and confrontations at tactical level.

Commanders of the AD units coordinate their operations by integrating them horizontally with other combat functions and vertically within combat function of the Air Defence.

Air defence branch badge contains two crossed missiles at an angle of 90 degrees. In the middle of the badge is a red square. Badge size is 27x27mm.



Courses

5th semester, 3rd year					
	ECTS	Required courses	Eng. Lev.	Study Hours	Sem.
AD	5.0	Ballistics (129373) (Note: course not offered in this academic year.) Vrdoljak, M.	Lo	60 (45+15+0)	5
AD	6.0	Communication and Information Systems (141692) (Note: course not offered in this academic year.) Šišul, G.; Ježić, G.	Lo	90 (60+15+15)	5
AD	5.0	Computer Architecture and Operating Systems (129892) (Note: course not offered in this academic year.) Jelenković, L.; Hofman, D.	Lo	60 (45+0+15)	5
AD	2.0	English V (129548) (Note: course not offered in this academic year.) Majhut, S.; Glavaš, T.	Lo	30 (15+15+0)	5
AD	3.0	Introduction to Systems and Automatic Control (129898) (Note: course not offered in this academic year.) Matika, D.; Seder, M.; Petković, T.	LI	45 (30+0+15)	5
AD	4.0	Management of Military Logistics Systems (129639) (Note: course not offered in this academic year.) Đukić, G.	Lo	60 (30+0+30)	5
AD	5.0	Military Management (141688) (Note: course not offered in this academic year.) Domjančić, S.	Lo	60 (45+15+0)	5
AD	0.0	Physical Training V (129626) (Note: course not offered in this academic year.) Rogalo, G.	Lo	30 (0+0+30)	5
6th semester, 3rd year					
	ECTS	Required courses	Eng. Lev.	Study Hours	Sem.
AD	5.0	Defence Systems and Technologies (129376) (Note: course not offered in this academic year.) Čosić, K.	Lo	60 (30+30+0)	6
AD	5.0	Energy and Drive Systems (129544) (Note: course not offered in this academic year.) Tomšić, Ž.	Lo	60 (45+0+15)	6
AD	2.0	English VI (129374) (Note: course not offered in this academic year.) Majhut, S.; Glavaš, T.	Lo	30 (15+15+0)	6
AD	3.0	Ethics of Military Profession (129375) (Note: course not offered in this academic year.) Žunec, O.; Lucić, D.	Lo	45 (30+15+0)	6
AD	4.0	Organization and Technology of Military Equipment Maintenance (129377) (Note: course not offered in this academic year.) Jakopčić, M.; Čurković, P.	Lo	45 (30+0+15)	6
AD	0.0	Physical Training VI (129382) (Note: course not offered in this academic year.) Rogalo, G.	Lo	30 (0+0+30)	6
AD	5.0	Production Technologies (129380) (Note: course not offered in this academic year.) Jakopčić, M.; Garašić, I.	Lo	60 (30+0+30)	6
AD	6.0	Radar Systems and Air Traffic Management (129444) (Note: course not offered in this academic year.) Bonefačić, D.; Juričić, B.	Lo	90 (60+0+30)	6
7th semester, 4th year					
	ECTS	Required courses	Eng. Lev.	Study Hours	Sem.
AD	5.0	Air Defence Artillery Weapons (130173) (Note: course not offered in this academic year.) Jakopčić, M.; Hoić, M.	Lo	75 (30+0+45)	7
AD	6.0	Computer and Telecommunication Devices, Systems and Networks (130152) (Note: course not offered in this academic year.) Vuković, M.; Možnik, D.	Lo	75 (45+0+30)	7

7th semester, 4th year					
	ECTS	Required courses	Eng. Lev.	Study Hours	Sem.
AD	4.0	Environmental Protection (130095) (Note: course not offered in this academic year.) Ljubas, D.	Lo	45 (30+10+5)	7
AD	4.0	Management for Engineers (130105) (Note: course not offered in this academic year.) Čar, Ž.	Lo	45 (30+0+15)	7
AD	5.0	Network System (130170) (Note: course not offered in this academic year.) Podobnik, V.	Lo	75 (30+0+45)	7
AD	0.0	Physical training VII (130108) (Note: course not offered in this academic year.) Šarlija, J.	Lo	30 (0+0+30)	7
AD	6.0	Rocket Air Defence Systems (130171) (Note: course not offered in this academic year.) Smojver, I.	Lo	90 (45+0+45)	7
8th semester, 4th year					
	ECTS	Required courses	Eng. Lev.	Study Hours	Sem.
AD	15.0	Final BSc Thesis - Air Defence (129627) (Note: course not offered in this academic year.)	Lo	180 (0+180+0)	8
AD	0.0	Physical Training VIII (129455) (Note: course not offered in this academic year.) Šarlija, J.	Lo	30 (0+0+30)	8
AD	15.0	Practical Military Training - Air Defence (129621) (Note: course not offered in this academic year.) Mihanović, L.	Lo	180 (0+0+180)	8

Group of Courses Chemical, Biological, Radiological and Nuclear Defence

The third Course Group of the study programme Military Engineering is comprised of the single course: Chemical, Biological, Radiological and Nuclear Defence. The second year study programme of this Course Group is different from the first two Course Groups. For designation of this Course Group and its corresponding course the same abbreviation is used throughout this document:

- CBR for Chemical, Biological, Radiological and Nuclear Defence.

Students are allocated into this group by the discretion of the Croatian Defence Academy, and at the proposal of the Ministry of Defence and the study Council. The Ministry of Defence expresses the need for the number of students from each group of courses for each generation of students of the Military Engineering programme before their enrolment in the second year of the study. Proposal for allocation of students to each of the course groups of the second study year programme is prepared by the Council taking into account the expressed interest of the student, his success in the first year of study, as well as the total number of seats available for each course group.

Given that this group is made up of only one course, students who are allocated to this group in their second study year are automatically enrolled in the third and the fourth study year programme in the corresponding course of this group (CBR).

In the event that in a particular year there are no needs for a particular group of courses, then in such year this course group will not be offered for enrolment in the second study year, hence the respective courses of this group will not be offered for enrolment in the third and the fourth study year as well.



Chemical, Biological, Radiological and Nuclear Defence

Enrolment to the Signals course in the second, and third study year is not offered in acc. year. 2020/2021.

NBC is a CAF combat service support branch intended for nuclear, biological and chemical countermeasures. It is a resource for professional planning, organizing and preparing of anti-nuclear biological and chemical operational systems and conduct of specialist and additional tasks of the NBC units.

Nuclear, biological and chemical countermeasures encompass general and special measures and operational procedures.

General measures and operational procedures concerning the individual and collective NBC protection are to be obeyed by all members of the CAF units and commands.

Special measures and procedures of specialist NBC units are: NBC surveillance (forecasts and effect assessments), radiological, nuclear, biological and chemical reconnaissance and nuclear, biological and chemical laboratory activities.

The special tasks of the attached NBC units and their members are as follows: assisting commanders of various levels in the NBC area and providing NBC unit support (NBC reconnaissance, NBC decontamination and laboratory works).

NBC branch comprises four specialties: general, laboratory, decontamination and NBC reconnaissance specialty.

The development of technology and industry inevitably results in the unconventional warfare, release of toxic industrial substances (ROTA – releases other than attack) and various accidents imposing the requirements for new NBC branch capabilities.

Chemical, biological, radiological and nuclear defence branch badge contains stylized representation of atoms, benzene ring and biological agents. In the middle of the badge is a red square. Badge size is 25x27mm.



Courses

3rd semester, 2nd year					
	ECTS	Required courses	Eng. Lev.	Study Hours	Sem.
CBR	6.0	Electronics (129325) (Note: course not offered in this academic year.) Krois, I.	Lo	75 (45+0+30)	3
CBR	2.0	English III (129328) (Note: course not offered in this academic year.) Majhut, S.; Prpić Đurić, I.	Lo	30 (15+15+0)	3
CBR	6.0	Informatics and Programming (129330) (Note: course not offered in this academic year.) Seder, M.; Sović Kržić, A.	Lo	75 (45+0+30)	3
CBR	6.0	Materials (129336) (Note: course not offered in this academic year.) Grilec, K.	Lo	75 (45+0+30)	3
CBR	5.0	Military Leadership (141686) (Note: course not offered in this academic year.) Barić, S.	Lo	60 (45+0+15)	3
CBR	0.0	Physical Training III (129343) (Note: course not offered in this academic year.) Ćurčić, D.	Lo	30 (0+0+30)	3
CBR	5.0	Probability and Statistics (129378) (Note: course not offered in this academic year.) Brnetić, I.	Lo	60 (30+0+30)	3
4th semester, 2nd year					
	ECTS	Required courses	Eng. Lev.	Study Hours	Sem.
CBR	6.0	Chemistry (129365) (Note: course not offered in this academic year.) Krištafor, S.	Lo	75 (30+30+15)	4
CBR	5.0	Decision Analysis (129338) (Note: course not offered in this academic year.) Hunjak, T.; Begičević Redep, N.	Lo	60 (30+15+15)	4
CBR	2.0	English IV (129340) (Note: course not offered in this academic year.) Majhut, S.; Prpić Đurić, I.	Lo	30 (15+15+0)	4
CBR	8.0	General Tactics (129342) (Note: course not offered in this academic year.) Pahernik, M.	Lo	105 (60+15+30)	4
CBR	5.0	Military Pedagogy (129356) (Note: course not offered in this academic year.) Markić, I.	Lo	60 (30+15+15)	4
CBR	4.0	Military Psychology (129359) (Note: course not offered in this academic year.) Bratko, D.	Lo	45 (30+0+15)	4
CBR	0.0	Physical Training IV (129350) (Note: course not offered in this academic year.) Ćurčić, D.	Lo	30 (0+0+30)	4
5th semester, 3rd year					
	ECTS	Required courses	Eng. Lev.	Study Hours	Sem.
CBR	5.0	Ballistics (129373) (Note: course not offered in this academic year.) Vrdoljak, M.	Lo	60 (45+15+0)	5
CBR	6.0	Communication and Information Systems (141692) (Note: course not offered in this academic year.) Šišul, G.; Ježić, G.	Lo	90 (60+15+15)	5
CBR	2.0	English V (129548) (Note: course not offered in this academic year.) Majhut, S.; Glavaš, T.	Lo	30 (15+15+0)	5
CBR	3.0	Instrumental Analytical Chemistry (129975) (Note: course not offered in this academic year.) Ašperger, D.	Lo	45 (30+0+15)	5
CBR	4.0	Management of Military Logistics Systems (129639) (Note: course not offered in this academic year.) Đukić, G.	Lo	60 (30+0+30)	5
CBR	5.0	Military Management (141688) (Note: course not offered in this academic year.) Domjančić, S.	Lo	60 (45+15+0)	5

5th semester, 3rd year					
	ECTS	Required courses	Eng. Lev.	Study Hours	Sem.
CBR	5.0	Organic Chemistry (129980) (Note: course not offered in this academic year.) Gazivoda Kraljević, T.	Lo	60 (30+15+15)	5
CBR	0.0	Physical Training V (129626) (Note: course not offered in this academic year.) Rogalo, G.	Lo	30 (0+0+30)	5
6th semester, 3rd year					
	ECTS	Required courses	Eng. Lev.	Study Hours	Sem.
CBR	6.0	CBRN Weapons (129422) (Note: course not offered in this academic year.) Raić-Malić, S.	Lo	90 (75+15+0)	6
CBR	5.0	Defence Systems and Technologies (129376) (Note: course not offered in this academic year.) Čosić, K.	Lo	60 (30+30+0)	6
CBR	5.0	Energy and Drive Systems (129544) (Note: course not offered in this academic year.) Tomšić, Ž.	Lo	60 (45+0+15)	6
CBR	2.0	English VI (129374) (Note: course not offered in this academic year.) Majhut, S.; Glavaš, T.	Lo	30 (15+15+0)	6
CBR	3.0	Ethics of Military Profession (129375) (Note: course not offered in this academic year.) Žunec, O.; Lucić, D.	Lo	45 (30+15+0)	6
CBR	4.0	Organization and Technology of Military Equipment Maintenance (129377) (Note: course not offered in this academic year.) Jakopčić, M.; Čurković, P.	Lo	45 (30+0+15)	6
CBR	0.0	Physical Training VI (129382) (Note: course not offered in this academic year.) Rogalo, G.	Lo	30 (0+0+30)	6
CBR	5.0	Production Technologies (129380) (Note: course not offered in this academic year.) Jakopčić, M.; Garašić, I.	Lo	60 (30+0+30)	6
7th semester, 4th year					
	ECTS	Required courses	Eng. Lev.	Study Hours	Sem.
CBR	3.0	Applied Organic Chemistry (130165) Gazivoda Kraljević, T.	Lo	45 (30+0+15)	7
CBR	5.0	CBRN Protection (130164) Mandić, V.	Lo	60 (30+15+15)	7
CBR	4.0	Crises Management in CBRN Situation (130168) Mandić, V.	Lo	45 (30+0+15)	7
CBR	4.0	Environmental Protection (130095) Ljubas, D.	Lo	45 (30+10+5)	7
CBR	4.0	Management for Engineers (130105) Car, Ž.	Lo	45 (30+0+15)	7
CBR	0.0	Physical training VII (130108) Šarlija, J.	Lo	30 (0+0+30)	7
CBR	6.0	RBC Detection, Identification and Monitoring (132734) Mandić, V.	Lo	90 (45+0+45)	7
CBR	4.0	Toxic Industrial Chemicals (130167) Mandić, V.	Lo	45 (30+0+15)	7
8th semester, 4th year					
	ECTS	Required courses	Eng. Lev.	Study Hours	Sem.
CBR	15.0	Final BSc Thesis - Chemical, Biological, Radiological, and Nuclear Defence (129617)	Lo	180 (0+180+0)	8

8th semester, 4th year					
	ECTS	Required courses	Eng. Lev.	Study Hours	Sem.
CBR	0.0	Physical Training VIII (129455) Šarlija, J.	Lo	30 (0+0+30)	8
CBR	15.0	Practical Military Training - Chemical, Biological, Radiological, and Nuclear Defence (129612) Ključarić, V.	Lo	180 (0+0+180)	8

Undergraduate Study Programme in Military Leadership and Management

Qualification awarded: University Bachelor of Military Leadership and Management
(univ. bacc. art. milit.)

Military Leadership and Management study program is an interdisciplinary program. It is the first of this kind initiated in the Republic of Croatia making it unique in the labor market in the public sector, especially in the fields of defence and the armed forces, including the fields of protection and rescue of people and assets, civil protection and other institutions providing assistance in crisis situations and natural or man-made disasters.

Military leadership and management knowledge and skills are required to operate within national and international frameworks, especially for participation in international missions and operations.

Military Leadership and Management study program enables students to acquire knowledge, skills and competencies in accordance with international and NATO standards, both in Croatian and in a foreign language.



Infantry

Infantry is the oldest and most numerous combat branch of a military force – armed, equipped and trained for combat operations on every terrain, in each part of the day and year and in all kinds of weather conditions.

The task of the infantry is to locate, approach, seize and destroy the enemy with fire and manoeuvre, and to repel the enemy assault by fire, close combat and counterattack.

The tasks are executed by manoeuvre, movement or blow, and unlike other branches and services, it is most capable for fast adaptation to newly arisen situations. Modern infantry forces are flexible, quick, highly trained for all types of military operations having sophisticated arms and equipment, firepower, psycho-physical readiness and capability of integrated operations. Due to its capability of quick and effective response to modern types of warfare, the infantry carries the main responsibility for combat operations and is a main force regarding the linear as well as asymmetrical warfare.

Highly sophisticated modern technology has profoundly changed the nature of conventional warfare. Asymmetrical battlefield has ousted the linear one; the infantry is becoming the leading branch due to its adaptability. The units of the infantry company and platoon level are becoming more and more independent and efficient in the implementation of non-traditional military tasks.

Infantry as a combat branch of the Croatian Army, and in accordance with its tasks, has several branch specialties: general, shooting, mortar, anti-armour and mechanized ones. Today's infantry has most frequently organized units at the level of squad, platoon, company, battalion and brigade/regiment.

Each member of the infantry, from soldier to officer is a shooter in the first place. Being the one, he has to master the basic skills (capabilities for battle): shooting, movement, communication, survival, and sustainability. When applied in a team or platoon these skills become combat skills.

Infantry branch badge contains stylized portrayal of two crossed rifles at an angle of 90 degrees. In the middle of the badge is a red square. Badge size is 24x27mm.



1st semester, 1st year					
	ECTS	Required courses	Eng. Lev.	Study Hours	Sem.
MLM	4.0	Academic Writing and Research Methods (128905) Bovan, K.	Lo	45 (20+10+15)	1
MLM	2.0	English I (129213) Majhut, S.; Glavaš, T.	Lo	30 (15+15+0)	1
MLM	5.0	Informatics (129776) Podobnik, V.; Pribanić, T.	L1	60 (45+0+15)	1
MLM	5.0	International Law - Selected Chapters (129236) Šošić, T.	Lo	60 (30+30+0)	1
MLM	5.0	Introduction to Security and Defence Studies (129891) Tatalović, S.	Lo	60 (30+30+0)	1
MLM	5.0	Mathematics I D (129803) Mihoković, L.	Lo	60 (30+0+30)	1
MLM	0.0	Physical Training I (129237) Vrkić, M.	Lo	30 (0+0+30)	1
MLM	4.0	State and Constitution (129386) Špehar, H.	Lo	60 (30+30+0)	1
2nd semester, 1st year					
	ECTS	Required courses	Eng. Lev.	Study Hours	Sem.
MLM	2.0	English II (129215) Majhut, S.; Glavaš, T.	Lo	30 (15+15+0)	2
MLM	5.0	Introduction to International Politics (129899) Popović, P.	Lo	60 (30+30+0)	2
MLM	5.0	Mathematics II D (129893) Kovačević, D.	Lo	60 (30+0+30)	2
MLM	8.0	Military Geography with Topography (129233) Pahernik, M.	Lo	105 (60+0+45)	2
MLM	5.0	Military Pedagogy (129356) Markić, I.	Lo	60 (30+15+15)	2
MLM	0.0	Physical Training II (129227) Vrkić, M.	Lo	30 (0+0+30)	2
MLM	5.0	Statistics (129895) Šimić, D.	L3	60 (30+0+30)	2
3rd semester, 2nd year					
	ECTS	Required courses	Eng. Lev.	Study Hours	Sem.
MLM	3.0	Contemporary Civilizations (129942) Kos-Stanišić, L.	L1	45 (30+15+0)	3
MLM	4.0	Croatian Political History (129388) Đurašković, S.; Matić, Z.	L2	60 (30+30+0)	3
MLM	3.0	Democracy and Civil Society (129936) Nikić Čakar, D.	Lo	45 (30+15+0)	3
MLM	2.0	English III (129328) Majhut, S.; Prpić Đurić, I.	Lo	30 (15+15+0)	3
MLM	4.0	Fundamentals of Croatian National Security (129939) Mikac, R.	Lo	60 (30+30+0)	3
MLM	5.0	Introduction to Technical Science - Special Topics (129948) Matijević, M.; Rajšl, I.	L3	60 (45+15+0)	3

3rd semester, 2nd year					
	ECTS	Required courses	Eng. Lev.	Study Hours	Sem.
MLM	4.0	Military History I (129950) Olujić, B.	Li	60 (30+30+0)	3
MLM	5.0	Military Leadership (141686) Barić, S.	Lo	60 (45+0+15)	3
MLM	0.0	Physical Training III (129343) Ćurčić, D.	Lo	30 (0+0+30)	3
4th semester, 2nd year					
	ECTS	Required courses	Eng. Lev.	Study Hours	Sem.
MLM	4.0	Defence Economics (129954) Detelj, K.	Lo	60 (30+15+15)	4
MLM	2.0	English IV (129340) Majhut, S.; Prpić Đurić, I.	Lo	30 (15+15+0)	4
MLM	8.0	General Tactics (129342) Pahernik, M.	Lo	105 (60+15+30)	4
MLM	4.0	Media, Propaganda and Public Relations (129956) Skoko, B.	Lo	60 (30+15+15)	4
MLM	4.0	Military History II (129962) Previšić, M.	Lo	60 (30+30+0)	4
MLM	4.0	Military Psychology (129359) Bratko, D.	Lo	45 (30+0+15)	4
MLM	0.0	Physical Training IV (129350) Ćurčić, D.	Lo	30 (0+0+30)	4
MLM	4.0	Political Geography and Geopolitics (129958) Zorko, M.	Li	60 (30+15+15)	4
5th semester, 3rd year					
	ECTS	Required courses	Eng. Lev.	Study Hours	Sem.
MLM	6.0	Communication and Information Systems (141692) Šišul, G.; Ježić, G.	Lo	90 (60+15+15)	5
MLM	2.0	English V D (129964) Majhut, S.	Lo	30 (15+15+0)	5
MLM	4.0	Management of Military Logistics Systems (129639) Đukić, G.	Lo	60 (30+0+30)	5
MLM	5.0	Military Management (141688) Domjančić, S.	Lo	60 (45+15+0)	5
MLM	4.0	Military Sociology and Sociology of War (129979) Žunec, O.; Bilandžić, M.	Lo	45 (30+15+0)	5
MLM	4.0	Peace Support Operations (129967) Jakešević, R.	Lo	60 (30+30+0)	5
MLM	0.0	Physical Training V (129626) Rogalo, G.	Lo	30 (0+0+30)	5
MLM	5.0	Theories and Politics of Peace and War (129897) Mikac, R.	Lo	60 (30+30+0)	5
6th semester, 3rd year					
	ECTS	Required courses	Eng. Lev.	Study Hours	Sem.

6th semester, 3rd year					
	ECTS	Required courses	Eng. Lev.	Study Hours	Sem.
MLM	4.0	Business Processes (129977) Vrček, N.	Li	60 (30+15+15)	6
MLM	4.0	Comparative Intelligence Systems (129960) Bilandžić, M.	Lo	45 (30+5+10)	6
MLM	5.0	Decision Analysis (129338) Hunjak, T.; Begičević Redep, N.	Lo	60 (30+15+15)	6
MLM	2.0	English VI D (129970) Majhut, S.	Lo	30 (15+15+0)	6
MLM	3.0	Ethics of Military Profession (129375) Žunec, O.; Lucić, D.	Lo	45 (30+15+0)	6
MLM	4.0	Introduction to Strategic Management (129983) Vrček, N.; Dobrović, Ž.	Lo	60 (30+0+30)	6
MLM	4.0	Organization and Technology of Military Equipment Maintenance (129377) Jakopčić, M.; Ćurković, P.	Lo	45 (30+0+15)	6
MLM	0.0	Physical Training VI (129382) Rogalo, G.	Lo	30 (0+0+30)	6
MLM	4.0	Public Administration (129974) Đulabić, V.	Li	60 (30+30+0)	6
7th semester, 4th year					
	ECTS	Required courses	Eng. Lev.	Study Hours	Sem.
IN-L	5.0	Ballistics (129373) Vrdoljak, M.	Lo	60 (45+15+0)	7
IN-L	5.0	Infantry Tactics (Social) (129986) Jakopčić, M.; Hoić, M.	Lo	75 (30+15+30)	7
IN-L	5.0	International Security and Security of EU (129985) Barić, R.	Lo	60 (30+30+0)	7
IN-L	0.0	Physical training VII (130108) Šarlija, J.	Lo	30 (0+0+30)	7
	ECTS	Elective course for the 7th semester MLM-Infantry study	Eng. Lev.	Study Hours	Sem.
IN-L	3.0	Applied Intelligence Models (130010) Bilandžić, M.	Lo	45 (30+15+0)	7
IN-L	5.0	Armoured Infantry Fighting Vehicles and Armament (130118) Ilinčić, P.	Lo	75 (45+0+30)	7
IN-L	4.0	Basics of Criminal Procedural Law (130008) Gluščić, S.; Gracin, D.	Lo	45 (30+10+5)	7
IN-L	4.0	Contemporary Combat Systems and Equipment (129981) Matika, D.	Lo	45 (30+15+0)	7
IN-L	5.0	Crime Investigation (129996) Karas, Ž.; Gracin, D.	Lo	80 (45+15+20)	7
IN-L	6.0	Criminology With the Criminal Law Basics (129997) Butorac, K.; Gracin, D.	Lo	65 (40+15+10)	7
IN-L	6.0	Infantry Weapons With Fire Conduct (130006) Vučković, K.	Lo	90 (45+15+30)	7
IN-L	7.0	Intelligence Tactics and Techniques (130001) Bilandžić, M.	Lo	105 (60+30+15)	7
IN-L	5.0	National Security and Intelligence (129998) Bilandžić, M.	Lo	60 (30+30+0)	7

8th semester, 4th year					
ECTS	Required courses	Eng. Lev.	Study Hours	Sem.	
0.0	Physical Training VIII (129455) Šarlija, J.	Lo	30 (0+0+30)	8	
ECTS	Elective course for the 8th semester MLM-Infantry study	Eng. Lev.	Study Hours	Sem.	
15.0	Final BSc Thesis - Infantry (133753)	Lo	180 (0+180+0)	8	
15.0	Final BSc Thesis - Military Intelligence (171900)	Lo	180 (0+180+0)	8	
15.0	Final BSc Thesis - Military Police (171899)	Lo	180 (0+180+0)	8	
15.0	Practical military training - Infantry (130014) Puklaveć, D.	Lo	180 (0+0+180)	8	
15.0	Practical Military Training - Military Intelligence (171898) Trnski, M.	Lo	180 (0+0+180)	8	
15.0	Practical Military Training - Military Police (171897) Trut, V.	Lo	180 (0+0+180)	8	

Courses

Academic Writing and Research Methods

128905

Lecturer



doc. dr. sc.
Kosta Bovan

Course Description

To introduce students into logic of social science scientific research and to answer the questions such as: what, why and how we conduct researches; to introduce them to the basic categories and rules of scientific work. Besides, to train them in written scientific style, i.e. in substantive and formal creation of all sorts of scientific texts.

Study Programmes

- » Military Engineering (Study) (*required course, 1st semester, 1st year*)
- » Military Leadership and Management (Study) (*required course, 1st semester, 1st year*)

Learning Outcomes

On successful completion of the course, students will be able to:

1. To define and differentiate logics of quantitative and qualitative research
2. To comprehend relationships of theory, hypothesis, research design and type of required data and inferential logic of scientific research
3. To recognize, describe and define phases of research as well as research designs
4. To recognize and describe various methods and techniques of data collecting
5. To understand logic of sampling as well as to recognize and describe various types of sampling
6. To recognize, describe and analyze various measurement levels and related to them possibilities of inference
7. To apply knowledge through the computer analysis of basic univariate and biariate problems
8. To acquire the skill of organization, structuration and writing of scientific report of empirical research as well as to integrate and apply acquired knowledge into such written form
9. To acquire skills of academic writing in all phases of scientific work
10. To recognize key arguments of other authors and development of capabilities for expression of informed attitude in the scientific text

Study Programme Learning Outcomes

Military Engineering

- 1 Basic competences of the military profession
 - 1.3 To make decisions independently and command a basic tactical unit
 - 1.6 To nourish, channel and use creativity in accomplishing missions of a basic tactical unit
 - 1.7 To be acquainted with and to respect historical, social and cultural diversities in the context of military activities

ECTS Credits	4.0
English Level	Lo
E-learning Level	L1
Study Hours	
Lectures	20
Seminar	10
Exercises	15

Grading

Grading: scores for attendance and active participation in lectures and seminars, assessment of seminar paper in the form of scientific report, assessment of acquired knowledge through colloquiums / final exam. Obligations: Students are obliged to attend lectures and seminars in order to acquire needed knowledge and skills as well as to write scientific report based on empirical research data.



4. Personal and professional skills and characteristics
 - 4.1 To identify and analyze a problem in the military environment
 - 4.2 To model and resolve a problem and to interpret problem solution by using appropriate knowledge and methods
 - 4.3 To assume military, professional and ethical responsibility
 - 4.4 To develop self-study abilities and the need for and methods of life-long learning in traditional and virtual environment
5. Social skills (team work and communication)
 - 5.1 To communicate effectively in the Croatian and English language applying modern presentation skills and techniques
 - 5.2 Organize and plan individual and team work in international and interdisciplinary work groups
 - 5.3 To effectively present work results both orally and in writing to stakeholders in the military environment

Military Leadership and Management

- 1 Basic competences of the military profession
 - 1.3 To make decisions independently and command a basic tactical unit
 - 1.6 To nourish, channel and use creativity in accomplishing missions of a basic tactical unit
 - 1.7 To be acquainted with and to respect historical, social and cultural diversities in the context of military activities
- 3 Basic competences in social and humanistic sciences
 - 3.2 To comprehend civil-military relations and to act in accordance with democratic standards
 - 3.8 To apply results of intelligence and counter-intelligence activities in leadership and management of military units
4. Personal and professional skills and characteristics
 - 4.1 To identify and analyze a problem in the military environment
 - 4.2 To model and resolve a problem and to interpret problem solution by using appropriate knowledge and methods
 - 4.3 To assume military, professional and ethical responsibility
 - 4.4 To develop self-study abilities and the need for and methods of life-long learning in traditional and virtual environment
5. Social skills (team work and communication)
 - 5.1 To communicate effectively in the Croatian and English language applying modern presentation skills and techniques
 - 5.2 Organize and plan individual and team work in international and interdisciplinary work groups
 - 5.3 To effectively present work results both orally and in writing to stakeholders in the military environment

Forms of Teaching

- » Lectures
 - » Ex cathedra lectures and interaction with students
- » Seminars and workshops
 - » Independent presentation and students' group work based on required literature readings and moderation of the lecturer
- » Exercises
 - » Application of learned knowledge in computer work
- » Independent assignments
 - » Students will get tasks for seminars and exercises which will be individually mastered
- » Multimedia and the internet
 - » Use of SPSS and other software

Week by Week Schedule

1. Lectures: Scientific work as a textual genre and its realization through various types of research
Seminar: Scientific work as a textual genre and its realization through various types of research
Exercises: Scientific work as a textual genre and its realization through various types of research
2. Lectures: Organization of research activities and writing different parts of a text
Seminar: Organization of research activities, writing different parts of a text and introduction to computer and informatics tools
Exercises: Organization of research activities and writing different parts of a text
3. Lectures: Research problem and research design
Seminar: Research problem and research design
Exercises: Research problem and research design
4. Lectures: Operationalization: from theory to the measurement
Seminar: Operationalization: from theory to the measurement
Exercises: Operationalization: from theory to the measurement
5. Lectures: Measurement levels and types of variables
Seminar: Measurement levels and types of variables - application of computer and informatics tools
Exercises: Measurement levels and types of variables
6. Lectures: Instruments, scales and indexes
Seminar: Instruments, scales and indexes - application of computer and informatics tools
Exercises: Instruments, scales and indexes
7. Lectures: Colloquium 1
8. Exercises: Colloquium 1 correction (2 hours)
Lectures: Sampling, scientific inference and presentation of data in scientific texts
Seminar: Sampling, scientific inference and presentation of data in scientific texts
Exercises: Sampling, scientific inference and presentation of data in scientific texts
9. Lectures: Types of scientific observation and experiments
Seminar: Types of scientific observation and experiments and appropriate computer statistical analysis
Exercises: Types of scientific observation and experiments
10. Lectures: Survey, interview and focus groups
Seminar: Focus groups and multiple computer data transcription
Exercises: Focus groups
11. Lectures: Archival, content, and discourse analysis
Seminar: Archival, content, and discourse analysis - computer programs
Exercises: Archival, content, and discourse analysis
12. Seminar: Survey and interview
Exercises: preparation for Colloquium 2 and written exam
13. Lectures: Colloquium 2
Exercises: Colloquium 2 correction (2 hours)
14. -
15. -

Literature



Burnham, Peter / Gilland, Karin / Grant, Wyn / Layton-Henry, Zig, 2006: *Metode istraživanja politike, Fakultet političkih znanosti, Zagreb*



Corbetta, Piergiorgio (2006). *Social Research: Theory, Methods and Techniques*, Sage, London

Additional Literature



Soeters, Joseph / Shields,
Patricia M. / Rietjens,
Sebastiaan (2014).
*ROUTLEDGE HANDBOOK OF
RESEARCH METHODS IN
MILITARY STUDIES*, Routledge

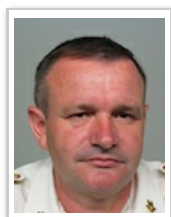
Similar Courses

- » Metode istraživanja, Oxford
- » Akademsko pisanje, Oxford

Air Defence Artillery Weapons

130173

Lecturers



izv. prof. dr. sc.
Mirko Jakopčić



doc. dr. sc.
Matija Hoić

Course Description

Introducing students with basics of air defence artillery techniques, laws of aerodynamics, missile flight mechanics, movement of missile during the flight as well as construction of the air defence gun and its basic subunits. Enabling for the analysis of the features of contemporary air defence artillery systems, as well as for the work with air defence artillery systems of the Croatian Army.

Study Programmes

- » Air Defence -> Group of Courses Signals, Monitoring and Guidance and Air Defence (Course) (required course, 7th semester, 4th year) (Note: course not offered in this academic year.)

Learning Outcomes

On successful completion of the course, students will be able to:

1. Analyze basic laws of physics and laws of aerodynamics that describe missile flight, analyze terms of flight dynamics that describe missile flight characteristics.
2. Evaluate basic design properties of the engine with liquid propellant, describe and explain the engine with liquid propellant (Vankel) and model basic design parameters. Describe and explain sighting hydraulic system (J 171), analyze design characteristics and use of contemporary air defence artillery system.
3. Assess fighting effectiveness of air defence artillery system.
4. Analyze, teach and efficiently use air defence artillery system in the CAF.
5. Organize efficient use of available air defence artillery system in the CAF.
6. Taking responsibility for the execution of simple fire tasks in familiar conditions and environment.
7. Understanding the basic facts and terms regarding anti-aircraft gun 20/3 mm M55 A4 and SPZT20/3 mm M55 A4M1
8. Apply and show simple activities in familiar conditions.
9. Handling and correct of the anti-aircraft gun 20/3 mm M55 A4 and SPZT20/3 mm M55 A4M1

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Study Programme Learning Outcomes

Military Engineering

1 Basic competences of the military profession

- 1.1 To communicate, organize and plan effectively the activities of a basic tactical unit

ECTS Credits 5.0

English Level Lo

E-learning Level L1

Study Hours

Lectures 30

Laboratory exercises 45

Associate Lecturer

Jozo Mešić

Grading

Grading: The final grade is determined by evaluating written preliminary exams and after demonstrating sufficient knowledge at written and oral exam. Obligations: Regularly attend classes. Participate in written preliminary exams during semester for periodic assesment of aquired knowledge.

Prerequisites for

Practical Military Training - Air Defence



- 1.2 To assess the situation and implement appropriate tactics for a basic tactical unit
- 1.3 To make decisions independently and command a basic tactical unit
- 1.6 To nourish, channel and use creativity in accomplishing missions of a basic tactical unit
- 2 Special military competences
 - 2.2 To manage maintenance of combat and non-combat assets, ammunitions and mines of the branch/service
 - 2.3 To use combat and non-combat assets of the branch/service in a professional way
- 3 Basic technical knowledge
 - 3.2. To apply complex methodology by integrating engineering knowledge and skills in military engineering practice
 - 3.3. To integrate and apply engineering principles and techniques in the operation of military system in unpredictable conditions
- 4. Personal and professional skills and characteristics
 - 4.2 To model and resolve a problem and to interpret problem solution by using appropriate knowledge and methods
- 5. Social skills (team work and communication)
 - 5.1 To communicate effectively in the Croatian and English language applying modern presentation skills and techniques
- 6 Development, implementation and operation of technical systems in economic and social environment
 - 6.2. To apply and create engineering approaches in analysing and assessing products and processes in security environment
 - 6.3. To apply and select knowledge and relevant facts from different areas, and to assume responsibility for assessing the impact of military technology in social environment

Screening of student's work

- 0.5 ECTS Lectures attendance
- 2 ECTS Midterm exam
- 1 ECTS Written exam
- 0.5 ECTS Seminar report
- 1 ECTS Practical work

- 5 ECTS

Forms of Teaching

- » Lectures
 - » Lectures on the description, maintenance, driving and handling of the AA gun
- » Exercises
 - » Practical execution of the conducts explained during the lectures
- » Field work
 - » Handling the vehicle, armament, and equipment in the field conditions

Week by Week Schedule

- I. Lectures: Introduction to the subject. Historical development of air defense artillery weapons.
Purpose, description, and tactically-technical characteristics of anti-craft gun 20/3 mm M55 A4 and SPZT20/3 mm M55 A4M1

2. Lectures: Parts, subunits and devices of anti-craft gun 20/3 mm M55 A4 and SPZT20/3 mm M55 A4M1,
Description of parts, subunits and devices of the combat vehicle and gun, description, composition, electrical installations, armament, devices for motion and aiming, mutual operation of components and subunits of the gun, control of turret and armament.
3. Lectures: Parts, subunits and devices of anti-craft gun 20/3 mm M55 A4 and SPZT20/3 mm M55 A4M1,
Description of parts, subunits and devices of the combat vehicle and gun, description, composition, electrical installations, armament, devices for motion and aiming, mutual operation of components and subunits of the gun, control of turret and armament.
4. Lectures: Sighting-computational-hydraulic system J 171
Purpose and description, power unit, hydraulic unit, control unit, computational unit, aiming unit, user checkup and examining of the targeting device.
5. Lectures: Handling of the combat vehicle and the gun
Preparation of the vehicle for the drive, driving the vehicle in various road-terrain and meteorological conditions, handling the gun, handling the communication equipment, handling the ammunition, loading and unloading the gun, composition and packaging, preparation of the gun for towing and towing of the gun, preparation of the vehicle for firing.
6. Lectures: Purpose, types and handling the ammunition
Purpose, types and description of the ammunition. Types, parts and operational principles of the primer. Storing and maintenance of the ammunition. Safety procedures during ammunition handling. Combat package composition. Types and description of the ammunition for the anti-aircraft guns of western origin. Maintenance of the anti-aircraft gun 20/3 mm M55 A4 and SPZT20/3 mm M55 A4M1. User maintenance of the AA gun. Schematics of the logistic support in maintenance. Irregularities of the power unit, subunits and devices and how to repair them. Maintenance documentation. Safety procedures during handling of the ammunition.
7. First midterm
8. Lab exercises
Checkup and examining, User maintenance of the gun, Handling of the turret and the gun, SCH device J171, Checkup and examining, User maintenance of the Sighting-computational-hydraulic system J 171 and the power unit
9. Lab exercises: handling of the combat vehicle and the gun.
Handling of the combat vehicle and the gun. Maintenance of the AA gun M55 A4 and the combat vehicle, User maintenance, Irregularities of the power unit, subunits and devices, and how to fix them and safety precautions.
10. Lab exercises : Assembling and disassembling of the gun
Assembling and disassembling of the gun – user level, Operation of the gun components, Formalized conduct and conditions.
Loading and unloading of the drum: Preparation of the ammunition
Loading and unloading of the drum in different conditions, Formalized conduct and conditions.
11. Lab exercises: Setting the gun from transport to firing position and vice versa
Composition of the gun squad and responsibilities, Setting the gun from transport to firing position and vice versa, Formalized conduct and conditions, Lining of the crew, issuing commands and reporting, Preparation for firing, Checkup – before, during and after firing, Preparation of the ammunition, checkup of the weapon, devices and combat vehicle, Preparation for transport
Formalized conduct and conditions
12. Lab exercises: Preparation of the gun for firing and transport
Lining the crew, issuing commands and reporting, preparation for firing, Checkup – before, during and after firing, Preparation of the ammunition, checkup of the tools, devices and the combat vehicle, Preparation for transport, Formalized conduct and conditions
Methods for the gunner training; Choice, training, examining and grading.

13. Lab exercises: Shooting at land targets
Immediate preparation for shooting, issuing commands and reporting, shooting and stationary and moving targets on the ground preparation for transport and transport
14. Lab exercises: Shooting at air targets
Immediate preparation for shooting, issuing commands and reporting, types of targeting at targets in the air, observation of shooting, abort and transition of fire, drill shooting and air targets
preparation for transport and transport
15. Second midterm

Literature



N. Barić, Pravilo za PZT 20/3mm M55A4, Koprivnica, 1994.,



SSNO, Protivavionski top 20/3 mm M55A4 – pravilo topa, 1976. g.,



SSNO, Samohodni protivavionski top 20/3 mm M55A4MI, TU-1, tehničko pravilo, 1989.,



D. Marković, Streljivo za lake topničke sustave, HVU, 1994.,

Similar Courses

» Design of Army Systems, West Point

Ammunition and Explosive Materials

129389

Lecturer



izv. prof. dr. sc.
Mario Dobrilović

Course Description

Introduction to the purpose, type and structure of ammunition and explosive materials (EM). Methods of maintenance, storage, handling and transportation of equipment. Components of ammunition, rockets and other EM. Purposes and principles of action. Contemporary tendency for the development of ammunition or EM. Cataloguing ammunition and EM.

Study Programmes

» Infantry -> Group of Courses Armour, Field Artillery, Engineers, Technical Support and Infantry (Course) (*required course, 6th semester, 3rd year*) (Note: course not offered in this academic year.)

Learning Outcomes

On successful completion of the course, students will be able to:

1. To describe the basic concepts related to ammunition
2. To describe the basic concepts related to explosive materials
3. To explain the principles of operation of certain groups of ammunition
4. To classify ammunition according to the method of marking
5. To distinguish the basic performance of explosive materials
6. To discern the parameters of safe handling of ammunition.
7. To describe procedures and measures for dealing with ammunition and explosives remnants of the battlefield
8. To explain principles of safety and security when handling, transporting and storing ammunition and explosive materials

Study Programme Learning Outcomes

Military Engineering

2 Special military competences

- 2.2 To manage maintenance of combat and non-combat assets, ammunitions and mines of the branch/service
- 2.3 To use combat and non-combat assets of the branch/service in a professional way

3 Basic technical knowledge

- 3.2. To apply complex methodology by integrating engineering knowledge and skills in military engineering practice
- 3.3. To integrate and apply engineering principles and techniques in the operation of military system in unpredictable conditions

ECTS Credits 4.0

English Level Lo

E-learning Level L1

Study Hours

Lectures 30

Exercises 15

Teaching Assistants

Milan Maleš, mag. pol.

mr. sc. Zvonko Trzun, pred.

Grading

Grading: During the implementation of the teaching process, students will be monitored and evaluated. Each student will receive a grade for the written test and practical work. A student who fails the written test, repeats test. A student who is not satisfied with the assessment of written test or an overall score could enter the oral exam. Assessment of practical work constitutes a commitment, initiative, creativity, responsibility and leadership skills. Overall assessment of the subject makes the arithmetic mean of written exams and practical work. Obligations: Regular attendance. Tour of warehouse space in which are stored ammunition, explosive materials. Enter the final exam.

- 4. Personal and professional skills and characteristics
 - 4.3 To assume military, professional and ethical responsibility
- 6 Development, implementation and operation of technical systems in economic and social environment
 - 6.3. To apply and select knowledge and relevant facts from different areas, and to assume responsibility for assessing the impact of military technology in social environment

Forms of Teaching

- » Lectures
- » Exercises

Week by Week Schedule

1. Lectures: Introduction to ammunition, explosive materials and other ordnance (historical development, purpose)
Seminar: Introduction to ammunition, explosive materials and other ordnance (historical development, purpose)
2. Lectures: Propellants, explosives and initial explosives
Seminar: Propellants, explosives and initial explosives
3. Lectures: Parts of ammunition and other explosive materials, and forms of packaging and storage.
Seminar: Parts of ammunition and other explosive materials, and forms of packaging and storage.
4. Lectures: Division and cataloging of ammunition and explosive materials (Croatian Armed Forces, NATO, other)
Seminar: Division and cataloging of ammunition and explosive materials (Croatian Armed Forces, NATO, other)
5. Lectures: Handling, storage and transport of ammunition and explosive materials (protective and security measures)
Seminar: Handling, storage and transport of ammunition and explosive materials (protective and security measures)
6. Lectures: Infantry ammunition: elements of bullets and ammunition breakdown by purpose
Seminar: Infantry ammunition: elements of bullets and ammunition breakdown by purpose
7. Lectures: Infantry ammunition: ammunition breakdown by type of weapons
Seminar: Infantry ammunition: ammunition breakdown by type of weapons
8. Lectures: Artillery ammunition: elements of bullets and ammunition breakdown by purpose
Seminar: Working in a regulated and dedicated facility - storage of ammunition and explosive materials (tour around dedicated storage space)
9. Lectures: Artillery ammunition: ammunition breakdown by type of weapons
Seminar: Working in a regulated and dedicated facility - storage of ammunition and explosive materials (tour around dedicated storage space)
10. Lectures: Anti-aircraft ammunition: elements of bullets and ammunition breakdown by purpose
Seminar: Working in a regulated and dedicated facility - storage of ammunition and explosive materials (tour around dedicated storage space)
11. Lectures: Anti-aircraft ammunition: ammunition breakdown by type of weapons
Seminar: Working in a regulated and dedicated facility - storage of ammunition and explosive materials (tour around dedicated storage space)
12. Lectures: Missiles: guided and unguided
Seminar: Working in a regulated and dedicated facility - storage of ammunition and explosive materials (tour around dedicated storage space)
13. Lectures: Missiles: breakdown by purpose
Seminar: Working in a regulated and dedicated facility - storage of ammunition and explosive materials (tour around dedicated storage space)

14. Lectures: Explosive materials - an explanation of action
Seminar: Working in a regulated and dedicated facility - storage of ammunition and explosive materials (tour around dedicated storage space)
15. Lectures: Extended range guided munition
Seminar: Working in a regulated and dedicated facility - storage of ammunition and explosive materials (tour around dedicated storage space)

Literature



Đ. Todorovski, Skladištenje, čuvanje i održavanje ubojitih sredstava; priručnik, MORH, Zagreb, 1998.



M. Maleš, Zapaljiva borbena sredstva i zaštita od njih; priručnik, Zagreb 2011.



V. Valković, Suvremeni sustav nadzora i kontrole, detekcija eksploziva i radioaktivnog materijala; MORH, Zagreb, 2008. (od 39 do 76 str.)



Jane's Ammunition Handbook (više godina)

Applied Intelligence Models

130010



Lecturer



prof. dr. sc.
Mirko Bilandžić

ECTS Credits 3.0

English Level Lo

E-learning Level L1

Study Hours

Lectures 30

Seminar 15

Teaching Assistants

Davor Kiseljāk, ing.

Damir Stručić, dipl.krim.

Grading

Grading: The success of the course is the sum of points and ratings success will be carried out according to the following table: A - 90-100 points B - 80-89 points C - 61-79 points D - 51-60 points F - 50 points
Obligations: Class attendance and active participation in class (questions, comments, analysis); attending seminars, consulting seminar's literatures and active participation in the seminar classes; project proposal; final oral exam

Course Description

The course has analytical and application objectives. Understand and critically analyze contemporary (military) intelligence models of foreign countries and international organizations; applied intelligence model in the Croatian Armed Forces; ISTAR (Intelligence, Surveillance, Target Acquisition, Reconnaissance) model and its variations; application of ISTAR concept: military support to non-military operations, operations other than war, peace enforcing operations, conventional war operations, integration and adjustment of intelligence models, knowledge-based intelligence concepts and models.

Study Programmes

- » Infantry -> Military Leadership and Management (Course) (*elective course for the 7th semester mlm-infantry study, 7th semester, 4th year*)

Learning Outcomes

On successful completion of the course, students will be able to:

1. Understand specifics of military intelligence
2. Critically evaluate history cases of military intelligence activities
3. Apply military intelligence tactics, procedures and models
4. Apply military intelligence tactics, procedures and models
5. Define the term ISTAR model
6. Present the elements of ISTAR model
7. Describe relation between the ISTAR model and operational factors
8. Present relation between the ISTAR model and intelligence cycle
9. Use the ISTAR model

Study Programme Learning Outcomes

Military Leadership and Management

1 Basic competences of the military profession

- 1.1 To communicate, organize and plan effectively the activities of a basic tactical unit
- 1.2 To assess the situation and implement appropriate tactics for a basic tactical unit
- 1.3 To make decisions independently and command a basic tactical unit
- 1.4 To train, develop and assess the abilities of soldiers and a basic tactical unit
- 1.5 To develop personal and collective determination, courage, enthusiasm and initiative of subordinates

- 1.6 To nourish, channel and use creativity in accomplishing missions of a basic tactical unit
- 1.7 To be acquainted with and to respect historical, social and cultural diversities in the context of military activities
- 2 Special military competences
 - 2.1 To analyse the environment and to develop and apply tactics of the branch/service
 - 2.2 To manage maintenance of combat and non-combat assets, ammunitions and mines of the branch/service
 - 2.3 To use combat and non-combat assets of the branch/service in a professional way
- 3 Basic competences in social and humanistic sciences
 - 3.1 To analyze and interpret processes in international environment, and to act within international alliances and organizations in which the Republic of Croatia participates
 - 3.2 To comprehend civil-military relations and to act in accordance with democratic standards
 - 3.3 To apply International War and Humanitarian Law
 - 3.4 To manage processes in the military environment using modern technologies
 - 3.5 To apply knowledge of the structure and functioning of the political system, state and public administration in resolving unstructured problems
 - 3.6 To apply knowledge of the military history in resolving tactical and operational problems
 - 3.7 To apply knowledge of military psychology and sociology in leadership and command in predictable and unpredictable situations
 - 3.8 To apply results of intelligence and counter-intelligence activities in leadership and management of military units
- 4. Personal and professional skills and characteristics
 - 4.1 To identify and analyze a problem in the military environment
 - 4.2 To model and resolve a problem and to interpret problem solution by using appropriate knowledge and methods
 - 4.3 To assume military, professional and ethical responsibility
 - 4.4 To develop self-study abilities and the need for and methods of life-long learning in traditional and virtual environment
- 5. Social skills (team work and communication)
 - 5.1 To communicate effectively in the Croatian and English language applying modern presentation skills and techniques
 - 5.2 Organize and plan individual and team work in international and interdisciplinary work groups
 - 5.3 To effectively present work results both orally and in writing to stakeholders in the military environment

Forms of Teaching

- » Lectures
- » Seminars and workshops
- » Independent assignments
- » Multimedia and the internet

Week by Week Schedule

- I. Lectures: Introduction into the course, a description of the content and objectives of the course, the structure of the course, an introduction to the seminar, review of the literature
- Exercises: Introduction to the seminar

2. Lectures: History of military intelligence
Exercises: Military intelligence activities: case study - World War II (Normandy)
3. Lectures: History of counterintelligence
Exercises: Military intelligence activities: case study - The Cold War
4. Lectures: Intelligence analyses: dilemmas and disputes
Exercises: Military counterintelligence activities: case study - Homeland war
5. Lectures: Intelligence analyses: man and modern technology
Exercises: Military intelligence activities: case study - non-military operations
6. Lectures: Military intelligence activities in the non-military operations
Exercises: Military intelligence activities: case study - peace enforcing operations
7. Lectures: History of ISTAR concept
Exercises: Secret/covert action in the war: case study - the Gulf War
8. Lectures: Terms of military intelligence ISTAR model
Exercises: Paramilitary secret / covert action: case study - counterterrorism
9. Lectures: Elements ISTAR model
Exercises: Paramilitary secret / covert action: case study- counterterrorism
10. Lectures: Development and application of the principles of the ISTAR model
Exercises: Military intelligence activities: case study- non-traditional military threats / weapons of mass destruction
11. Lectures: Specialized forms of intelligence gathering
Exercises: Military intelligence activities: case study- non-traditional military threats / transnational crimes
12. Lectures: ISTAR model and information operations (INFOOPS)
Exercises: Military intelligence activities: case study - Iran-Iraq war
13. Lectures: ISTAR model and intelligence disciplines (SIGINT, IMINT)
Exercises: Military intelligence activities: case study - Arab Spring
14. Lectures: STAR model and intelligence techniques: surveillance and reconnaissance
Exercises: Military intelligence activities: case study - Arab Spring
15. Lectures: Review of the overall teaching and preparing students (through discussion) for final oral examination
Exercises: A critical review of the seminar classes

Literature



Heuer, J. R. (1999.) *Psychology of Intelligence Analysis*, Washington: Center for the Study of Intelligence, Central Intelligence Agency.



Johnson, K.L. (2007.) (ed.) *Strategic Intelligence, Volumes 1-5, Understanding the Hidden Side of Government, Vol. 1*, Westport/London: Praeger Security International.



Field Army ISTAR Handbook (MINISTRY OF DEFENCE, LONDON 2007)



AAP-6 NATO Glossary of Terms and Definitions (NATO 2013.)

Applied Organic Chemistry

130165



Lecturer



izv. prof. dr. sc.
Tatjana Gazivoda
Kraljević

Course Description

Explain the relationship between chemical structure, physical and chemical properties of organic compounds and reaction mechanisms. Learn to apply spectroscopic methods (NMR and MS) to determine the structure of organic molecules. Perform multistep synthesis of selected classes of macromolecules and structural characterization by spectroscopic methods.

Study Programmes

» Chemical, Biological, Radiological and Nuclear Defence -> Military Engineering (Course) (required course, 7th semester, 4th year)

Learning Outcomes

On successful completion of the course, students will be able to:

1. Recognize, differentiate, classify and present the structure of organic compounds
2. Connect the chemical structure of the physical and chemical properties of organic compounds
3. Analyze and connect the reaction mechanisms with the properties and structure of selected classes of organic compounds
4. Apply the reaction mechanism of the functional group transformations in the macromolecules structures
5. Prepare, isolate, purify and identify selected organic macromolecules
6. Summarize, analyze and interpret the results, and conclude on the type of organic molecule evaluation of physicochemical and spectroscopic results

Study Programme Learning Outcomes

Military Engineering

- 1 Basic competences of the military profession
 - 1.6 To nourish, channel and use creativity in accomplishing missions of a basic tactical unit
- 2 Special military competences
 - 2.1 To analyse the environment and to develop and apply tactics of the branch/service
- 3 Basic technical knowledge
 - 3.1. To identify, analyse, model and resolve military engineering problems by integrating basic knowledge of natural and technical sciences
 - 3.2. To apply complex methodology by integrating engineering knowledge and skills in military engineering practice

ECTS Credits	3.0
English Level	Lo
E-learning Level	L3
Study Hours	
Lectures	30
Laboratory exercises	15

Associate Lecturers

izv. prof. dr. sc. Marijana Hranjec
dr. sc. Valentina Ključarić, pred.

Grading

Grading: During lectures spend 2 partial exams, written and oral exam if a student fails the partial exams or wants a better grade. Obligations: Regularly attend classes and exercises. Regularly participation in partial exams organized during the semester.

4. Personal and professional skills and characteristics
 - 4.2 To model and resolve a problem and to interpret problem solution by using appropriate knowledge and methods
 - 4.4 To develop self-study abilities and the need for and methods of life-long learning in traditional and virtual environment
5. Social skills (team work and communication)
 - 5.2 Organize and plan individual and team work in international and interdisciplinary work groups
 - 5.3 To effectively present work results both orally and in writing to stakeholders in the military environment
6. Development, implementation and operation of technical systems in economic and social environment
 - 6.1. To analyse and evaluate the effect of engineering solutions on society and environment
 - 6.2. To apply and create engineering approaches in analysing and assessing products and processes in security environment
 - 6.4. To plan, organise, create and implement engineering testing, and to analyse and interpret the results

Screening of student's work

1	ECTS Lectures attendance
0.5	ECTS Experimental work
1	ECTS Midterm exam
0.5	ECTS Written exam
3	ECTS

Forms of Teaching

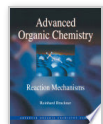
- » Lectures
 - » ex cathedra
- » Partial e-learning
 - » using system for e-learning (Merlin)
- » Laboratory
 - » individual

Week by Week Schedule

1. Lectures: Classification and reactions of hydrocarbons (alkanes, alkenes, cycloalkanes) and aromatic compounds
Seminar: Synthesis of 2,4-dimethoxypyrimidine from pyrimidine and phosphorus oxychloride by multistep synthesis
2. Lectures: Classification and reactions of halogenated hydrocarbons
Seminar: Isolation of 2,4-dichloropyrimidine
3. Lectures: Organic compounds with oxygen and nitrogen
Seminar: Purification of 2,4-dichloropyrimidine
4. Lectures: Organometallic organic compounds: organomercury, organophosphorus and organopalladium compounds
Seminar: Identification of 2,4-dichloropyrimidine
5. Lectures: Polymers and polymerization reactions
Seminar: Synthesis of 2,4-dimethoxypyrimidine
6. Lectures: Carbohydrates: monosaccharides, disaccharides and polysaccharides
Seminar: Isolation of 2,4-dimethoxypyrimidine
7. Lectures: Nucleic acids and proteins
Seminar: Purification of 2,4-dimethoxypyrimidine

8. Lectures: Biologically important natural and synthetic derivatives of carbohydrates and nucleic acids
Seminar: Identification of the isolated compounds by ^1H and ^{13}C NMR spectroscopy and MS spectrometry
9. Lectures: Oils and fats: drying oils, phospholipids and soaps
Seminar: Synthesis of pentaacetyl-D-glucose
10. Lectures: Animal, vegetable and mineral waxes, natural terpene resins and varnishes
Seminar: Isolation of pentaacetyl-D-glucose
11. Lectures: Coloring and dyes: natural and synthetic dyes
Seminar: Purification of pentaacetyl-D-glucose
12. Lectures: Application of ^1H NMR spectroscopy in the determination of organic compounds structure
Seminar: Structural characterization of pentaacetyl-D-glucose
13. Lectures: Application of ^1H NMR spectroscopy in the determination of organic compounds structure
Seminar: Synthesis of biodiesel by transesterification reaction
14. Lectures: Application of ^{13}C NMR spectroscopy in the determination of organic compounds structure
Seminar: Isolation and purification of biodiesel
15. Lectures: Application of MS spectrometry in the determination of organic compounds structure
Seminar: Identification of biodiesel by MS spectrometry

Literature



R. Bruckner (2002).
Advanced organic chemistry,
Elsevier



R. M. Silverstein, F. X.
Webster, D. J. Kiemle (2005).
*Spectroscopic identification of
organic compounds*, John
Wiley Sons, 2005., John
Wiley&Sons

Similar Courses

» Advanced Organic Chemistry, Stanford University

Armament and Ammunition in Armour

130107



Lecturer



izv. prof. dr. sc.
Nenad Bojčetić

Course Description

Educate students in proper handling, use and maintenance of AFV weapons.

Study Programmes

» Armour -> Group of Courses Armour, Field Artillery, Engineers, Technical Support and Infantry (Course) (*required course, 7th semester, 4th year*)

Learning Outcomes

On successful completion of the course, students will be able to:

1. Describe the function of all combat armored vehicles weapon systems
2. Show the components of the combat armored vehicles weapons
3. Use the entire AFV weapon system
4. Identify failures of the armored combat vehicles weapons system
5. Apply basic maintenance actions and fix weapons system failures at the crew level
6. Describe ammunition for combat armored vehicles weapons systems
7. Use ammunitions inside AFV in accordance with the mission

Study Programme Learning Outcomes

Military Engineering

- 1 Basic competences of the military profession
 - 1.1 To communicate, organize and plan effectively the activities of a basic tactical unit
- 2 Special military competences
 - 2.2 To manage maintenance of combat and non-combat assets, ammunitions and mines of the branch/service
 - 2.3 To use combat and non-combat assets of the branch/service in a professional way
- 3 Basic technical knowledge
 - 3.3 To integrate and apply engineering principles and techniques in the operation of military system in unpredictable conditions
- 5 Social skills (team work and communication)
 - 5.3 To effectively present work results both orally and in writing to stakeholders in the military environment
- 6 Development, implementation and operation of technical systems in economic and social environment
 - 6.2 To apply and create engineering approaches in analysing and assessing

ECTS Credits 9.0

English Level Lo

E-learning Level L1

Study Hours

Lectures 60

Laboratory exercises 75

Associate Lecturers

doc. dr. sc. Zoran Domitran
Mladen Janić, pred.
Miroslav Kuhar, pred.

Teaching Assistants

Mario Klun, mag. ing. mech.
Dalibor Vujić, dipl. ing.

Grading

Grading: During the implementation of the teaching process, students will be monitored, tested and evaluated. The student takes the final exam, which consists of an oral examination and practical work. Obligations: Regular attendance and enter the final exam.

Prerequisites for

Practical Military Training -
Armour

products and processes in security environment

Screening of student's work

- 1 ECTS Lectures attendance
- 1 ECTS Midterm exam
- 7 ECTS Practical work
- 9 ECTS

Forms of Teaching

- » Lectures
 - » Lectures will be held half of the semester by four lessons. One group.
- » Field work
 - » The exercises will be held according to the schedule that will determine by the assistants on the basis of the number of students and field capability. Exercises are held all semester five hours weekly.

Week by Week Schedule

1. Lectures: Topic 1: Tank gun 125 mm 2A46
Seminar: Practice 1: Tank gun 125 mm 2A46
2. Lectures: Topic 2: AFV gun 20 mm M55
Seminar: Practice 2: AFV gun 20 mm M55
3. Lectures: Topic 3: Machine guns PKT 7,62 mm, NSV i Browning 12,7 mm
Seminar: Practice 3: Machine guns PKT 7,62 mm, NSV i Browning 12,7 mm
4. Lectures: Topic 4: Vision and Sighting devices
Seminar: Practice 4: Vision and Sighting devices
5. Lectures: Topic 4: Vision and Sighting devices - continue
Seminar: Practice 4: Vision and Sighting devices - continue
6. Lectures: Topic 5: 125 mm ammunition
Seminar: Practice 5: 125 mm ammunition
7. Lectures: Topic 6: 20 mm ammunition
Seminar: Practice 6: 20 mm ammunition
8. Lectures: Topic 7: AFV combat load
Seminar: Practice 8: AFV combat load
9. Lectures: Topic 8: Tank automatic loader 125 mm
Seminar: Practice 9: Tank automatic loader 125 mm
10. Lectures: Topic 8: Tank automatic loader 125 mm - continue
Seminar: Practice 9: Tank automatic loader 125 mm - continue
11. Lectures: Topic 9: M-84 fire control system
Seminar: Practice 10: M-84 fire control system
12. Lectures: Topic 9: M-84 fire control system - continue
Seminar: Practice 10: M-84 fire control system - continue
13. Lectures: Topic 9: M-84 fire control system - continue
Seminar: Practice 10: M-84 fire control system - continue
14. Lectures: Topic 10: AFV M80A turret
Seminar: Practice 11: AFV M80A turret
15. Lectures: Final exam
Seminar: Final exam

Literature



1. Tenk M-84I. Opis, rukovanje, osnovno i tehničko održavanje, knjiga 2., TU, 1988



2. Tenkovski top 125 mm 2A46, Opis, rukovanje, osnovno i tehničko održavanje, TU, 1984



3. *Borbeno vozilo pješništva BVP
M80A, Opis, rukovanje, osnovno i
tehničko održavanje, TU, 1989.*

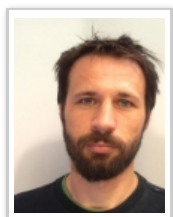
Similar Courses

» Armor Basic Officer Leaders Course, Oxford

Armoured Fighting Vehicles

130078

Lecturer



doc. dr. sc.
Goran Šagi

Course Description

Introducing students with the construction of combat armored vehicles. Teach students the basic skills of combat armored vehicles crew. Educate students to implement the basic maintenance of armored vehicles in his unit.

Study Programmes

- » Armour -> Group of Courses Armour, Field Artillery, Engineers, Technical Support and Infantry (Course) (*required course, 7th semester, 4th year*)

Learning Outcomes

On successful completion of the course, students will be able to:

1. Repeat the definitions related to armored fighting vehicles and systems within the same
2. Explain and describe the systems within combat armored vehicles
3. Demonstrate operation of the combat armored vehicles system
4. Distinguish systems in a variety of armored combat vehicles
5. Describe the production technology of combat armored vehicles subsystems
6. Use the communication system in combat vehicles
7. Use systems of combat vehicles

Study Programme Learning Outcomes

Military Engineering

- 1 Basic competences of the military profession
 - 1.1 To communicate, organize and plan effectively the activities of a basic tactical unit
- 2 Special military competences
 - 2.2 To manage maintenance of combat and non-combat assets, ammunitions and mines of the branch/service
 - 2.3 To use combat and non-combat assets of the branch/service in a professional way
- 3 Basic technical knowledge
 - 3.1. To identify, analyse, model and resolve military engineering problems by integrating basic knowledge of natural and technical sciences
 - 3.2. To apply complex methodology by integrating engineering knowledge and skills in military engineering practice
 - 3.3. To integrate and apply engineering principles and techniques in the operation of military system in unpredictable conditions

ECTS Credits 10.0

English Level Lo

E-learning Level L1

Study Hours

Lectures 75

Laboratory exercises 45

Associate Lecturers

Mladen Janić, pred.

Miroslav Kuhar, pred.

dr. sc. Rudolf Tomić

Teaching Assistants

Mario Klun, mag. ing. mech.

Dalibor Vujić, dipl. ing.

Grading

Grading: During the implementation of the teaching process, students will be monitored and evaluated (2 preliminary exams and seminar). After positively graded preliminary exams, student takes the final exam, which consists of an oral examination and practical work. Obligations: Regular attendance and enter the final exam.

Prerequisites for

Practical Military Training - Armour

4. Personal and professional skills and characteristics
 - 4.3 To assume military, professional and ethical responsibility
5. Social skills (team work and communication)
 - 5.2 Organize and plan individual and team work in international and interdisciplinary work groups
- 6 Development, implementation and operation of technical systems in economic and social environment
 - 6.2. To apply and create engineering approaches in analysing and assessing products and processes in security environment

Screening of student's work

- 1.5 ECTS Lectures attendance
- 3 ECTS Midterm exam
- 0.5 ECTS Seminar report
- 2 ECTS Oral exam
- 3 ECTS Practical work
- 10 ECTS

Forms of Teaching

- » Lectures
- » Exercises
- » Laboratory

Week by Week Schedule

1. Topic 1: The development of tanks and armoured infantry fighting vehicle; Topic 2: Development tendencies of tanks and armoured infantry fighting vehicles; Practice 1: Technical and tactical data of tanks and armoured infantry fighting vehicles
2. Topic 3: Engines V-46-6, V-46 TK and 10V003; Practice 2: Engines V-46-6, V-46 TK and 10V003
3. Topic 4: Fuel system; Practice 3: Fuel system
4. Topic 5: Air supply and exhaust system; Practice 4: Air supply and exhaust system
5. Topic 6: Lubrication system; Practice 5: Lubrication system
6. Topic 7: Cooling and heating system; Topic 8: Engine air-start system and system for engine cold start; Practice 6: Cooling and heating system; Practice 7: Engine air-start system and system for engine cold start
7. Mid exam
8. Topic 9: Transmissions M-84 i BVP M-80A; Practice 8: Transmissions M-84 i BVP M-80A
9. Topic 10: Suspensions and Running gear M-84 i BVP M-80A; Practice 9: Suspensions and Running gear M-84 i BVP M-80A
10. Topic 11: Electrical system on M-84 i BVP M-80A; Practice 10: Electrical system on M-84 i BVP M-80A
11. Topic 12: Special devices on M-84 i BVP M-80A; Practice 11: Special devices on M-84 i BVP M-80A
12. Topic 12: Special devices on M-84 i BVP M-80A; Practice 11: Special devices on M-84 i BVP M-80A
13. Topic 13: Radios in combat armored vehicles; Practice 12: Radios in combat armored vehicles
14. Topic 14: Communication in armor units; Practice 13: Communication in armor units
15. Final exam

Literature



(1988). *Tenk M-84 Opis, rukovanje, osnovno i tehničko održavanje, knjiga 1.*, Tehnička uprava



(1988). *Tenk M-84 Opis, rukovanje, osnovno i tehničko održavanje, knjiga 2.*, Tehnička uprava



(1989). *Borbena vozilo pešadije BVP M-80A, Opis, rukovanje, osnovno i tehničko održavanje*, Tehnička uprava



Milorad Dragojević (1986). *Tenkovi i borbena vozila pješništva*

Additional Literature



Vinko Pavelić (1995). *Specifične tehnologije u proizvodnji oružja*, Ministarstvo obrane Republike Hrvatske

Armoured Infantry Fighting Vehicles and Armament

130118

Lecturer



dr. sc.
Petar Ilinčić

Course Description

Introducing students with the construction of armoured infantry fighting vehicles and their sub-systems. Teach the students a basic knowledge and skills and enable them to handle and organize armoured infantry fighting vehicles basic maintenance.

Study Programmes

- » Infantry -> Group of Courses Armour, Field Artillery, Engineers, Technical Support and Infantry (Course) (*required course, 7th semester, 4th year*) (Note: course not offered in this academic year.)
- » Infantry -> Military Leadership and Management (Course) (*elective course for the 7th semester mlm-infantry study, 7th semester, 4th year*)

Learning Outcomes

On successful completion of the course, students will be able to:

1. Explain definitions of armoured infantry fighting vehicles and their sub-systems
2. Explain and describe armoured infantry fighting vehicles sub-systems
3. Show the working system of the armoured infantry fighting vehicle
4. Differentiate the various systems in different armoured infantry fighting vehicles
5. Use armoured infantry fighting vehicle in all conditions
6. Use systems in armoured infantry fighting vehicle

Study Programme Learning Outcomes

Military Engineering

- 1 Basic competences of the military profession
 - 1.3 To make decisions independently and command a basic tactical unit
 - 1.4 To train, develop and assess the abilities of soldiers and a basic tactical unit
- 2 Special military competences
 - 2.2 To manage maintenance of combat and non-combat assets, ammunitions and mines of the branch/service
 - 2.3 To use combat and non-combat assets of the branch/service in a professional way
- 3 Basic technical knowledge
 - 3.1. To identify, analyse, model and resolve military engineering problems by integrating basic knowledge of natural and technical sciences
5. Social skills (team work and communication)

ECTS Credits 5.0

English Level Lo

E-learning Level L1

Study Hours

Lectures 45

Laboratory exercises 30

Associate Lecturers

Miroslav Kuhar, pred.
prof. dr. sc. Zoran Lulić
doc. dr. sc. Goran Šagi
dr. sc. Rudolf Tomić

Teaching Assistant

Mario Klun, mag. ing. mech.

Grading

Grading: During the implementation of the teaching process, students will be monitored, tested and evaluated. The student takes the final exam, which consists of an oral examination and practical work. Obligations: Regular attendance and enter the final exam.

Prerequisites for

Practical military training - Infantry

5.3 To effectively present work results both orally and in writing to stakeholders in the military environment

6 Development, implementation and operation of technical systems in economic and social environment

6.2. To apply and create engineering approaches in analysing and assessing products and processes in security environment

Military Leadership and Management

1 Basic competences of the military profession

1.4 To train, develop and assess the abilities of soldiers and a basic tactical unit

2 Special military competences

2.2 To manage maintenance of combat and non-combat assets, ammunitions and mines of the branch/service

2.3 To use combat and non-combat assets of the branch/service in a professional way

3 Basic competences in social and humanistic sciences

3.1 To analyze and interpret processes in international environment, and to act within international alliances and organizations in which the Republic of Croatia participates

5. Social skills (team work and communication)

5.3 To effectively present work results both orally and in writing to stakeholders in the military environment

Forms of Teaching

» Lectures

» Exercises

Week by Week Schedule

1. Topic 1: The development of tanks and armoured infantry fighting vehicle
Topic 2: Basic elements of armoured infantry fighting vehicle conception
Topic 3: Armour protection. Passive and active protection of armoured infantry fighting vehicle
Practice 1: Armoured infantry fighting vehicle Patria
2. Topic 3: Armour protection. Passive and active protection of armoured infantry fighting vehicle
Topic 4: Mobility of armoured infantry fighting vehicle
Topic 5: Description and TT characteristics of Patria armoured infantry fighting vehicle
Practice 1: Armoured infantry fighting vehicle Patria - extension
3. Topic 5: Description and TT characteristics of Patria armoured infantry fighting vehicle
Topic 6: Engine Scania DC 12 57 A 05 P
Topic 7: Fuel system
Topic 8: Air supply and exhaust system
Practice 2: Engine Scania DC 12 57 A 05 P
4. Topic 9: Lubricating system
Practice 3: Fuel system
Practice 4: Air supply and exhaust system
5. Topic 10: Cooling system
Topic 11: Transmission
Practice 5: Lubrication system
6. Topic 11: Transmission
Practice 6: Cooling system
Practice 7: Transmission
7. Lectures: Mid exam
Seminar: Mid exam

8. Topic 12: Wheel and suspension
Practice 8: Wheel and suspension
9. Topics 13: Frame hanger support and shock absorbers
Topic 14: Brake system
Topics 15: Electric devices
Practice 9: Frame hanger support and shock absorbers
10. Topic 16: Steering system
Practice 10: Brake system
Practice 11: Electric devices
11. Topic 17: Fire-fighting system
Topic 18: Heating, air-conditioning, ventilation system and NBC
Practice 12: Steering system
Practice 13: Fire-fighting system
12. Topic 19: Optical and opto-electronic monitoring equipment
Topic 20: Hydraulic and pneumatic system
Practice 14: Heating, air-conditioning, ventilation system and NBC
13. Topic 20: Hydraulic and pneumatic system
Practice 16: Optical and opto-electronic monitoring equipment
14. Topic 21: Armoured infantry fighting vehicle armament
Practice 17: Armoured infantry fighting vehicle armament
15. Lectures: Final exam
Seminar: Final exam

Literature



*Patria AMV 8x8 Priručnik za
polaznika tečaja*



*Patria AMV 8x8 Priručnik za
korisnika*



Milorad Dragojević (1986).
*Tenkovi i borbena vozila
pješaštva*

Artillery Survey

130113

Lecturer



prof. dr. sc.
Tomislav Bašić

Course Description

Introduce students with topographic and geodetic support, organization and conduct in artillery and manouevre units through documentation, elaboration, instruments and devices during the preparation in operating and fire control. Enable them in conducting topographic and geodetic preparation within the process of operating and fire control of artillery units.

Study Programmes

» Field Artillery -> Group of Courses Armour, Field Artillery, Engineers, Technical Support and Infantry (Course) (*required course, 7th semester, 4th year*)

Learning Outcomes

On successful completion of the course, students will be able to:

1. Use the Plan of Topographic and Geodetic Support and the Topographic and Geodetic Support Scheme;
2. Use instruments and device for collecting data, accessories and means for data processing (calculator; computer);
3. Differentiate among the forms of Topographic and Geodetic Preparation and apply them accordingly;
4. Prepare accurate co-ordinates to weapons in firing position, observation post, landmarks and targets and check the target direction of the fire arms by applying one of the prescribed ways of determining it;
5. Apply activities and procedures of the preparation required for successful operating and fire control.
6. Connect activities and procedures clearly, meaningfully and command and report by respecting the procedures of the communication;
7. Organize activities and procedures to the subordinates and conduct continuous control of their work;
8. Apply acquired knowledge in further process of studying and in the work of units after the completion of the study;
9. Apply acquired knowledge in the work with subordinates in the training process;
10. Use technical and technological achievements in the development of instruments and devices, educate professionally and update knowledge and convey it together with skills to the subordinates;

Study Programme Learning Outcomes

Military Engineering

- 1 Basic competences of the military profession

ECTS Credits 5.0

English Level L1

E-learning Level L1 (5%)

Study Hours

Lectures 15

Laboratory exercises 45

Teaching Assistant

Branko Posarić, ing. stroj.

Grading

Grading: During the course students will be graded for each exam, oral exam, practical and seminar work. Practical work is graded by the amount of dedication, initiative, creativity and organisational skills. The final positive grade is given under the condition that the grades by all elements are evaluated positive. Obligations: Students are required to attend classes, exercises and artillery firing. During the training, students are obliged to respect the military organization and hierarchy, in order to assure safety of the activities. The student takes two exams during the semester, and must develop and deliver one seminar on the topic. At the end the student takes the final exam, which is conducted during the final battle shooting.

Prerequisites for

Practical Military Training - Field Artillery



- 1.4 To train, develop and assess the abilities of soldiers and a basic tactical unit
- 1.5 To develop personal and collective determination, courage, enthusiasm and initiative of subordinates
- 2 Special military competences
 - 2.1 To analyse the environment and to develop and apply tactics of the branch/service
 - 2.3 To use combat and non-combat assets of the branch/service in a professional way
- 3 Basic technical knowledge
 - 3.2. To apply complex methodology by integrating engineering knowledge and skills in military engineering practice
- 4. Personal and professional skills and characteristics
 - 4.1 To identify and analyze a problem in the military environment
 - 4.4 To develop self-study abilities and the need for and methods of life-long learning in traditional and virtual environment
- 5. Social skills (team work and communication)
 - 5.1 To communicate effectively in the Croatian and English language applying modern presentation skills and techniques

Screening of student's work

- 1 ECTS Lectures attendance
- 2 ECTS Midterm exam
- 1 ECTS Seminar report
- 1 ECTS Oral exam
- 5 ECTS

Forms of Teaching

- » Lectures
 - » oral lectures with Powerpoint
- » Seminars and workshops
 - » preparation and presentation of seminars based on selected short literature
- » Exercises
 - » laboratory exercises
- » Field work
- » Other
 - » TGP topničkog bojnoga gađanja

Week by Week Schedule

- I. Lectures: Topographic and geodetic preparation and support (general definition, contents and significance of topographic and geodetic support, general definition, content and significance of topographic and geodetic preparation, curriculum, and obligations of the students according to the subject, literature from the field of topographic and geodetic preparation, topographic squad, types, ways of work and method of field data processing of TGP; basic terms concerning the points and lines of TGP, state trigonometric grid and catalogue of the points of the trigonometric grid, artillery trigonometric grid; Points and direction lines in topographic and geodetic preparation; Geodetic reference systems in Croatia
Seminar: o

2. Lectures: Instruments and accessories for data collecting and processing (GPS), theodolite, artillery compass, laser rangefinder, calculator and computer, topographic map, topographic table, chord-protractor with cross-section, tables with trigonometric functions; Planar map projections
Seminar: Instruments, accessories and devices for collecting and processing of data (GPS, theodolite, artillery compass, laser rangefinder, calculator and computer, topographic map, topographic table, chord-protractor with cross-section, tables with trigonometric functions)
3. Lectures: Main exercises and forms in topographic and geodetic preparation (law of sines, normal geodetic exercise, inverse geodetic exercise);
Seminar: Main exercises and forms in topographic and geodetic preparation (law of sines, normal geodetic exercise, inverse geodetic exercise);
4. Lectures: Defining and usage of rectangular azimuth and make up of artillery compass (defining and usage of rectangular azimuth, defining and usage of declination the artillery compass, defining and usage of working make up of artillery compass), Geomagnetic information
Seminar: Defining and usage of rectangular azimuth and make up of artillery compass (defining and usage of rectangular azimuth, defining and usage of declination the artillery compass, defining and usage of working make up of artillery compass)
5. Lectures: Defining of rectangular coordinate points (general terms, polar way, backward, forward and combined intersection, traverse (polygon), use of GPS device);
Seminar: Defining of rectangular coordinate points (general terms, polar way, backward, forward and combined intersection, traverse (polygon), use of GPS device);
6. Lectures: Defining of rectangular coordinate points (general terms, polar way, backward, forward and combined intersection, traverse (polygon), use of GPS device); Global Navigation Satellite Systems and Croatian Positioning System CROPOS
Seminar: o
7. Lectures: o
Seminar: Defining of rectangular coordinate points (general terms, polar way, backward, forward and combined intersection, traverse (polygon), use of GPS device);
8. Lectures: o
Seminar: Defining of rectangular coordinate points (general terms, polar way, backward, forward and combined intersection, traverse (polygon), use of GPS device);
9. Lectures: Work at the borders of meridian zone (enlarging of rectangular coordinate system of one zone to the neighboring one, determining rectangular coordinates of the points in the coordinate system of the neighboring zone, calculating make up of the artillery compass from the coordinate system of one zone into coordination system of the neighboring zone);
Seminar: Work at the borders of meridian zone, enlarging of rectangular coordinate system of one zone to the neighboring one, determining rectangular coordinates of the points in the coordinate system of the neighboring zone, calculating make up of the artillery compass from the coordinate system of one zone into coordination system of the neighboring zone);

10. Lectures: Work at the borders of meridian zone, enlarging of rectangular coordinate system of one zone to the neighboring one, determining rectangular coordinates of the points in the coordinate system of the neighboring zone, calculating make up of the artillery compass from the coordinate system of one zone into coordination system of the neighboring zone); Transformations between geodetic reference systems
Seminar: Work at the borders of meridian zone, enlarging of rectangular coordinate system of one zone to the neighboring one, determining rectangular coordinates of the points in the coordinate system of the neighboring zone, calculating make up of the artillery compass from the coordinate system of one zone into coordination system of the neighboring zone)
11. Lectures: o
Seminar: Work at the borders of meridian zone, enlarging of rectangular coordinate system of one zone to the neighbouring one, determining rectangular coordinates of the points in the coordinate system of the neighbouring zone, calculating make up of the artillery compass from the coordinate system of one zone into coordination system of the neighbouring zone);
12. Lectures: o
Seminar: Defining of rectangular coordinate points (general terms, polar way, backward, forward and combined intersection, traverse (polygon), use of GPS device); Defining and usage of rectangular azimuth, repair of artillery compass (defining and usage of rectangular azimuth, defining and usage of the repair of artillery compass, defining and usage of the working repair of artillery compass);
13. Lectures: o
Seminar: Topographic and geodetic preparation (the work of squad for TGP; defining the zero point of artillery compass, declination the artillery compass, determining rectangular coordinates of the elements of combat formation; directing of artillery weapons in AzOP and check up of direction, orienting of instruments at the observation post in rectangular north, fire control during shooting
14. Lectures: o
Seminar: Topographic and geodetic preparation (the work of squad for TGP; defining the zero point of artillery compass, declination the artillery compass, determining rectangular coordinates of the elements of combat formation; directing of artillery weapons in AzOP and check up of direction, orienting of instruments at the observation post in rectangular north, fire control during shooting
15. Lectures: o
Seminar: Topographic and geodetic preparation; (the work of squad for TGP; defining the zero point of artillery compass, determining of the repair of artillery compass, determining rectangular coordinates of the elements of combat formation; directing of artillery weapons in AzOP and check up of direction, orienting of instruments at the observation post in rectangular north, fire control during shooting

Literature



Topografsko-geodetska priprema u topništvu, priručnik, Zagreb 1996.;



Zemljovidi i koordinatni sustavi prema standardima NATO-a u upotrebi u Hrvatskoj vojsci, Zagreb 2001.;



FM 6-50, Taktika, tehnike i postupci za topničku bitnicu zemaljskog topništva;



FM 6-30, Taktika, tehnike i postupci za upravljanje vatrom;



FM 6-40, Taktika, tehnike i postupci za zemaljsko topništvo; AArty P-1 Artillery procedures; AArty P-5 NATO Field Artillery Tactical Doctrine;

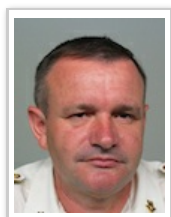


Tomislav Bašić Topografsko-geodetska priprema i osiguranje - predavanja, Zagreb 2018/19.

Artillery Weapons, Equipment and Ammunition

129387

Lecturers



izv. prof. dr. sc.
Mirko Jakopčić



izv. prof. dr. sc.
Željko Alar

Course Description

Introduction to the types of artillery weapons, instruments, accessories and other combat equipment alone or within artillery units. Teach the students to differentiate artillery weapons, introduce the tactical and technical characteristics of weapons, equipment and instruments, as well as handling, usage and maintenance of artillery weapons and equipment in the artillery unit.

Study Programmes

» Field Artillery -> Group of Courses Armour, Field Artillery, Engineers, Technical Support and Infantry (Course) (*required course, 6th semester, 3rd year*)

Learning Outcomes

On successful completion of the course, students will be able to:

1. Differentiate the types of artillery weapons, distinguish them according to the criteria of construction characteristics.
2. Give historical development and the function within each phase.
3. Clarify functionally dependent activity of each construction element.
4. Apply accessories, instruments and devices
5. Differentiate artillery ammunition and know how to apply elementary types of ammunition;
6. Connect the activities of gun crew at artillery weapons and take command over the squad during live firing.
7. Use the available literature and materials on the Internet concerning artillery armament, fittings, instruments, devices, equipments and ammunition.
8. Apply the acquired knowledge in further studying process and work in units after finishing the study;
9. Use the acquired knowledge in working with the subordinates in the training process;
10. Apply technical and technological achievements in the development of artillery armament, fitting, instruments, ammunition and equipment, educate professionally, upgrade and transfer knowledge and skills upon the subordinates:

Study Programme Learning Outcomes

Military Engineering

- 1 Basic competences of the military profession
 - 1.5 To develop personal and collective determination, courage, enthusiasm and initiative of subordinates

ECTS Credits 6.0

English Level Lo

E-learning Level L1

Study Hours

Lectures 30

Laboratory exercises 60

Associate Lecturers

mr. sc. Zdravko Jakop

Ivan Leutar, pred.

mr. sc. Mate Paden

Branko Posarić, ing. stroj.

Grading

Grading: During the course students will be graded for each exam, oral exam, practical and seminar work. Practical work is graded by the amount of dedication, initiative, creativity and organisational skills. The final positive grade is given under the condition that the grades by all elements are evaluated positive. Obligations: Students are required to attend classes, exercises and artillery firing. During the training, students are obliged to respect the military organization and hierarchy, in order to assure safety of the activities. The student takes two exams during the semester, and must develop and deliver one seminar on the topic. At the end the student takes the final exam, which is conducted during the final battle shooting.

Prerequisites for

Practical Military Training - Field Artillery

- 2 Special military competences
 - 2.2 To manage maintenance of combat and non-combat assets, ammunitions and mines of the branch/service
 - 2.3 To use combat and non-combat assets of the branch/service in a professional way
- 3 Basic technical knowledge
 - 3.3. To integrate and apply engineering principles and techniques in the operation of military system in unpredictable conditions
- 4. Personal and professional skills and characteristics
 - 4.1 To identify and analyze a problem in the military environment
 - 4.3 To assume military, professional and ethical responsibility
- 5. Social skills (team work and communication)
 - 5.3 To effectively present work results both orally and in writing to stakeholders in the military environment
 - 5.5 To apply knowledge of military psychology and sociology in leadership and command in predictable and unpredictable situations
- 6 Development, implementation and operation of technical systems in economic and social environment
 - 6.3. To apply and select knowledge and relevant facts from different areas, and to assume responsibility for assessing the impact of military technology in social environment

Screening of student's work

- 0.5 ECTS Lectures attendance
- 3 ECTS Midterm exam
- 0.5 ECTS Oral exam
- 2 ECTS Practical work

- 6 ECTS

Forms of Teaching

- » Lectures
 - » Lecture in the classroom
- » Exercises
 - » Exercises in the cabinet
- » Field work
 - » Education in the artillery unit
- » Other
 - » Execution of the field artillery shooting

Week by Week Schedule

- 1. Lectures: Historical development of artillery armament 1; Application and distribution of artillery armament 1; Tactical and technical characteristics of artillery armament, instruments, fitting, and equipment, combat, construction and exploitation characteristics of artillery armament 2; Guidelines of artillery weapons development 1; Artillery accessories, instruments and devices: description and application of artillery compass 1.
- Exercises: 0

2. Lectures: Artillery accessories, instruments and devices (description and application of artillery binoculars) 1;
Handling and maintenance of artillery weapons: main parts-description and application (barrel with breech, suspension arms) 2.

Exercises: Artillery accessories, instruments and devices: artillery binoculars-preparing to use 2;
Handling and maintenance of artillery weapons: dismantling and assembling of the breechblock 1.

3. Lectures: Handling and maintenance of artillery weapons: target devices 2.

Exercises: Artillery accessories, instruments and devices: artillery binoculars-measuring of horizontal angles, measuring of vertical angles, measuring of distance using pickets and badges 2;
Handling and maintenance of artillery weapons: targeting by optical scope, targeting by panorama to collimator, targeting by panorama to pickets, targeting to distance points. 2

4. Lectures: Handling and maintenance of artillery weapons: main parts of artillery weapons-description and application of anti-setback system 2.

Exercises: Artillery accessories, instruments and devices: artillery binoculars-orientation of instruments to the rectangular north, measurement of rectangular azimuths, weapon directing 2;
Handling and maintenance of artillery weapons: artificial recoil, check of anti-setback system 2.

5. Lectures: Handling and maintenance of artillery weapons: crew, composition and tasks of crew 1;
Artillery ammunition (overview, components of classic artillery charge, fuze, projectiles) 2.

Exercises: Handling and maintenance of artillery weapons-crew works 3.

6. Lectures: Artillery accessories, instruments and devices-laser beam and sitometre (description and application) 1.

Exercises: Artillery accessories, instruments and devices-measurement of upper refuge, selection of firing position 1;
Arrangement of beam 2;
Handling and maintenance of artillery weapons: weapon directing into AzBD 2.

7. Lectures: 0
Exercises: 0
Midterm exam: 6

8. Lectures:
-artillery laser range finder 2;
-meteorological station VAISALA 2;
-control fire system 2.

Exercises: 0

9. Lectures: Artillery ammunition:
-mortar mines 2;
-rocket ammunition 2.

Exercises:
Handling and maintenance of artillery weapons: charge and discharge of artillery weapons, work according to shooting command 2.

10. Lectures: 0

Exercises: Artillery accessories, instruments and devices: visit to artillery unit (training battalion)

- measurement with artillery laser range finder 2;
- presentation of meteorological station VAISALA using 2;
- presentation of control fire system using 2.

11. Lectures: 0

Exercises: Preparation and execution of the artillery test shooting with inserted barrel 20 mm of howitzer H122 D30 6.

squad of self-propelled multiple rocket launchers and the squad of heavy mortars.

12. Lectures: 0

Exercises: Preparation and execution of the artillery test shooting with mortar MB 120 mm (cadets in the roles of handlers of the weapons) 6.

13. Lectures: 0

Exercises: Preparation and execution of directly artillery test shooting range practice with howitzer H122 D30 6

14. Lectures: 0

Exercises: Preparation and execution of indirectly field artillery shooting range practice with howitzer H122 D30 6

15. Lectures: 0

Exercises: Preparation and execution of indirectly field artillery shooting range practice with the SVLR 122 mm "GRAD" (cadets observe the shooting) 6

Literature



Oružje i oprema topništva, skripta, Jakopčić M., Zagreb 1996.



Instrumenti u topništvu, skripta, Jakopčić M., HVU, Zagreb 2007.



Održavanje naoružanja, skripta, Jakopčić M., GS OS RH, Zagreb 2006



Topnički naboji, skripta, Drabić S., Zagreb 1995.



Uputa za rad na paljbenom položaju topničke postrojbe, priručnik, Dimitrijević B., Zagreb, 1996.

Similar Courses

- » Design of Army Systems, Oxford

Ballistics

129373

Lecturer



prof. dr. sc.
Milan Vrdoljak

ECTS Credits	5.0
English Level	Lo
E-learning Level	L2
Study Hours	
Lectures	45
Seminar	15

Associate Lecturers

mr. sc. Zvonko Trzun, pred.
doc. dr. sc. Dario Zlatar

Course Description

The main objective of the course is to introduce students to the concepts, theory and models of internal and external ballistics.

Study Programmes

- » Armour -> Group of Courses Armour, Field Artillery, Engineers, Technical Support and Infantry (Course) (*required course, 5th semester, 3rd year*) (Note: course not offered in this academic year.)
- » Field Artillery -> Group of Courses Armour, Field Artillery, Engineers, Technical Support and Infantry (Course) (*required course, 5th semester, 3rd year*)
- » Engineers -> Group of Courses Armour, Field Artillery, Engineers, Technical Support and Infantry (Course) (*required course, 5th semester, 3rd year*) (Note: course not offered in this academic year.)
- » Technical Support -> Group of Courses Armour, Field Artillery, Engineers, Technical Support and Infantry (Course) (*required course, 5th semester, 3rd year*)
- » Infantry -> Group of Courses Armour, Field Artillery, Engineers, Technical Support and Infantry (Course) (*required course, 5th semester, 3rd year*) (Note: course not offered in this academic year.)
- » Signals -> Group of Courses Signals, Monitoring and Guidance and Air Defence (Course) (*required course, 5th semester, 3rd year*)
- » Monitoring and Guidance -> Group of Courses Signals, Monitoring and Guidance and Air Defence (Course) (*required course, 5th semester, 3rd year*) (Note: course not offered in this academic year.)
- » Air Defence -> Group of Courses Signals, Monitoring and Guidance and Air Defence (Course) (*required course, 5th semester, 3rd year*) (Note: course not offered in this academic year.)
- » Chemical, Biological, Radiological and Nuclear Defence -> Military Engineering (Course) (*required course, 5th semester, 3rd year*) (Note: course not offered in this academic year.)
- » Infantry -> Military Leadership and Management (Course) (*required course, 7th semester, 4th year*)

Learning Outcomes

On successful completion of the course, students will be able to:

1. Describe the basic concepts of internal ballistics
2. Describe the basic concepts of external ballistics
3. Relate relevant characteristics of internal ballistics with characteristics of external ballistics
4. Solve the basic problems of internal ballistics

Grading

Grading: Students work will be evaluated during the lectures with midterm exams. Oral exam can be accessed with positive grade from midterm exams, a passing grade is required also from the oral exam. Final grade is made of the grade from the midterm exams and grade from the oral exam (in equal ratio). Obligations: lectures and seminars attendance, participation in e-learning activities, attendance at midterm exams and oral exam.

5. Solve the basic problems of external ballistics
6. Describe major phenomena of the transit ballistics and dispersion
7. Recognize deviations from the normal conditions for firing
8. Apply adequate corrections in case of deviation from the normal conditions of firing

Study Programme Learning Outcomes

Military Engineering

- 1 Basic competences of the military profession
 - 1.3 To make decisions independently and command a basic tactical unit
- 2 Special military competences
 - 2.2 To manage maintenance of combat and non-combat assets, ammunitions and mines of the branch/service
 - 2.3 To use combat and non-combat assets of the branch/service in a professional way
- 3 Basic technical knowledge
 - 3.1. To identify, analyse, model and resolve military engineering problems by integrating basic knowledge of natural and technical sciences
 - 3.2. To apply complex methodology by integrating engineering knowledge and skills in military engineering practice
 - 3.3. To integrate and apply engineering principles and techniques in the operation of military system in unpredictable conditions
4. Personal and professional skills and characteristics
 - 4.1 To identify and analyze a problem in the military environment
5. Social skills (team work and communication)
 - 5.2 Organize and plan individual and team work in international and interdisciplinary work groups

Military Leadership and Management

- 1 Basic competences of the military profession
 - 1.3 To make decisions independently and command a basic tactical unit
- 2 Special military competences
 - 2.2 To manage maintenance of combat and non-combat assets, ammunitions and mines of the branch/service
 - 2.3 To use combat and non-combat assets of the branch/service in a professional way
4. Personal and professional skills and characteristics
 - 4.1 To identify and analyze a problem in the military environment
5. Social skills (team work and communication)
 - 5.2 Organize and plan individual and team work in international and interdisciplinary work groups

Screening of student's work

2	ECTS	Lectures attendance
1.5	ECTS	Midterm exam
1.5	ECTS	Oral exam
5 ECTS		

Forms of Teaching

- » Lectures
- » Seminars and workshops
- » Partial e-learning

Week by Week Schedule

1. Lecture: Explosions and explosive materials
Seminar: Gunpowder and consistency test
2. Lecture: Gunpowder
Seminar: Gunpowder
3. Lecture: Bullet, gunpowder charge and projectile; Gunpowder energy characteristics; Gunpowder stability
Seminar: Visit to the Laboratory for gunpowder
4. Lecture: Weapon firing; Gunpowder combustion
Seminar: Internal ballistics measurements
5. Lecture: Constant volume combustion
Seminar: Exploitation of gunpowder gasses energy
6. Lecture: Solution of the major internal ballistic problem
Seminar: Solution example for the major internal ballistic problem
7. Midterm exam: first exam
8. Lecture: Flight kinematics
Seminar: Atmosphere
9. Lecture: Projectile dynamics
Seminar: Atmosphere, continued
10. Lecture: Projectile aerodynamics
Seminar: Projectile stabilization
11. Lecture: Projectile flight model; Projectile motion about the center of gravity
Seminar: Example of projectile flight model
12. Lecture: Dissipation in external ballistics; Ballistic disturbances; Transit ballistics
Seminar: Ballistic disturbances
13. Lecture: Firing tables
Seminar: Examples of application and production of firing tables
14. Lecture: Fire control system; Terminal ballistics
Seminar: Fire control system
15. Final exam

Additional Literature



Viličić J., Gajić M. (1979).
Balistika (udžbenik za VA KoV – smer artiljerije i artiljerijske jedinice), VIZ, Beograd



Seretinek, Željko (2011).
Osnove balistike i teorije gađanja, HVU „Petar Zrinski“, Zagreb



Kuftinec, Zdenko (2011).
Balistika nevođenih projektila, HVU „Petar Zrinski“, Zagreb



Janković, Slobodan (1998).
Mehanika leta projektila, Fakultet strojarstva i brodogradnje, Zagreb

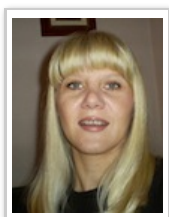
Basics of Criminal Procedural Law

130008

Lecturers



dr. sc.
Stjepan Gluščić



doc. dr. sc.
Dijana Gracin

Course Description

Upon completion of the course students will be able to understand the basic principles, processes, and subjects of the criminal proceedings and its role in the legal system of the state

Study Programmes

» Infantry -> Military Leadership and Management (Course) (*elective course for the 7th semester mlm-infantry study, 7th semester, 4th year*)

Learning Outcomes

On successful completion of the course, students will be able to:

1. To understand the criminal proceedings
2. To understand the relationships between the subjects in the criminal proceedings
3. Acquisition of basic knowledge for independently taking measures and actions of the military police in criminal proceedings
4. Razumjeti stručnu terminologiju i značenje izraza koje treba upotrebljavati u radu To understand technical terminology and meaning of terms which should be used in the practice
5. Lead and plan investigations into criminal acts.
6. Prepare and submit appropriate reports.

Study Programme Learning Outcomes

Military Leadership and Management

- 1 Basic competences of the military profession
 - 1.2 To assess the situation and implement appropriate tactics for a basic tactical unit
- 2 Special military competences
 - 2.1 To analyse the environment and to develop and apply tactics of the branch/service
- 3 Basic competences in social and humanistic sciences
 - 3.3 To apply International War and Humanitarian Law
4. Personal and professional skills and characteristics
 - 4.2 To model and resolve a problem and to interpret problem solution by using appropriate knowledge and methods

ECTS Credits	4.0
English Level	Lo
E-learning Level	L1
Study Hours	
Lectures	30
Seminar	10
Exercises	5

Associate Lecturer

Luka Kovač, dipl. ing.

Grading

Grading: Through points by which are evaluated activities defined in section 2.9.
Obligations: Attending lectures, making of seminar and exercises.



Forms of Teaching

- » Lectures
- » Seminars and workshops
- » Exercises

Week by Week Schedule

1. Criminal procedural law and criminal proceedings, criminal law in a broader sense, the criminal proceedings, other procedures for penal offenses, criminal procedural law and its science, the relationship between the criminal procedural law and other criminal laws, the relationship between the criminal procedural law and constitutional law, the relationship of the state towards citizens' rights in criminal proceedings.
2. Historical development - origins of procedural law (accusatorial, inquisitorial and mixed type of criminal proceedings), the sources of the Croatian criminal procedure law and its validity.
3. Principles of the criminal procedure law, the concept and the purpose of the criminal procedure law. Principles related to the activation and commencement of criminal proceedings, the principles related to the conduct of criminal proceedings, the principles related to the structure of the criminal courts, the principle of a fair trial before a criminal court.
4. Criminal process entities and their functions, the court (Constitutional and legislative provisions on Courts, the type and structure of the court, jurisdiction, composition, judges and other staff), party (prosecutor, defendant), process assistants of the parties, especially advocate of the accused and the right to a formal defence .
5. Procedural actions, the concept and classification, place as the form, time and place of procedural actions, the consequences of improper procedural actions, the procedural steps to establish facts (generally about establishing the facts in criminal proceedings, actions to establish facts by observation, using proofing for establishing fact)
6. Procedural actions (continued), actions of legal enforcement (general restrictions on fundamental rights and freedoms of citizens in criminal proceedings, the constitutional principle of proportionality; types of legal enforcement actions: to ensure the case and the evidences, in order to ensure the presence of persons in the process), decision making actions particularly: verdict and its entry into legal force, the procedural actions of the parties, the log recording of process activities.
7. Forms of criminal procedure, regular and summary procedure, the proceedings against minors, proceedings for offenses against members of the Armed Forces and other special procedures, stages of the regular criminal proceedings, prosecution and criminal proceedings, initiation of prosecution and criminal proceedings.
8. Criminal investigations conducted by the police and military police, the structure and the tasks of the modern police (police term, the scope of the criminal police, the relationship between the police and other authorities during the investigation of criminal offenses, supervision of the police and its responsibility), the structure and functions of the Military Police of the Croatian Armed Forces (scope of the work, duties and powers of the Military Police, Military Police criminal relation to other subjects during the investigation of criminal offenses)
9. Criminal investigations conducted by the police and military police (continued), term, the aim and content of the police and military police investigation (knowledge of the offense, the term survey and legal basis of action of police and Military Police, the police and Military Police actions during investigation, specific supporting actions , supporting actions before the beginning of the procedure, the arrest of the suspect)

10. Investigations conducted by the Attorney General, the term of the criminal charge and its receipt, the application of the principle of official leading, legality and appropriateness of criminal prosecution, investigations of criminal offenses by the Attorney General and its relation to other state authorities, especially towards the police and the Military Police.
11. Investigations, initiating an investigation, course of the investigation, supporting actions, measures to ensure the presence of the defendant in the proceedings, the position of the parties in the investigation, the participation of the police (and Military Police) in the investigation, the completion of the investigation.
12. The indictment, the term of the indictment, control of its validity and merits.
13. The main discussion, in general about the main discussion during trial as the central stage of the procedure, requirements for holding the trial, the start of the trial, the defendant's statement on the merits of the charges, bifurcation of the trial, the course of the trial and evidentiary hearing, the completion of the trial and addressing of the parties.
14. Bringing and publication of the verdict, its written production, regular legal remedies against the verdict and the decision, extraordinary legal remedies.
15. Criminal procedural law of international criminal law, international criminal law as a set of standards for the protection of legal values of the international community and the criminal proceedings before international bodies, international and domestic criminal law as a set of norms that regulate the legal relationship between the state government and the offender, where there is a foreign element, international police cooperation.

Literature



Goran Tomašević, Davor Krapac, Stjepan Gluščić (2016). *Kazneno procesno pravo*



Durđević, Z., Gluščić, S.: *Kazneno procesno pravo: Primjerovnik, Narodne novine Zagreb 2010. (odabrana poglavlja)*



Aktualni zakonski tekstovi

Basics of Structural Design of Armoured Combat Vehicles

129379



Lecturer



dr. sc.
Rudolf Tomic

Course Description

Introducing students to the construction of armored vehicles and the fundamental starting point in construction of combat armored vehicles and subsystems.

Study Programmes

» Armour -> Group of Courses Armour, Field Artillery, Engineers, Technical Support and Infantry (Course) (*required course, 6th semester, 3rd year*) (Note: course not offered in this academic year.)

Learning Outcomes

On successful completion of the course, students will be able to:

1. Explain definitions of armoured fighting vehicles and their sub-systems
2. Repeat the definitions related to armored vehicles armament
3. Describe the construction of armored vehicles armaments
4. Describe the construction of armored vehicles
5. Explain the features of armored vehicles armaments
6. Explain the basic elements of the armored vehicles concept

Study Programme Learning Outcomes

Military Engineering

3 Basic technical knowledge

- 3.1. To identify, analyse, model and resolve military engineering problems by integrating basic knowledge of natural and technical sciences
- 3.2. To apply complex methodology by integrating engineering knowledge and skills in military engineering practice

4. Personal and professional skills and characteristics

- 4.4 To develop self-study abilities and the need for and methods of life-long learning in traditional and virtual environment

5. Social skills (team work and communication)

- 5.1 To communicate effectively in the Croatian and English language applying modern presentation skills and techniques
- 5.3 To effectively present work results both orally and in writing to stakeholders in the military environment

6 Development, implementation and operation of technical systems in economic and social environment

ECTS Credits 2.0

English Level Lo

E-learning Level L1

Study Hours

Lectures 30

Exercises 15

Associate Lecturers

dr. sc. Petar Ilinčić
prof. dr. sc. Zoran Lulić
doc. dr. sc. Goran Šagi

Teaching Assistants

Mladen Janić, pred.
Miroslav Kuhar, pred.

Grading

Grading: During the implementation of the teaching process, students will be monitored, tested and evaluated. The student takes the mid-term and final exam, which consists of an oral examination and practical work. Obligations: Regular attendance and enter the exams.

- 6.3. To apply and select knowledge and relevant facts from different areas, and to assume responsibility for assessing the impact of military technology in social environment

Forms of Teaching

- » Lectures
- » Exercises

Week by Week Schedule

1. Lectures: Topic 1: Construction of armored combat vehicles
Seminar: Practice 1: Construction of M-84 tank
2. Lectures: Topic 2: The basic elements of the concept of tanks and infantry fighting vehicles
Seminar: Practice 2: Construction of AFV M80A
3. Lectures: Topic 3: Construction of artillery weapons
Seminar: Practice 3: Large caliber tank guns
4. Lectures: Topic 4: Designs and assemblies features of artillery weapons
Seminar: Practice 3: Small caliber tank guns
5. Lectures: Topic 5: Technology in the weapons production
Seminar: Practice 5: Production of tank guns and machine guns
6. Lectures: Topic 6: Armament stabilization system in armored combat vehicles and fire control system
Seminar: Practice 6: Armament stabilization system in armored combat vehicles and fire control system
7. Lectures: Mid exam
Seminar: Mid exam
8. Lectures: Topic 7: Optoelectronic systems in armored combat vehicles
Seminar: Practice 7: Vision and Sighting devices
9. Lectures: Topic 8: Armored Protection
Seminar: Practice 8: Armored Protection
10. Lectures: Topic 9: The mobility of armored combat vehicles
Seminar: Practice 9: The mobility of armored combat vehicles
11. Lectures: Topic 10: Power pack systems of tanks and infantry fighting vehicles
Seminar: Practice 10: Power pack systems of tanks and infantry fighting vehicles
12. Lectures: Topic 11: Construction of wheeled combat vehicles
Seminar: Practice 11: Construction of AFV Patria
13. Lectures: Topic 12: Development trends of tanks
Seminar: Practice 12: Subsystems within the armored combat vehicles
14. Lectures: Topic 13: Development trends of infantry combat vehicles
Seminar: Practice 12: Subsystems within the armored combat vehicles - continue
15. Lectures: Final exam
Seminar: Final exam

Literature



Milorad Dragojević (1986).
*Tenkovi i borbeni vozila
pešadije - koncepcije i
perspektive razvoja*, VINC



Anastas Paligorić (1982).
*Projektovanje naoružanja
samohodnih artiljerijskih
oruđja i tenkova*



Radoš Obrenović (1975).
*Konstrukcija artiljerijskih
oruđja I*, TŠC KoV, Zagreb



Vinko Pavelić (1995).
*Specifične tehnologije u
proizvodnji oružja*, MORH



Dušan Pavlović, Milorad
Novaković i Ante Duilo
(1983). *Osnovi konstrukcije
artiljerijskog naoružanja*

Bridges

130145



Lecturer



doc. dr. sc.
Marija Kušter Marić

Course Description

Learning basic knowledge of all bearing systems for bridges, design, construction and maintenance procedures and methods. Learning basic knowledge of the conceptual design, analysis of bridge loading and structure elements. Qualifying students to develop project for structure design, as well as leadership and management of the construction of the provisional bridge - Bailey structure.

All teaching activities will be held in Croatian. However, foreign students in mixed groups will have the opportunity to attend additional office hours with the lecturer and teaching assistants in English to help master the course materials. Additionally, the lecturer will refer foreign students to the corresponding literature in English, as well as give them the possibility of taking the associated exams in English

Study Programmes

» Engineers -> Group of Courses Armour, Field Artillery, Engineers, Technical Support and Infantry (Course) (*required course, 7th semester, 4th year*)

Learning Outcomes

On successful completion of the course, students will be able to:

1. Students have the basic knowledge and skills needed to design bridge structure.
2. Students have the basic knowledge and skills of the basic principles of conceptual design.
3. Students have the knowledge and skills needed for numerical analysis of bridge structures according to ultimate and serviceability limit states using modern methods and criteria of European codes.
4. Students have the knowledge and ability to choose adequate bearing system of the bridge, depending on the geometry and boundary conditions according to modern methods and European codes
5. Students are able to develop conceptual design of all bearing systems of bridges, according to modern methods and European codes
6. Students are able to design and lead construction of Bailey bridges.

Study Programme Learning Outcomes

Military Engineering

1 Basic competences of the military profession

- 1.1 To communicate, organize and plan effectively the activities of a basic tactical unit

ECTS Credits 4.0

English Level Lo

E-learning Level L1

Study Hours

Lectures 30

Laboratory exercises 15

Associate Lecturers

izv. prof. dr. sc. Ana Mandić
Ivanković

Dragutin Remenar, pred.

Teaching Assistants

Mladen Fusić, pred.

Vladimir Horvat, pred.

Marko Šimić, pred.

Grading

GRADING : Colloquium: students, who achieve success of 60% or more at each colloquium, do not need to take the written exam. Exam: students, who achieve success of 60% or more at written exam, can take the oral exam.

Obligations: • Attending lectures and exercises • Project of Bailey Bridge • 2 colloquiums (minimum for each of them: achieved 25% of successfully written colloquium)

Assessment and evaluation of students' work during the semester: (colloquium, project tasks) • 37,5% attendance at lectures and exercises = 1.5 ECTS • 12.5% colloquium = 0.25 ECTS • 25% Project of Bailey Bridge = 1.0 ECTS • 25% exam = 1.0 ECTS • colloquium: students, who achieve success of 60% or more at each colloquium, do not need to take the written exam

Prerequisites for

Practical Military Training - Engineers

- 1.6 To nourish, channel and use creativity in accomplishing missions of a basic tactical unit
- 2 Special military competences
 - 2.3 To use combat and non-combat assets of the branch/service in a professional way
- 3 Basic technical knowledge
 - 3.2. To apply complex methodology by integrating engineering knowledge and skills in military engineering practice
 - 3.3. To integrate and apply engineering principles and techniques in the operation of military system in unpredictable conditions
- 4. Personal and professional skills and characteristics
 - 4.1 To identify and analyze a problem in the military environment
 - 4.2 To model and resolve a problem and to interpret problem solution by using appropriate knowledge and methods
- 5. Social skills (team work and communication)
 - 5.2 Organize and plan individual and team work in international and interdisciplinary work groups
 - 5.3 To effectively present work results both orally and in writing to stakeholders in the military environment
- 6 Development, implementation and operation of technical systems in economic and social environment
 - 6.1. To analyse and evaluate the effect of engineering solutions on society and environment
 - 6.2. To apply and create engineering approaches in analysing and assessing products and processes in security environment

Screening of student's work

- 0.5 ECTS Midterm exam
- 1 ECTS lectures
- 0.5 ECTS excersises
- 1 ECTS written+oral exam
- 1 ECTS Project of Bridge (task from excersise)
- 4 ECTS

Forms of Teaching

- » Lectures
- » Exercises
- » Independent assignments

Week by Week Schedule

- 1. Lectures: Introduction and General Specifications
Seminar: Introduction into the project, the basics of Bailey structures - audio exercises
- 2. Lectures: Types of bridges, Basic demands on bridges and Traffic conditions
Seminar: Bridge elements - audio exercises
- 3. Lectures: Actions on bridges
Seminar: Design of Bailey bridge, Distribution of the project tasks - audio exercises
- 4. Lectures: Factors of bridge reliability and Elements of bridge layout
Seminar: Design of Bailey bridge - constructive exercises
- 5. Lectures: Load-bearing structures of bridges - part 1
Seminar: Launching nose, rollers and jacks - audio exercises
- 6. Lectures: Load-bearing structures of bridges - part 2
Seminar: Preparation for the 1. colloquium - auditory + constructive exercises

7. 1. colloquium (lectures 1-6)
8. Lectures: Bailey structures and other provisional bridges
Seminar: Bailey structures and other provisional bridges - audio exercises
9. Lectures: Substructure and Bridge equipment
Seminar: Launching nose, rollers and jacks - constructive exercises
10. Lectures: Substructure and Bridge equipment
Seminar: Planning and organization, Technical description and Layout drawing - audio exercises
11. Lectures: Maintenance of bridges and Bridges under accidental actions
Seminar: Planning and organization - constructive exercises
12. Lectures: Overview of bridge building history
Seminar: Technical description and Layout drawing -constructive exercises
13. Lectures: Contemporary achievements in bridge engineering
Seminar: Preparation for the 2. colloquium - audio + constructive exercises
14. Lectures: Bridge aesthetics, Preparation for the 2. colloquium
Seminar: Submission and review of the completed project - constructive exercises
15. 2. colloquium (lectures 8-14)
Additional colloquium (16th week)

Literature



1. Radić, J. *UVOD U MOSTARSTVO*, Hrvatska sveučilišna naklada, Jadring, Sveučilište u Zagrebu - Građevinski fakultet, Zagreb 2009.



2. Radić, J.; Mandić, A.; Puž, G.: *KONSTRUIRANJE MOSTOVA*, Hrvatska sveučilišna naklada, Sveučilište u Zagrebu - Građevinski fakultet, Jadring, Zagreb 2005.



3. *Separati s vježbi (dostupno na web stranici predmeta neposredno prije održavanja nastave)*



4. *Separati s predavanja (dostupno na web stranici predmeta neposredno prije održavanja nastave)*

Additional Literature



5. Radić J. i suradnici: *Betonske konstrukcije – priručnik*



6. Radić J. i suradnici: *Betonske konstrukcije – riješeni primjeri*

Business Processes

129977

Lecturer



prof. dr. sc.
Neven Vrčeka

Course Description

Contemporary ICT is used for the construction of information systems that support the core business processes of an organization. Business processes are therefore the focus of business professionals, practitioners and scholars who are engaged in the development of information systems. Projects that have a purpose of operational excellence and improvement include the support of modern ICT, a wide range of managerial activities and the scientific methods gathered in popular approaches of business process improvement (BPI), Business Process reengineering (BPR) or business process modeling (BPM). A common feature of all these approaches is the technique and paradigms of business process modeling and evaluating the effects of improvement, before accessing their implementation. During this course students will learn how to model business processes in the organization, thereby anticipating the potential of modern ICT, and how to apply methods of BPR and BPM to achieve business excellence. Theoretical knowledge will be applied to several case studies and practical skills students will complement the use of modern tools for computer aided modeling of business processes. Knowledge gained in this course will enable graduates to work as business analysts, managers, planners of strategic development in organizations, development experts for planning and implementation of contemporary ICT and consultants for business excellence, the development of the IS and modern forms of business.

Study Programmes

» Military Leadership and Management (Study) (*required course, 6th semester, 3rd year*)

Learning Outcomes

On successful completion of the course, students will be able to:

1. Assemble a process model
2. Use of templates in modelling complex business processes
3. Use of contemporary software tools for BPM
4. Describe a Business process in accordance with BPMN
5. Compose the most important parameters of the business process (duration, required resources, bottlenecks) for using simulations on the model of the process
6. Describe Business process architecture and structure determination and definition of roles and participants in process execution
7. Identify business processes
8. Apply the complete set of symbols for BPM
9. Apply logical concepts BPM, such as sequence, event, decision making

ECTS Credits	4.0
English Level	L1
E-learning Level	L2
Study Hours	
Lectures	30
Seminar	15
Exercises	15

Associate Lecturers

doc. dr. sc. Igor Pihir

doc. dr. sc. Katarina Tomičić-Pupek

Teaching Assistant

mr. sc. Marina Jurčić

Grading

Grading: Evaluation of project presentations at the seminar sessions, stages of projects submitted into the system for e-learning and evaluation of the theoretical knowledge. Obligations: Develop a case study in the form of a project on a selected set of processes. The project includes models made in the selected modelling tool. The project will be presented at the seminar sessions continued in stages. Each stage represents a phase and each phase must be submitted for verification into the system for e-learning in the form of documentation. Reviewed and accepted project is a prerequisite for the verification of theoretical knowledge.

10. Apply logical concepts BPM, such as inclusive and exclusively for branching and merging

Study Programme Learning Outcomes

Military Leadership and Management

- 1 Basic competences of the military profession
 - 1.1 To communicate, organize and plan effectively the activities of a basic tactical unit
 - 1.3 To make decisions independently and command a basic tactical unit
 - 1.6 To nourish, channel and use creativity in accomplishing missions of a basic tactical unit
- 2 Special military competences
 - 2.1 To analyse the environment and to develop and apply tactics of the branch/service
4. Personal and professional skills and characteristics
 - 4.1 To identify and analyze a problem in the military environment
 - 4.2 To model and resolve a problem and to interpret problem solution by using appropriate knowledge and methods
 - 4.4 To develop self-study abilities and the need for and methods of life-long learning in traditional and virtual environment
5. Social skills (team work and communication)
 - 5.1 To communicate effectively in the Croatian and English language applying modern presentation skills and techniques
 - 5.2 Organize and plan individual and team work in international and interdisciplinary work groups
 - 5.3 To effectively present work results both orally and in writing to stakeholders in the military environment

Screening of student's work

- 0.5 ECTS Midterm exam
- 1 ECTS Written exam
- 1 ECTS Oral exam
- 1.5 ECTS Project
-
- 4 ECTS

Forms of Teaching

- » Lectures
 - » Lectures are held on schedule, materials will be available in electronic form.
- » Seminars and workshops
 - » At the seminars case studies will be presented as well as samples of exercises and projects. Students will be also presenting their work on the projects.
- » Exercises
 - » During exercises, students are going to:
 - learn the basics of working with software tools for process modeling and
 - develop their own models.
- » Partial e-learning
 - » Teaching materials will be available in electronic form.
- » Independent assignments
 - » Students will work in teams of three students on their project related to a selected set of processes. The project includes models made in the selected programming tool.

- » Work with mentor
 - » Subject teachers will mentor students during the development of their projects.
- » Other
 - » Working in project teams.

Week by Week Schedule

1. Lectures: Reasons for change and improvement of business processes
Seminar: Exercise 1 - Creating a Resource

Exercises: Introduction of the range of expected projects
2. Lectures: Principles of business process modeling
Seminar: Exercise 2 - Creating business content

Exercises: Determination of project teams and project themes
3. Lectures: Generic process models of organizations
Seminar: Exercise 3: Creating a process model AS IS

Exercises: Project presentations - 1st phase As Is Models
4. Lectures: Generic process models of organizations
Seminar: Exercise 4: Creating a process model TO BE

Exercises: Project presentations - 1st phase As Is Models
5. Lectures: Basic methods and techniques for business process modeling
Seminar: Exercise 5: Simulation of the process model

Exercises: Project presentations - 1st phase As Is Models
6. Lectures: Basic methods and techniques for business process modeling
Seminar: Exercise 6: Global and local elements of the model

Exercises: Project presentations - 2nd phase To Be Models
7. Lectures: Advanced techniques for business process modeling
Seminar: Exercise 7: Application of gateways, branching and merging

Exercises: Project presentations - 2nd phase To Be Models
8. Lectures: Advanced techniques for business process modeling
Seminar: Exercise 8: Implementation of control and return flows

Exercises: Project presentations - 2nd phase To Be Models
9. Lectures: Verification and evaluation of business process models
Seminar: Exercise 9: Implementation of loops

Exercises: Project presentations - 2nd phase To Be Models
10. Lectures: Verification and evaluation of business process models
Seminar: Exercise 10: Application of special types of events

Exercises: Project presentations - 2nd phase To Be Models
11. Lectures: Reference Models
Seminar: Exercise 11: Simulation settings Part 1

Exercises: Project presentations - 3rd phase Simulation, impact assessment and feasibility
12. Lectures: Reference Models
Seminar: Exercise 11: Simulation settings Part 2

Exercises: Project presentations - 3rd phase Simulation, impact assessment and feasibility

13. Lectures: Reference Models
Seminar: Exercise 13: Simulation settings and application of Simulation -
Creating a report on simulation results
- Exercises: Project presentations - 3rd phase Simulation, impact assessment and
feasibility
14. Lectures: Implementation of business processes reengineering
Seminar: Exercise 14: Implementation planning, impact assessment and
feasibility
- Exercises: Project presentations - 3rd phase Simulation, impact assessment and
feasibility
15. Lectures: Implementation of business processes reengineering
Seminar: Exercise 15: Questions and review of project documentation
- Exercises: Project presentations - 3rd phase Simulation, impact assessment and
feasibility

Literature



*Materijali dostupni na
sustavu za e-učenje*



Dumas, M., La Rosa, M.,
Mendling, J., Reijers, H.
(2013). *Fundamentals of
Business Process Management*,
Springer

Additional Literature



*White, S.A.; Miers, D. BPMN
modeling and reference guide:
understanding and using BPMN.
Future Strategies, Lighthouse,
2008.*

Similar Courses

» Engineering Management, West Point

Calculus I

141684



Lecturer



izv. prof. dr. sc.
Tomislav Burić

ECTS Credits 3.0

English Level Lo

E-learning Level L1

Study Hours

Lectures 30

Exercises 15

Associate Lecturer

prof. dr. sc. Ilko Brnetić

Teaching Assistant

Stjepan Šebek, mag. math.

Grading

The required minimum for a passing grade is a 45% score.

Course Description

We introduce basics of calculus which cover differentiation and integration of functions of one variable. Covered topics include limit of a function, derivative, integral and their applications to various engineering problems.

Study Programmes

» Military Engineering (Study) (*required course, 1st semester, 1st year*)

Learning Outcomes

On successful completion of the course, students will be able to:

1. Demonstrate fundamental skills contained in the course, such as differentiation and integration in one variable
2. Outline basic definitions (limit, derivative, integral) and statements of main theorems
3. Apply differentiation and integration in solving engineering problems
4. Describe and use methods presented in the course
5. Illustrate problem by mathematical model and apply appropriate mathematical method
6. Apply mathematical reasoning adequately

Study Programme Learning Outcomes

Military Engineering

- 1 Basic competences of the military profession
 - 1.6 To nourish, channel and use creativity in accomplishing missions of a basic tactical unit
- 2 Special military competences
 - 2.1 To analyse the environment and to develop and apply tactics of the branch/service
- 3 Basic technical knowledge
 - 3.1. To identify, analyse, model and resolve military engineering problems by integrating basic knowledge of natural and technical sciences
- 4 Personal and professional skills and characteristics
 - 4.2 To model and resolve a problem and to interpret problem solution by using appropriate knowledge and methods
 - 4.4 To develop self-study abilities and the need for and methods of life-long learning in traditional and virtual environment
- 6 Development, implementation and operation of technical systems in economic

and social environment

6.4. To plan, organise, create and implement engineering testing, and to analyse and interpret the results

Screening of student's work

1	ECTS Lectures attendance
1	ECTS Midterm exam
1	ECTS Homework
3	ECTS

Forms of Teaching

- » Lectures
 - » The course is divided in two cycles, 2 hours of lessons per week.
- » Exercises
 - » The course is divided in two cycles, 1 hour of exercises per week.
- » Independent assignments
 - » Regular homeworks.

Week by Week Schedule

1. Elementary functions. Graphs and basic properties.
2. Limit of a function. Continuous function.
3. The derivative of a function. Techniques of differentiation.
4. Differentiation of implicit and parametric functions
5. The mean value theorem. Taylor theorem.
6. The min-max problem. Curve sketching.
7. Applications of the derivative of a function on problem solving.
8. Examination.
9. Definition and existence of the integral. Newton-Leibiz formula.
10. Direct integration
11. Methods of substitution
12. Partial integration
13. Applications of the integral - area
14. Applications of the integral - volume and arc length
15. Examination.

Literature



A. Aglič (2012). *Matematika 1*, Element



M. Pašić (2005). *Matematika 1 s 800 riješenih primjera*, Merkur ABD

Additional Literature



B. P. Demidovič (2003). *Zadaci i riješeni primjeri iz matematičke analize za tehničke fakultete*, Golden marketing



G.F. Simmons (1996). *Calculus with analytic geometry*, McGraw-Hill



S. Lang (1986). *A first course in calculus*, Springer



Z. Šikić (2008). *Diferencijalni i integralni račun*, Profil

Similar Courses

- » Analytic Geometry and Calculus, The Citadel
- » Calculus I, West Point

Calculus II

141685

Lecturer



doc. dr. sc.
Mario Bukal

Course Description

To introduce, to study and to present applications of calculus of several variables and vector functions, differential equations and Laplace transform. The lectures are oriented towards elementary notions and model examples, with applications in military and engineering, while exercises are dedicated to sufficient number of exercises. The main goal is to familiarize students with main mathematical tools of faculty-level mathematics, to make them able to read mathematical literature and to teach them to think critically and logically.

Study Programmes

» Military Engineering (Study) (*required course, 2nd semester, 1st year*)

Learning Outcomes

On successful completion of the course, students will be able to:

1. Demonstrate fundamental skills contained in the course, such as integration in one variable, and derivation of several variables.
2. Outline basic definitions and theorems, describe methods, such as necessary and sufficient conditions for extremes, existence of solutions of Cauchy problem, Laplace transform.
3. Explain, connect and interpret basic concepts and theories from the course.
4. Make conclusions by using logical reasoning (analogy, contradiction, implication).
5. Apply mathematical reasoning adequately.
6. Demonstrate modeling and problem solvers skills.
7. Illustrate problem by mathematical model, select and apply appropriate mathematical methods, interpret a solution to ensure it makes sense in the context of the problem.
8. Analyse problems by combining different areas of mathematics.
9. Think critically in solving complex problems.
10. Demonstrate an ability to communicate mathematics, by team work, discussion and written material

Study Programme Learning Outcomes

Military Engineering

- 1 Basic competences of the military profession
 - 1.6 To nourish, channel and use creativity in accomplishing missions of a basic tactical unit
- 2 Special military competences

ECTS Credits 8.0

English Level Lo

E-learning Level L1

Study Hours

Lectures 60

Exercises 45

Teaching Assistants

Kristijan Kilassa Kvaternik, dipl. ing.

Stjepan Šebek, mag. math.

Grading

Grading: The required minimum for a passing grade is a 45% score. Obligations: The student is required to attend lectures. The student is also required to fulfill homework assignments and to take exams.



- 2.1 To analyse the environment and to develop and apply tactics of the branch/service
- 3 Basic technical knowledge
 - 3.1. To identify, analyse, model and resolve military engineering problems by integrating basic knowledge of natural and technical sciences
- 4. Personal and professional skills and characteristics
 - 4.2 To model and resolve a problem and to interpret problem solution by using appropriate knowledge and methods
 - 4.4 To develop self-study abilities and the need for and methods of life-long learning in traditional and virtual environment
- 6 Development, implementation and operation of technical systems in economic and social environment
 - 6.4. To plan, organise, create and implement engineering testing, and to analyse and interpret the results

Screening of student's work

- o ECTS Lectures attendance
- 7 ECTS Midterm exam
- o ECTS Written exam
- 1 ECTS Regular homeworks
- 8 ECTS

Forms of Teaching

- » Lectures
 - » The course is divided in two cycles, 4 hours of lessons per week. Two colloquia: one mid-semester and one final.
- » Exercises
 - » The course is divided in two cycles, 3 hours of exercises per week.
- » Independent assignments
 - » Regular homeworks.

Week by Week Schedule

1. Lectures: Sequences, limits and accumulation points.
Exercises: Limits of sequences.
2. Lectures: Series. Convergent and divergent series. Criteria for convergence.
Exercises: Determining convergence of series.
3. Lectures: Power series. Taylor series and polynomial approximation.
Exercises: Exercises power and Taylor series.
4. Lectures: Vector functions. Velocity and acceleration.
Exercises: Derivative of vector functions and applications.
5. Lectures: Calculus of functions of several variables. Limit, continuity, partial and directional derivatives, gradient.
Exercises: Exercises partial and directional derivatives, gradient.
6. Lectures: Chain rule, implicit differentiation, higher partial derivatives.
Exercises: Exercises chain rule and higher partial derivatives.
Second differential.
7. Midterm exam.
8. Lectures: Extrema of functions of two variables. Linear programming.
Exercises: linear programming.
9. Lectures: Stationary points and local extrema of two-variable functions. The least squares method.
Exercises: Finding local extrema of functions.
10. Lectures: Conditional extrema. Lagrange multiplier.
Exercises: Exercises conditional extrema.

11. Lectures: Differential equations, separate variables. Cauchy problem.
Exercises: Differential equations, separate variables.
12. Lectures: Linear differential equations. LDE of higher order and applications.
Exercises: Solving linear differential equations.
13. Lectures: Laplace transform. Properties of Laplace transform.
Exercises: Laplace transform of functions using definition.
14. Lectures: Application to differential equations and circuits.
Exercises: Application to differential equations and circuits.
15. Final exam.

Literature



M. Pašić: Matematika 2, MERKUR ABD 2006.



Aglič, Brnetić, Čepulić, Marangunić, Pašić, Žubrinić, Županović: Matematika 2, Element 2013.



N. Elezović: Diferencijalne jednačbe, Element, 2006.



N. Elezović: Fourierov red i integral i Laplaceova transformacija, Element 2007.

Similar Courses

» Analytic geometry and calculus 1-3, The Citadel

CBRN Protection

130164

Lecturer



doc. dr. sc.
Vilko Mandić

Course Description

Acquire theoretical and practical knowledge of CBRN protection and their application in the CBRN unit. Enable students to work independently with funds CBRN protection, organization, management and utilization of CBRN protection.

Study Programmes

» Chemical, Biological, Radiological and Nuclear Defence -> Military Engineering (Course) (required course, 7th semester, 4th year)

Learning Outcomes

On successful completion of the course, students will be able to:

1. Define the term, classification and features of CBRN protection
2. Discern, classify and utilize of the CBRN protection tools
3. Identify and analyze the factors that influence on the use of CBRN protection
4. Use the CBRN protection tools in the individual and team work
5. Organize, demonstrate and manage the work with CBRN protection tools
6. Explain the concept and purpose of global protection

Study Programme Learning Outcomes

Military Engineering

- 1 Basic competences of the military profession
 - 1.2 To assess the situation and implement appropriate tactics for a basic tactical unit
 - 1.3 To make decisions independently and command a basic tactical unit
 - 1.4 To train, develop and assess the abilities of soldiers and a basic tactical unit
 - 1.5 To develop personal and collective determination, courage, enthusiasm and initiative of subordinates
- 2 Special military competences
 - 2.2 To manage maintenance of combat and non-combat assets, ammunitions and mines of the branch/service
 - 2.3 To use combat and non-combat assets of the branch/service in a professional way
- 3 Basic technical knowledge
 - 3.1. To identify, analyse, model and resolve military engineering problems by integrating basic knowledge of natural and technical sciences
 - 3.3. To integrate and apply engineering principles and techniques in the operation of military system in unpredictable conditions

ECTS Credits	5.0
English Level	Lo
E-learning Level	L1
Study Hours	
Lectures	30
Seminar	15
Laboratory exercises	15

Associate Lecturer

dr. sc. Dragutin Tušek, pred.

Teaching Assistant

Svetko Župan, dipl. ing.

Grading

Grading: The final grade is determined by evaluating exercises and partial exams, pass the written and oral exam if a student fails the partial exam or wants a better grade.

Obligations: Regularly attend classes. Be sure to participate in partial exams organized in semester for assessment.

Prerequisites for

Practical Military Training - Chemical, Biological, Radiological, and Nuclear Defence



4. Personal and professional skills and characteristics
 - 4.1 To identify and analyze a problem in the military environment
 - 4.2 To model and resolve a problem and to interpret problem solution by using appropriate knowledge and methods
 - 4.3 To assume military, professional and ethical responsibility
5. Social skills (team work and communication)
 - 5.1 To communicate effectively in the Croatian and English language applying modern presentation skills and techniques
 - 5.2 Organize and plan individual and team work in international and interdisciplinary work groups
- 6 Development, implementation and operation of technical systems in economic and social environment
 - 6.1. To analyse and evaluate the effect of engineering solutions on society and environment
 - 6.3. To apply and select knowledge and relevant facts from different areas, and to assume responsibility for assessing the impact of military technology in social environment

Screening of student's work

- 1 ECTS Lectures attendance
- 2 ECTS Midterm exam
- 1 ECTS Written exam
- 1 ECTS field work
- 5 ECTS

Forms of Teaching

- » Lectures
 - » ex cathedra
- » Exercises
 - » ex cathedra
- » Partial e-learning
 - » using system for e-learning (Merlin)
- » Field work
 - » polygon
- » Independent assignments
 - » individual

Week by Week Schedule

1. Lectures: Introduction to the course: content, location and significance of course in CBRN
Seminar: Resources for personal CBRN protection: preparation equipment for use
Exercises: Equipment preparation for personal CBRN protection
2. Lectures: Fundamental concepts of CBRN protection: objective and tasks of CBRN protection principles and the classification of CBRN protection
Seminar: Resources for personal CBRN protection: the use stage
Exercises: The use of resources for personal CBRN protection
3. Lectures: CBRN personal care: organizational personal protective equipment
Seminar: Resources for personal CBRN protection: the use stage
Exercises: The use of resources for personal CBRN protection
4. Lectures: CBRN personal care: alternative means of personal protection
Seminar: Resources for personal CBRN protection: the CBRN protection levels
Exercises: Application of CBRN protection levels

5. Lectures: Levels of personal protection: gear the level of CBRN personal protection during combat actions
Seminar: Resources for personal CBRN protection: handling with resources after use
Exercises: Application of handling with resources after use
6. Lectures: Effect of wearing personal protective equipment at CBRN effective implementation of the tasks of individuals and units during military operations: the effect of temperature and humidity, and meteorological phenomena on the combat effectiveness of troops in the application of funds for personal CBRN protection, time norms for carrying individual assets
Seminar: Special resources for personal CBRN protection: preparation resources for the use special resources for personal CBRN protection
Exercises: Application of special resources for personal CBRN protection
7. Lectures: Collective CBRN protection: concept and goal of collective CBRN protection, distribution and characteristics of organizational resources and facilities for collective CBRN protection
Seminar: Special resources for personal CBRN protection: the use stage
Exercises: Application of special resources for personal CBRN protection
8. Lectures: Analysis of vulnerability to chemical hazards: dressing theme accordance with NATO documents
Seminar: Special resources for personal CBRN protection: the use stage
Exercises: Application of special resources for personal CBRN protection
9. Lectures: Analysis of vulnerability to biological hazards: dressing theme accordance with NATO documents
Seminar: Special resources for personal CBRN protection: the levels of CBRN protection units and teams CBRN,
Exercises: Application of the levels of CBRN protection units and teams CBRN
10. Lectures: Protection of food, water and materially technical resources
Seminar: Special resources for personal CBRN protection: handling with the resources after use
Exercises: Application of handling with personal CBRN protection after use
11. Lectures: Measures for the protection of food, water and materially technical resourcesTTS
Seminar: Resources collective CBRN protection: system setup to work
Exercises: Application of resources for collective CBRN protection
12. Lectures: Equipment for CBRN defence - operating guidelines: classification of CBRN protective equipment and use in accordance with current NATO documents
Seminar: Resources collective CBRN protection: tents setup
Exercises: Tents setup
13. Lectures: Equipment for CBRN defence - operating guidelines: the use of CBRN equipments in accordance with current NATO documents
Seminar: Resources collective CBRN protection: related equipment setup
Exercises: Related equipment setup
14. Lectures: Medical NBC protection: protective effects of pretreatment of warfare agents, ionizing radiation and biological war agents, triage and treatment of poisoned, and irradiated patients
Seminar: Resources collective CBRN protection: packaging of tents and related equipment
Exercises: Packaging of tents and related equipment
15. Lectures: Glossary and abbreviations: NATO dictionary of terms and definitions of CBRN
Seminar: Resources collective CBRN protection: maintenance of tents and related equipment
Exercises: Maintenance of tents and related equipment

Literature



S. Bokan, I. Jukić, Z. Orehovec, M. Radalj, B. Ilijaš, A. Čižmek (2004). *Oružja za masovno uništavanje: nuklearno, kemijsko, biološko i toksinsko oružje*, Pučko otvoreno učilište, Zagreb



(2012). *AJP-3.8 - ALIDE JOINT DOCTRINE FOR CBRN DEFENCE* (2003.), NATO Standardization Agency, Brussels, Belgium,, North Atlantic Treaty Organization



(1985). *FM 3-4 CBRN Protection*, HeadquartersDepartment of the Army, US Marine Corps, Washington

Similar Courses

», The Citadel

CBRN Weapons

129422

Lecturer



prof. dr. sc.
Silvana Raić-Malić

Course Description

Teach students to apply theoretical knowledge and principles in the field of CBRN weapons and the influence of meteorological parameters on their performance. Explain to students the key concepts of CBRN contamination after the combat application of CBRN weapons.

Study Programmes

» Chemical, Biological, Radiological and Nuclear Defence -> Military Engineering (Course) (required course, 6th semester, 3rd year) (Note: course not offered in this academic year.)

Learning Outcomes

On successful completion of the course, students will be able to:

1. Summarize the term, division and features of CBRN weapons
2. Identify and analyze the factors that influence on the use of CBRN weapons
3. Explain the effects of CBRN weapons effects on environment and society
4. Explain the term, discern and recognise the type of RBC contamination
5. Analyze and compare the physical - chemical properties of warfare agents
6. Explain the toxicological characteristics of warfare agents and assess their effects on living organisms

Study Programme Learning Outcomes

Military Engineering

1 Basic competences of the military profession

- 1.3 To make decisions independently and command a basic tactical unit
- 1.4 To train, develop and assess the abilities of soldiers and a basic tactical unit
- 1.6 To nourish, channel and use creativity in accomplishing missions of a basic tactical unit

2 Special military competences

- 2.3 To use combat and non-combat assets of the branch/service in a professional way

3 Basic technical knowledge

- 3.1. To identify, analyse, model and resolve military engineering problems by integrating basic knowledge of natural and technical sciences
- 3.3. To integrate and apply engineering principles and techniques in the operation of military system in unpredictable conditions

4. Personal and professional skills and characteristics

ECTS Credits 6.0

English Level Lo

E-learning Level L1

Study Hours

Lectures 75

Seminar 15

Associate Lecturers

doc. dr. sc. Dragana Vuk

prof. dr. sc. Marija Vuković
Domanovac

Teaching Assistant

dr. sc. Ante Vučemilović, pred.

Grading

Grading: During lectures spend 3 partial exams; written and oral exam if a student fails the exam or wants a better grade. Obligations: Regular attendance at lectures and seminars. Seminar work and participate in partial exams organized in classes for assessment.



- 4.2 To model and resolve a problem and to interpret problem solution by using appropriate knowledge and methods
- 4.4 To develop self-study abilities and the need for and methods of life-long learning in traditional and virtual environment
- 5. Social skills (team work and communication)
 - 5.1 To communicate effectively in the Croatian and English language applying modern presentation skills and techniques
 - 5.2 Organize and plan individual and team work in international and interdisciplinary work groups
- 6 Development, implementation and operation of technical systems in economic and social environment
 - 6.2. To apply and create engineering approaches in analysing and assessing products and processes in security environment
 - 6.3. To apply and select knowledge and relevant facts from different areas, and to assume responsibility for assessing the impact of military technology in social environment

Screening of student's work

- 2 ECTS Lectures attendance
- 2 ECTS Midterm exam
- 1 ECTS Written exam
- 1 ECTS Oral exam
- 6 ECTS

Forms of Teaching

- » Lectures
 - » ex cathedra
- » Seminars and workshops
 - » ex cathedra
- » Work with mentor
 - » consultation

Week by Week Schedule

1. Lectures: Introduction to the course: content, location and significance of course in CBRN; CBRN weapons in general, their historical development: history, features CBRN weapons; Conventions: content and significance of the Chemical, Nuclear, Biological and Toxic Weapons
Exercises: Seminar 1
2. Lectures: Chemical weapons: features of the chemical weapons, division of warfare agents, equipment for use
Exercises: Seminar 2
3. Lectures: Physical-chemical properties of warfare agents: properties, reactivity and stability
Exercises: Seminar 3
4. Lectures: Toxicological features of warfare agents: defining toxicity, toxicology division and mechanism of action of poison gas, Symptoms, Treatment
Exercises: Seminar 4
5. Lectures: Chemical contamination: concept and features of chemical contamination, contamination of soil and atmosphere
Exercises: Seminar 5
6. Lectures: Nuclear weapons: features of the nuclear weapons, the types of radiation and nuclear explosions funding applications of nuclear weapons, nuclear weapons division of the action and intensity
Exercises: Seminar 6

7. Lectures: Radioactivity and radioactive decay: term radioactivity decay processes and units; radioactive contamination: concept and features of radioactive contamination; low dose: term low-dose radiation and their sources, the risk of long-term exposure
Exercises: Seminar 7
8. Lectures: Effects of the nuclear weapons: the kind of action a nuclear explosion and the effects on humans and materially technical resources
Exercises: Seminar 8
9. Lectures: Biological weapons: definition, characteristics, specific effects of biological weapons, types of biological war agents and means for transmitting and / or dissemination of biological war agents
Exercises: Seminar 9
10. Lectures: Biological warfare agents: basic characteristics of bacteria, viruses, rickettsia, and fungi; types and characteristics of toxins; genetic engineering in biotechnology: possibility of obtaining modified organisms
Exercises: Seminar 10
11. Lectures: The most important infectious diseases whose causes could be used as biological warfare agents: bacterial, viral, fungal and rickettsial diseases and poisoning toxins
Exercises: Seminar 11
12. Lectures: Biological contamination: concept and features of biological contamination, contamination of the environment
Exercises: Seminar 12
13. Lectures: Meteorology, meteorological elements and phenomena: the concept and mission of meteorology, atmosphere - composition and characteristics, meteorological phenomena, meteorological elements
Exercises: Seminar 13
14. Lectures: The influence of meteorological elements and phenomena to the planning of the using and the effects of CBRN weapons (influence of meteorological elements and phenomena in chemical, nuclear and biological weapons)
Exercises: Seminar 14
15. Lectures: Countering Improvised Explosive Devices C-IED (C-IED basics, place and role of gender CBRN in C-IED, Glossary and abbreviations (NATO CBRN dictionary of terms and definitions)
Exercises: Seminar 15

Literature



S. Bokan, I. Jukić, Z. Orehovec, M. Radalj, B. Ilijaš, A. Čižmek (2004). *Oružja za masovno uništavanje: nuklearno, kemijsko, biološko i toksinsko oružje*, Pučko otvoreno učilište, Zagreb

Additional Literature



- (2003). *AJP-3.8-ALIDE JOINT DOCTRINE FOR NBC DEFENCE*, NATO Standardization Agency, Brussels, Belgium

Similar Courses

» Nuclear Weapons Effects, West Point

Chemistry

129365

Lecturer



doc. dr. sc.
Svjetlana Krištafor

Course Description

Adopt the basics of chemistry, chemical calculus and the modern theory of the structure of atoms and molecules, statistical mechanics, wave mechanics and quantum chemistry and thermodynamics. Introduction to the chemistry of elements based on the trends of change of physical and chemical properties within periodic table.

Study Programmes

- » Chemical, Biological, Radiological and Nuclear Defence -> Military Engineering (Course) (required course, 4th semester, 2nd year) (Note: course not offered in this academic year.)

Learning Outcomes

On successful completion of the course, students will be able to:

1. Apply the basic chemical bond theories in aim to understand the finally obtained chemical and physical properties of compounds.
2. Predict the chemical properties of chemical compounds using the information for electronegativity, electron affinity and ionization energy
3. Apply chemical principles and methodology in solving problems
4. Explain basic theory and principles of equilibrium constants for chemical reactions
5. Apply basic chemical laws on electrochemical processes
6. Explain basic principles of chemical data treatment.
7. Apply principles of experimental design in chemistry
8. Identify and understand useful chemical information.

Study Programme Learning Outcomes

Military Engineering

- 1 Basic competences of the military profession
 - 1.6 To nourish, channel and use creativity in accomplishing missions of a basic tactical unit
- 3 Basic technical knowledge
 - 3.1. To identify, analyse, model and resolve military engineering problems by integrating basic knowledge of natural and technical sciences
 - 3.2. To apply complex methodology by integrating engineering knowledge and skills in military engineering practice
 - 3.3. To integrate and apply engineering principles and techniques in the operation of military system in unpredictable conditions

ECTS Credits 6.0

English Level Lo

E-learning Level L1

Study Hours

Lectures 30

Seminar 30

Laboratory exercises 15

Teaching Assistants

dr. sc. Lidija Furač, v. pred.

dr. sc. Valentina Ključarić, pred.

Grading

Grading: Students' progress will be continuously assessed by written tests and final exam. Students also will be assigned a seminar project theme and should submit a final project report. Obligations: class attendance



ME

ME-M

ARM

ART

ENG

TS

IN-E

ME-E

SIG

MG

AD

CBR

MLM

IN-L

4. Personal and professional skills and characteristics
 - 4.1 To identify and analyze a problem in the military environment
 - 4.2 To model and resolve a problem and to interpret problem solution by using appropriate knowledge and methods
 - 4.4 To develop self-study abilities and the need for and methods of life-long learning in traditional and virtual environment
5. Social skills (team work and communication)
 - 5.3 To effectively present work results both orally and in writing to stakeholders in the military environment

Screening of student's work

- 2 ECTS Lectures attendance
- 1 ECTS Experimental work
- 2 ECTS Written exam
- 1 ECTS Oral exam
- 6 ECTS

Forms of Teaching

- » Lectures
 - » Lectures are given as an interactive presentation given by a lecturer. Students get handouts for each lecture in advance.
- » Seminars and workshops
 - » At seminars students are involved in solving numerical problems related to theoretical concepts introduced previously at lectures.
- » Laboratory
 - » Lab sessions will be divided into five 3-hour blocks weekly.

Week by Week Schedule

1. Lectures: Atoms: the quantum world
Seminar: Physical quantities and units. Chemical elements and compounds. Chemical formula.

Lab: Separation techniques
2. Lectures: Chemical bonds
Seminar: Chemical equivalents. Definite composition of compounds and mixtures. Empirical and molecular formulas

Lab: Laws of stoichiometry
3. Lectures: Molecular shape and structure
Seminar: Solutions

Lab: The gas laws
4. Lectures: The properties of gases
Seminar: Oxidation- reduction reactions

Lab: Solutions and their properties
5. Lectures: Liquids and solids
Seminar: Stoichiometry of chemical reactions

Lab: Chemical reactions I
6. Lectures: Fundamentals of Thermochemistry
Seminar: The gas laws

Lab: Chemical reactions II

7. Lectures: Physical Equilibria
Seminar: Physical properties of solutions

Lab: Chemical kinetics
8. Lectures: Chemical Equilibria
Seminar: Equilibrium of chemical reactions

Lab: Electrolysis
9. Lectures: Acids and bases
Seminar: Acid - base equilibria

Lab: Chemical Equilibria I
10. Lectures: Aqueous Equilibria
Seminar: Hydrolysis of salts

Lab: Chemical Equilibria II
11. Lectures: Electrochemistry
Seminar: Buffer solutions

Lab: Properties and hydrogen production, properties and oxygen production, production of chlorine, bromine and iodine
12. Lectures: Chemical kinetics
Seminar: Equilibrium of complex ions and solubility product

Lab: Properties of non-metal oxides
13. Lectures: The elements: The first -four main groups
Seminar: Equilibrium involving gas reactions

Lab: Properties of metal oxides and hydroxides
14. Lectures: The elements :The last four main groups and transition metals
Seminar:Electrochemistry

Lab: Preparation of complex compounds
15. Lectures: Nuclear reactions
Seminar: Thermochemistry

Lab: Preparation and properties of transition metals

Literature



I. Filipović, S. Lipanović
(1996). *Opća i anorganska
kemija, I i II dio*, Školska
knjiga



D. Grdenić *Molekule i kristali*,
Školska knjiga, Zagreb, 2005.

Similar Courses

- » General Chemistry I, West Point

Communication and Information Systems

141692

Lecturers



prof. dr. sc.
Gordan Šišul



prof. dr. sc.
Gordan Ježić

Course Description

Familiarize students with the organization of communication and information systems by NATO standards. Planning CIS for the resulting tasks. Specifics of CIS in IMO / MMM that are under the command of NATO headquarters or the EU-led operations and missions. Fundamentals of communication information systems. Networks overview.

Study Programmes

- » Armour -> Group of Courses Armour, Field Artillery, Engineers, Technical Support and Infantry (Course) *(required course, 5th semester, 3rd year)* (Note: course not offered in this academic year.)
- » Field Artillery -> Group of Courses Armour, Field Artillery, Engineers, Technical Support and Infantry (Course) *(required course, 5th semester, 3rd year)*
- » Engineers -> Group of Courses Armour, Field Artillery, Engineers, Technical Support and Infantry (Course) *(required course, 5th semester, 3rd year)* (Note: course not offered in this academic year.)
- » Technical Support -> Group of Courses Armour, Field Artillery, Engineers, Technical Support and Infantry (Course) *(required course, 5th semester, 3rd year)*
- » Infantry -> Group of Courses Armour, Field Artillery, Engineers, Technical Support and Infantry (Course) *(required course, 5th semester, 3rd year)* (Note: course not offered in this academic year.)
- » Signals -> Group of Courses Signals, Monitoring and Guidance and Air Defence (Course) *(required course, 5th semester, 3rd year)*
- » Monitoring and Guidance -> Group of Courses Signals, Monitoring and Guidance and Air Defence (Course) *(required course, 5th semester, 3rd year)* (Note: course not offered in this academic year.)
- » Air Defence -> Group of Courses Signals, Monitoring and Guidance and Air Defence (Course) *(required course, 5th semester, 3rd year)* (Note: course not offered in this academic year.)
- » Chemical, Biological, Radiological and Nuclear Defence -> Military Engineering (Course) *(required course, 5th semester, 3rd year)* (Note: course not offered in this academic year.)
- » Military Leadership and Management (Study) *(required course, 5th semester, 3rd year)*

ECTS Credits 6.0

English Level Lo

E-learning Level L2

Study Hours

Lectures 60

Seminar 15

Laboratory exercises 15

Teaching Assistants

dr. sc. Darko Možnik, doc.

dr. sc. Igor Štambuk, doc.

mr. sc. Vinko Zebić, pred.

Grading

Grading: It is necessary to achieve 50% of the total number of points for the exam.

Obligations: Attendance and participation in class, learning subject matter, Homework, exams.



Learning Outcomes

On successful completion of the course, students will be able to:

1. Enumerate some of the communication of information systems in NATO
2. Enumerate some of the communication of information systems in the CAF
3. Distinguish stationary, mobile, and combat communications and information systems
4. Apply the standards CIS
5. Apply safeguards information
6. Develop a mission by NATO procedures
7. Fundamental knowledge about information transmission in different types of communication systems
8. Fundamental knowledge about multiplexing, switching and multiple access techniques
9. Basic knowledge about telecommunication networks
10. Basic knowledge about wireless systems and technologies

Study Programme Learning Outcomes

Military Engineering

- 1 Basic competences of the military profession
 - 1.1 To communicate, organize and plan effectively the activities of a basic tactical unit
 - 1.2 To assess the situation and implement appropriate tactics for a basic tactical unit
 - 1.3 To make decisions independently and command a basic tactical unit
 - 1.4 To train, develop and assess the abilities of soldiers and a basic tactical unit
- 2 Special military competences
 - 2.1 To analyse the environment and to develop and apply tactics of the branch/service
 - 2.2 To manage maintenance of combat and non-combat assets, ammunitions and mines of the branch/service
 - 2.3 To use combat and non-combat assets of the branch/service in a professional way
- 3 Basic technical knowledge
 - 3.2. To apply complex methodology by integrating engineering knowledge and skills in military engineering practice
 - 3.3. To integrate and apply engineering principles and techniques in the operation of military system in unpredictable conditions
4. Personal and professional skills and characteristics
 - 4.1 To identify and analyze a problem in the military environment
 - 4.2 To model and resolve a problem and to interpret problem solution by using appropriate knowledge and methods
5. Social skills (team work and communication)
 - 5.1 To communicate effectively in the Croatian and English language applying modern presentation skills and techniques
 - 5.2 Organize and plan individual and team work in international and interdisciplinary work groups
 - 5.3 To effectively present work results both orally and in writing to stakeholders in the military environment
- 6 Development, implementation and operation of technical systems in economic and social environment
 - 6.1. To analyse and evaluate the effect of engineering solutions on society and environment

- 6.2. To apply and create engineering approaches in analysing and assessing products and processes in security environment

Military Leadership and Management

- 1 Basic competences of the military profession
 - 1.1 To communicate, organize and plan effectively the activities of a basic tactical unit
 - 1.2 To assess the situation and implement appropriate tactics for a basic tactical unit
 - 1.3 To make decisions independently and command a basic tactical unit
 - 1.4 To train, develop and assess the abilities of soldiers and a basic tactical unit
- 2 Special military competences
 - 2.1 To analyse the environment and to develop and apply tactics of the branch/service
 - 2.2 To manage maintenance of combat and non-combat assets, ammunitions and mines of the branch/service
 - 2.3 To use combat and non-combat assets of the branch/service in a professional way
4. Personal and professional skills and characteristics
 - 4.1 To identify and analyze a problem in the military environment
 - 4.2 To model and resolve a problem and to interpret problem solution by using appropriate knowledge and methods
5. Social skills (team work and communication)
 - 5.1 To communicate effectively in the Croatian and English language applying modern presentation skills and techniques
 - 5.2 Organize and plan individual and team work in international and interdisciplinary work groups
 - 5.3 To effectively present work results both orally and in writing to stakeholders in the military environment

Screening of student's work

- 3 ECTS Lectures attendance
 1 ECTS Written exam
 1 ECTS Seminar report
 1 ECTS Practical work

 6 ECTS

Forms of Teaching

- » Lectures
 - » Lectures, with lecture notes and presentations available in advance on the web.
- » Seminars and workshops
 - » Preparation of documents and designing communication systems
- » Exercises
 - » Simulation of communication networks
- » Independent assignments
 - » Learning
- » Laboratory
 - » Designing communication systems in MATLAB

Week by Week Schedule

1. Lectures: Introduction to subject
Seminar: Creating tasks by NATO procedures
Exercises: NATO CIS
2. Lectures: Elementary terms of communication and information systems
Seminar: Preparation of documents for the practical use of the system by NATO procedures
Exercises: Croatian Armed Forces CIS
3. Lectures: CIS organisation in NATO
Seminar: Setting up the system according to documents made
Exercises: CIS in the ISAF mission
4. Lectures: CIS organisation in Croatian Armed Forces
Seminar: Introduction to the basics of measurement.
Exercises: CIS in the KFOR mission
5. Lectures: CIS planning and management
Seminar: Overview of measuring instruments.
Exercises: Digital subscriber line - DSL
6. Lectures: CIS resources
Seminar: Introduction to MATLAB and Simulink.
Exercises: Local area network - LAN
7. Lectures: CIS Concept
Seminar: Designing communication systems in MATLAB I
Exercises: GSM
8. Lectures: Information sources and types; sound, image and data. Various information signals characteristics. Information transmission through space (communication) and time (storage).
Seminar: Designing communication systems in MATLAB II
Exercises: UMTS
9. Lectures: Communication system model, analog and digital transmission, transmission media: types, physical parameters and applications, narrowband and broadband services.
Seminar: Designing communication systems in MATLAB III
Exercises: LTE
10. Lectures: Communication channel: transmission characteristics, channel noise. Channel capacity.
Seminar: Designing communication systems in MATLAB IV
Exercises: Ethernet
11. Lectures: Modulation and coding.
Seminar: Designing communication systems in MATLAB V
Exercises: Wireless local area network - WLAN
12. Lectures: Synchronous and asynchronous transmission, switching, multiplexing, plesiochronous digital hierarchy (PDH), synchronous digital hierarchy (SDH).
Seminar: Designing communication systems in MATLAB VI
Exercises: Network security
13. Lectures: Two-way communications: FDD, TDD, duplexing techniques, multiple access techniques: FDMA, TDMA, CDMA, SDMA, CSMA.
Seminar: Designing communication systems in MATLAB VII
Exercises: Optical networks I
14. Lectures: Telecommunication networks overview: public switched telephone network (PSTN), public mobile network.
Seminar: Designing communication systems in MATLAB VIII
Exercises: Optičke mreže II
15. Lectures: Private networks.
Seminar: Designing communication systems in MATLAB IX
Exercises: TETRA

Literature



*Osnove komunikacijsko
informacijskih sustava*



*Osnovne arhitekture mreža A.
Bažant, G. Gledec, Ž. Ilić, G.
Ježić, M. Kos, M. Kunštić, I.
Lovrek, M. Matijašević, B.
Mikac, V. Sinković Element
2004*



*Computer Networks, Fourth
Edition A.S. Tanenbaum Pearson
Education International 2003*

Similar Courses

» Wireless Communication System Engineering, West Point

Comparative Intelligence Systems

129960

Lecturer



prof. dr. sc.
Mirko Bilandžić

ECTS Credits 4.0

English Level Lo

E-learning Level L1

Study Hours

Lectures 30

Seminar 5

Exercises 10

Associate Lecturer

doc. dr. sc. Danijela Lucić

Grading

Grading: The success of the course is the sum of points and ratings success will be carried out according to the following table: A - 90-100 points B - 80-89 points C - 61-79 points D - 51-60 points F - 50 points
Obligations: Class attendance and active participation in class (questions, comments, analysis); attending seminars, consulting seminar's literatures and active participation in the seminar classes; participation in exercises; final oral exam

Course Description

Introduce students to the area of intelligence activities; adopt basic terminology and categories related to the topics of intelligence; understand the tasks of national intelligence systems and business intelligence systems, especially in relation to the strategic decisions in the narrow area of national security, political and economic decisions and the role of the national intelligence system in the overall social development (social intelligence); to familiarize students with general intelligence models and models of individual states. The course has a conceptual, analytical and applicational objective.

Study Programmes

» Military Leadership and Management (Study) (*required course, 6th semester, 3rd year*)

Learning Outcomes

On successful completion of the course, students will be able to:

1. Introduce the intelligence field
2. Understand and adopt intelligence terminology
3. Understand the role of intelligence in national security
4. Understand the role of national intelligence system in the political system
5. Understand the role of national intelligence system in social development
6. Understand the role of intelligence in business
7. Understand the role of intelligence in the decision-making process
8. Acquire knowledge about the foreign national intelligence systems
9. Acquire knowledge about intelligence models
10. Apply intelligence (counterintelligence) results in managing

Study Programme Learning Outcomes

Military Leadership and Management

1 Basic competences of the military profession

1.1 To communicate, organize and plan effectively the activities of a basic tactical unit

1.2 To assess the situation and implement appropriate tactics for a basic tactical unit

1.7 To be acquainted with and to respect historical, social and cultural diversities in the context of military activities

2 Special military competences

2.1 To analyse the environment and to develop and apply tactics of the

branch/service

3 Basic competences in social and humanistic sciences

3.1 To analyze and interpret processes in international environment, and to act within international alliances and organizations in which the Republic of Croatia participates

3.2 To comprehend civil-military relations and to act in accordance with democratic standards

3.5 To apply knowledge of the structure and functioning of the political system, state and public administration in resolving unstructured problems

3.8 To apply results of intelligence and counter-intelligence activities in leadership and management of military units

4. Personal and professional skills and characteristics

4.1 To identify and analyze a problem in the military environment

4.2 To model and resolve a problem and to interpret problem solution by using appropriate knowledge and methods

4.4 To develop self-study abilities and the need for and methods of life-long learning in traditional and virtual environment

5. Social skills (team work and communication)

5.2 Organize and plan individual and team work in international and interdisciplinary work groups

5.3 To effectively present work results both orally and in writing to stakeholders in the military environment

Forms of Teaching

» Lectures

» Seminars and workshops

» Exercises

» Other

» diskusije; studije slučaja; studije država

Week by Week Schedule

1. Lectures: Introduction to the course, a description of the content and objectives of the course, the structure of the course, an introduction to the seminar, review of the literature
Seminar: Data collection techniques: OSINT

Exercises: Intelligence community of the USA

2. Lectures: History of intelligence
Seminar: Data collection techniques: OSINT

Exercises: Israel: national intelligence system

3. Lectures: Basic terminology and definition: intelligence, counterintelligence, security services ; business intelligence/business counterintelligence; business espionage/business counterespionage
Seminar: Data collection techniques: HUMINT

Exercises: United Kingdom: national intelligence system

4. Lectures: Intelligence systems in political systems, intelligence systems in national security systems, intelligence systems in military organizations, management of intelligence systems
Seminar: Intelligence analysis: military theme

Exercises: Russian Federation: national intelligence system

5. Lectures: Intelligence systems and typology of government: totalitarianism, authoritarianism and democracy
Seminar: Intelligence analysis: business theme

Exercises: Slovenia: national intelligence system

6. Lectures: (Counter)intelligence, (counter)espionage
Seminar: None

Exercises: None

7. Lectures: Intelligence techniques and methods/data collection techniques (HUMINT, SIGINT, OSINT, etc.); intelligence circle
Seminar: None

Exercises: None

8. Lectures: Counterintelligence tactics, techniques, and functional areas
Seminar: None

Exercises: None

9. Lectures: Security services: areas of operation and techniques
Seminar: None

Exercises: None

10. Lectures: Covert actions
Seminar: None

Exercises: None

11. Lectures: Intelligence systems, and democracy and human rights: intelligence oversight (professional, parliamentary, civil, judicial);
Seminar: None

Exercises: None

12. Lectures: National (in)security: intelligence abuses and illegal action
Seminar: None

Exercises: None

13. Lectures: Supranational intelligence systems: controversies, dilemmas and achievements
Seminar: None

Exercises: None

14. Lectures: Republic of Croatia: national intelligence system - past, present and future
Seminar: None

Exercises: None

15. Lectures: Review of the overall teaching and preparing students (through discussion) for final oral examination
Seminar: None

Exercises: None

Literature



Dover, Robert; Goodman, S. Michael; Hillebrand, Claudia (2013.)(eds.) Routledge Companion to Intelligence Studies, London/New York: Routledge



Gill, P.; Marrin, S.; Pythian, M.(2009.)(eds.) Intelligence Theory: Key questions and debates, London/New York: Routledge.



*Johnson, K.L. (2007.) (ed.)
Handbook of Intelligence Studies,
London/New York: Routledge*

Computer and Engineering Graphics

129347

Lecturer



doc. dr. sc.
Zoran Domitran

Course Description

Introduction to technical standards, axonometric representation, orthogonal projection, cross sections and complete outfitting of technical documentation. Usage of computers for production of technical drawings. Getting basic knowledge for engineering information exchange (communication) by means of a technical drawing.

Study Programmes

» Group of Courses Armour, Field Artillery, Engineers, Technical Support and Infantry -> Military Engineering (Course) (*required course, 4th semester, 2nd year*)

Learning Outcomes

On successful completion of the course, students will be able to:

1. List basic standards in the field of technical drawings.
2. Repeat freehand sketching of horizontal, vertical and slanted lines and basic shapes. Ability to recognize and decompose complex to primitive bodies. Freehand isometric sketching of primitive bodies and complex bodies consisted of primitive ones.
3. Select appropriate viewing direction and determine projections required for its overall representation. Ability to make freehand projections of a simple machine part and its isometric drawing.
4. Select and make freehand section view appropriate for simple machine part. Ability to combine several different types of sections.
5. Recognize situations and apply rules and recommendations for representations of various shapes.
6. Analyze simple machine part and perform dimensioning based on assumed manufacturing process.
7. Recognize and distinguish between dimension tolerances and fits.
8. Produce and outfit part and assembly drawings.
9. Differentiate between capabilities and purpose of certain CAD systems, especially between approach to 2D and 3D.
10. Combine theoretical knowledge with usage of CAD systems.

Study Programme Learning Outcomes

Military Engineering

3 Basic technical knowledge

- 3.1. To identify, analyse, model and resolve military engineering problems by integrating basic knowledge of natural and technical sciences
- 3.2. To apply complex methodology by integrating engineering knowledge and

ECTS Credits 6.0

English Level L1

E-learning Level L2

Study Hours

Lectures 30

Laboratory exercises 35

Associate Lecturer

izv. prof. dr. sc. Dragan Žeželj

Teaching Assistant

dr. sc. Daniel Miler

Grading

Grading: Preliminary exams 50%, Single part project 20%, Assembly project 30%.

Obligations: Lecture and exercise attendance. For final grade student have to pass each of two preliminary exams. Single part and Assembly projects have to be satisfactorily graded as well. Prerequisites for final grade are submitted workbook and at least two finished assignments concerning AutoCAD drawings.

skills in military engineering practice

4. Personal and professional skills and characteristics

4.1 To identify and analyze a problem in the military environment

4.2 To model and resolve a problem and to interpret problem solution by using appropriate knowledge and methods

4.4 To develop self-study abilities and the need for and methods of life-long learning in traditional and virtual environment

6 Development, implementation and operation of technical systems in economic and social environment

6.1. To analyse and evaluate the effect of engineering solutions on society and environment

6.2. To apply and create engineering approaches in analysing and assessing products and processes in security environment

Screening of student's work

2.1 ECTS Midterm exam

2.5 ECTS Project

1 ECTS Exercise book

0.4 ECTS E-learning

6 ECTS

Forms of Teaching

» Lectures

» Lectures to one joint group during the semester.

» Exercises

» Design exercises in groups of 12-15 students.

» Partial e-learning

» Individual work on LMS system.

» Independent assignments

» Individual work on exercise book.

Week by Week Schedule

1. Lectures: The notion of projecting, projection types. Orthogonal projecting on two and more planes. Projecting of point, straight line and plane.
Seminar: Basics of orthogonal projecting, freehand sketching, projection analysis.
2. Lectures: Mutually positions: point on straight line, straight line and point in plane. Disposition of projections.
Seminar: Basics of orthogonal projecting, freehand sketching, synthesis of projections. Assessment.
3. Lectures: Cross sections of cylinder, cone and sphere with projecting plane.
Seminar: Axonometric representation, freehand sketching of isometric view.
4. Lectures: Standardization and standards; types of lines, technical letters, drawing formats, drawing scales.
Seminar: Sketching of orthogonal and isometric projections of machine parts - individual exercise.
5. Lectures: Basic notions and projecting rules, ISO 128. Axonometric representation.
Seminar: Sketching of orthogonal and isometric projections of machine parts - individual exercise.
6. Lectures: Freehand sketching in orthogonal projection. Recommendations for representations of various shapes; simplifications.
Seminar: Sketching of orthogonal and isometric projections of machine parts - individual exercise.

7. Lectures: Preliminary exam 1: Orthogonal projections, isometric view. Dimensioning, ISO 129 - technological approach.
Seminar: Sketching of orthogonal projections (and cross section) of simple machine assembly - individual exercise.
8. Lectures: Dimensioning, ISO 129.
Seminar: Sketching of orthogonal projections (and cross section) of simple machine assembly - individual exercise.
9. Lectures: Dimensioning, ISO 129. Surface finish symbols.
Seminar: Simple machine assembly - freehand isometric view.
10. Lectures: Assembly drawings. Freehand sketching of isometric view. Basics of computer graphics. 2D curves, coordinate systems, transformation matrix, projections.
Seminar: Simple machine assembly - freehand isometric view.
11. Lectures: Using of computers in working out (preparing) the technical documentation Computer aided drafting.
Seminar: Introduction to 2D CAD system. Coordinate systems, basic drawing entities, interface - assistant supervised.
12. Lectures: Preliminary exam 2: Formal knowledge in technical drawing. A survey of computer graphics application areas in engineering.
Seminar: Creating of machine part manufacture drawing, using 2D CAD system -individual exercise.
13. Lectures: Dimension tolerances and fits on manufacture and assembly drawings.
Seminar: Creating of machine part manufacture drawing, using 2D CAD system -individual exercise.
14. Lectures: Preliminary exam 2: Dimensioning for manufacturing. Geometric tolerances; symbols on technical drawings.
Seminar: Finishing of technical drawings and submission.
15. Lectures: Outfitting the technical documentation. Examples
Seminar: Finishing of technical drawings and submission.

Literature



Milan Kljajin, Milan Opalić (2016). *Inženjerska grafika, Drugo dopunjeno izdanje*, Strojarski fakultet u Slavonskom Brodu



Zvonko Herold, Dragan Žeželj (2005). *Inženjerska grafika, Metodička vježbenica - interna skripta*, Fakultet strojarstva i brodogradnje

Additional Literature



Ksenija Horvatić- Baldasar, Ivanka Babić (2001). *Nacrtna geometrija*, Sand d.o.o.



Nenad Bojčetić, Damir Deković, Zvonko Herold, Dorian Marjanović, Danijel Rohde, Rajko Tomić, Dragan Žeželj (2003). *Računalna i inženjerska grafika - podloge za vježbe AUTOCAD, interna skripta*, Fakultet strojarstva i brodogradnje

Similar Courses

- » Engineering Computer Applications, The Citadel
- » Engineering Drawing, Stanford University

Computer and Telecommunication Devices, Systems and Networks

130152



Lecturers



doc. dr. sc.
Marin Vuković



doc. dr. sc.
Darko Možnik

Course Description

To introduce students to the basics of planning and monitoring of telecommunication networks - from traffic-technical aspects, tactical and technical characteristics, operation and basic maintenance of organizational telecommunication devices and related equipment, engineering / technical standards underlying telecommunications systems Armed Forces (NATO standards).

Study Programmes

- » Signals -> Group of Courses Signals, Monitoring and Guidance and Air Defence (Course) (required course, 7th semester, 4th year) (Note: course not offered in this academic year.)
- » Monitoring and Guidance -> Group of Courses Signals, Monitoring and Guidance and Air Defence (Course) (required course, 7th semester, 4th year) (Note: course not offered in this academic year.)
- » Air Defence -> Group of Courses Signals, Monitoring and Guidance and Air Defence (Course) (required course, 7th semester, 4th year) (Note: course not offered in this academic year.)

Learning Outcomes

On successful completion of the course, students will be able to:

1. Differentiate based business communications system MD 110.
2. Apply transmission technology ADSL, ISDN
3. Analyze the error monitoring system and network management
4. Identify telecommunications infrastructure
5. Distinguish terminal equipment: telephones, IP, analog, digital, fax, fax, and innovation.
6. Apply the methods of preparing the initial elements for setting up funds for the operation
7. Analyze errors when installing the equipment to work, and work on them
8. Plan types telecom infrastructure.
9. Construct the structure and elements of tactical multichannel telecommunication networks
10. Distinguish networks

Study Programme Learning Outcomes

Military Engineering

ECTS Credits	6.0
English Level	Lo
E-learning Level	L1
Study Hours	
Lectures	45
Exercises	30

Associate Lecturers

prof. dr. sc. Gordan Ježić
Renato Šoić, mag. ing. comp.

Teaching Assistant

mr. sc. Vinko Zebić, pred.

Grading

Grading: Assessment by tests, final written exam and evaluation during practical work. Obligations: Regularity in lectures and exercises

Prerequisites for

Practical Military Training - Air Defence
Practical Military Training - Monitoring and Guidance
Practical military training - Signals

- 1 Basic competences of the military profession
 - 1.1 To communicate, organize and plan effectively the activities of a basic tactical unit
 - 1.2 To assess the situation and implement appropriate tactics for a basic tactical unit
 - 1.3 To make decisions independently and command a basic tactical unit
 - 1.4 To train, develop and assess the abilities of soldiers and a basic tactical unit
- 2 Special military competences
 - 2.1 To analyse the environment and to develop and apply tactics of the branch/service
 - 2.2 To manage maintenance of combat and non-combat assets, ammunitions and mines of the branch/service
 - 2.3 To use combat and non-combat assets of the branch/service in a professional way
- 3 Basic technical knowledge
 - 3.1. To identify, analyse, model and resolve military engineering problems by integrating basic knowledge of natural and technical sciences
 - 3.2. To apply complex methodology by integrating engineering knowledge and skills in military engineering practice
4. Personal and professional skills and characteristics
 - 4.1 To identify and analyze a problem in the military environment
 - 4.2 To model and resolve a problem and to interpret problem solution by using appropriate knowledge and methods
 - 4.3 To assume military, professional and ethical responsibility
5. Social skills (team work and communication)
 - 5.1 To communicate effectively in the Croatian and English language applying modern presentation skills and techniques
 - 5.2 Organize and plan individual and team work in international and interdisciplinary work groups
- 6 Development, implementation and operation of technical systems in economic and social environment
 - 6.1. To analyse and evaluate the effect of engineering solutions on society and environment
 - 6.2. To apply and create engineering approaches in analysing and assessing products and processes in security environment
 - 6.3. To apply and select knowledge and relevant facts from different areas, and to assume responsibility for assessing the impact of military technology in social environment

Screening of student's work

- 2.5 ECTS Lectures attendance
- 1 ECTS Experimental work
- 0.5 ECTS Written exam
- 1 ECTS Research
- 1 ECTS Seminar report

- 6 ECTS

Forms of Teaching

- » Lectures
 - » Lectures, with lecture notes and presentations available in advance on the web.
- » Seminars and workshops
 - » Work on telecommunication systems and network

- » Exercises
 - » Telecommunication systems examples
- » Field work
 - » Practical exercises on real systems

Week by Week Schedule

1. Lectures: T-1 Telecommunications systems, types and characteristics; - telecommunications networks and services, telecommunication traffic, information transfer technology: PSTN, ISDN, Internet, xDSL, ATM, FR. Seminar: T-1 Canal network develop a plan scheme and other documents on which the network raises
2. Lectures: T-2 Business Communication System MD-110 is, in general, the structure of MD-110
Seminar: T-2 Multiservice network development plan for network and application in practice, the production of the complete documentation for multiservice network
3. Lectures: T-3 Systems for monitoring and network management tools for monitoring and management, organization, management services, and management functions
Seminar: T-3 Terminal equipment - work with the terminal equipment, preparation for work, installation of equipment in operation; - linking with other systems; - inspection and maintenance of equipment
4. Lectures: T-4 Telecommunications infrastructure, standardization DTK infrastructure, standardization structured cabling
Seminar: T-4 Telecommunications infrastructure - installation of telecommunications infrastructure - connecting infrastructure systems; - supply and maintenance of infrastructure.
5. Lectures: T-5 Terminal (users) equipment; HIT-1, DAP-210, MLT-210; IP phones, analog phones, digital phones, fax machines.
Seminar: T-5 Telecommunication systems - use system, the operation of the systems, - the transmission of information through a system.
6. Lectures: T-6 Switching elements of the network, in general, kind, shots 10 CPX200/300; MD110, IP switching.
Seminar: T-6 Creating a computer network (installation of network equipment, setting up a network server, configure the client computer, configure and add a network printer, configure Internet access, configure sharing resources) (5)
7. Lectures: T-7 Telecommunications infrastructure; lines: permanent and temporary / bojišnički; Telecommunication Infrastructure
Seminar: T-7 network administration and network security (fundamentals administration and responsibilities of administrators, account management, firewall and anti-virus protection, network management software, worry about network performance, making rezervih data backups, recovery from system crashes) (4)
8. Lectures: T-8 Introduction to computer networks (the concept of a computer network, the reasons for networking, network types, network topology) (2)
Seminar: Transmission media I
9. Lectures: T-9 Network protocols and standards (the concept of standards and protocols, OSI model, Ethernet protocol, TCP / IP, IPX / SPX protocols, other protocols) (2)
Seminar: Transmission media II
10. Lectures: T-10 Hardware computer network (server - computer, network cards, network cables, hub, switch, router (router)) (2)
Seminar: Transmission media III
11. Lectures: T-11 Network Operating Systems (characteristics of network operating systems, Microsoft Server OS, Unix / Linux, Novell Netware, AppleMac OS / X server) (1)
Seminar: Transmission media IV

12. Lectures: T-12 TCP / IP and the Internet (TCP / IP protocols, IP addressing, the concept and the use of DHCP, DNS, and FTP) (3)
Seminar: Computer network I
13. Lectures: T-13 Development of computer networks (network planning, installation, networking equipment, set up network servers, configure the client computer, configure and add a network printer, configure Internet access, configure sharing resources) (2)
Seminar: Computer network II
14. Lectures: T-14 Administiranje networks and network security (basic administration and accountability administrator, account management, firewall and anti-virus protection, network management software, worry about network performance, your backup data recovery from system crashes) (2)
Seminar: Computer network III
15. Lectures: Final exam (2)
Seminar: Computer network IV

Literature



1.- Lekcije predmetnih
nastavnika



2.- STANAG (NATO) iz
područja KS sustava

Similar Courses

» Networking, West Point

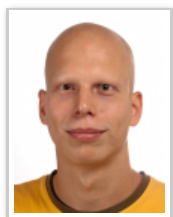
Computer Architecture and Operating Systems

129892

Lecturers



doc. dr. sc.
Leonardo
Jelenković



doc. dr. sc.
Daniel Hofman

Course Description

Acquire basic knowledge about processor internal operations. Learn how processor fetches, decodes and executes instructions. Understand the reasons for the division of the operating system on the layers and subsystems. Know the function of the each subsystem. Detail procedures for operating system maintenance.

Study Programmes

- » Signals -> Group of Courses Signals, Monitoring and Guidance and Air Defence (Course) (*required course, 5th semester, 3rd year*)
- » Monitoring and Guidance -> Group of Courses Signals, Monitoring and Guidance and Air Defence (Course) (*required course, 5th semester, 3rd year*) (Note: course not offered in this academic year.)
- » Air Defence -> Group of Courses Signals, Monitoring and Guidance and Air Defence (Course) (*required course, 5th semester, 3rd year*) (Note: course not offered in this academic year.)

Learning Outcomes

On successful completion of the course, students will be able to:

1. Explain the operation and basic parts of the processor and the computer.
2. Explain how to fetch, decode and execute instructions in the processor.
3. Explain the basic algorithms in assembler.
4. Explain the reasons for the division of the operating system on the layers and subsystems.
5. Explain the operation of basic operating system components (subsystems).
6. Apply actions for operating system maintenance.

Study Programme Learning Outcomes

Military Engineering

3 Basic technical knowledge

- 3.1. To identify, analyse, model and resolve military engineering problems by integrating basic knowledge of natural and technical sciences
- 3.2. To apply complex methodology by integrating engineering knowledge and skills in military engineering practice

4 Personal and professional skills and characteristics

- 4.1 To identify and analyze a problem in the military environment
- 4.2 To model and resolve a problem and to interpret problem solution by using appropriate knowledge and methods

ECTS Credits 5.0

English Level Lo

E-learning Level L1

Study Hours

Lectures 45

Exercises 15

Grading

Grading: It is necessary to achieve 50% of the total number of points for the positive grade. Obligations: Attendance and participation in class, learning course lectures, homeworks, exams.



- 4.4 To develop self-study abilities and the need for and methods of life-long learning in traditional and virtual environment
- 5. Social skills (team work and communication)
 - 5.3 To effectively present work results both orally and in writing to stakeholders in the military environment

Screening of student's work

- 2 ECTS Midterm exam
- 3 ECTS Written exam
- 5 ECTS

Forms of Teaching

- » Lectures
 - » weekly
- » Exercises
 - » weekly
- » Laboratory
 - » once per month

Week by Week Schedule

1. Lectures: Computer architecture. Introduction to the architecture of the processor. CISC and RISC processors.
Seminar: Introduction to the processor architecture
2. Lectures: The basic model of RISC processors. Connecting the processor and memory.
Seminar: Number formats
3. Lectures: Processor instruction set.
Seminar: Simple code written in assembler
4. Lectures: Datapath and execution of instructions. Bus. Communication with the bus.
Seminar: Subroutines and transmission parameters to subroutines
5. Lectures: Pipeline. Data input-output.
Seminar: Unconditional I/O units
6. Lectures: Interrupts. Software and hardware I/O units.
Seminar: Conditional I/O units
7. Lectures: Memory organization. Cache memories. Basics of virtual memory.
Seminar: I/O units with interrupt capabilities
8. Lectures: Role of the operating system in computer system. Components of operating systems - subsystems.
Seminar: Operating systems. Programs. Libraries (DLL). User files. File organization on Windows and Linux systems.
9. Lectures: Controlling input-output devices. Direct access to input-output devices. Interrupts. Direct memory access. Interrupt subsystem.
Seminar: Device drivers. Resources (addresses, interrupts) used by devices.
10. Lectures: Multitasking. Multithreading. Support for multithreading. Operating system kernel. Thread scheduling. Synchronization and communication: semaphores, message queues, pipes, signals.
Seminar: Program, process, thread. Scheduling. Priorities.
11. Lectures: Memory management. Logical and physical addresses. Static memory management. Dynamic memory management. Paging. Processes. Hierarchical organization of cache memory.
Seminar: Memory. Memory usage: allocated, used, in pagefile.
12. Lectures: Hard drive (disk) properties. Disk as complementary storage for memory management. File system. File attributes. File system types and their properties. File subsystem (in operating system).
Seminar: File system. File properties. File access rights.

13. Lectures: Computer in distributed system. Network terms: IP address, socket, local network, router, client, server, DNS, Web, e-mail. Network subsystem (in operating system).
Seminar: Setting up network subsystem. Network protocols.
14. Lectures: Managing operating system: updates, antivirus protection, firewall. Backup: operating system files, user files.
Seminar: Operating system updates. Antivirus programs. Firewall. Creating backups. Cloud data storage and services.
15. Lectures: Final exam.
Seminar: Preparations for final exam.

Literature



Leo Budin, Marin Golub,
Domagoj Jakobović, Leonardo
Jelenković (2010). *Operacijski
sustavi*, Element, Zagreb

Additional Literature



Basch, D.; Žagar, M.; Mihaljević,
B.; Orlić, M.; Knezović, J.;
Bosnić, I.; Hofman, D.; Kovač,
M. (2012). (2012). *Zbirka
programskih zadataka za
procesor FRISC. Fakultet
elektrotehnike i računarstva,
Sveučilište u Zagrebu*

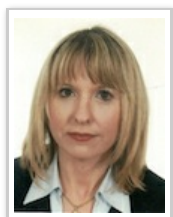
Similar Courses

- » Computer Systems Architecture, Stanford University

Contemporary Civilizations

129942

Lecturer



prof. dr. sc.
Lidiya Kos-Stanišić

ECTS Credits 3.0

English Level L1

E-learning Level L1

Study Hours

Lectures 30

Seminar 15

Associate Lecturer

dr. sc. Borna Zgurić

Grading

Grading: Students can take the exam through two tests (after 6 and 14 meeting) or the written exam during exam period, which is 60 points. Attendance and activity carries 10 points, a paper or a presentation 30 points. 60-69 = sufficient, 70-79 = good, 80-89 = very good, 90-100 = excellent Obligations: attend to two thirds of lectures and seminars, held a seminar presentation or write paper

Course Description

It discusses the origins and achievements of contemporary civilizations: Western, Chinese, Japanese, Hindu, Islamic, Orthodox, African and Latin American. The aim is to introduce the adequate knowledge of the political and cultural history of other parts of the world, and an understanding of contemporary issues and relationships.

Study Programmes

» Military Leadership and Management (Study) (*required course, 3rd semester, 2nd year*)

Learning Outcomes

On successful completion of the course, students will be able to:

1. Collect and organize relevant information
2. Systemic thinking to solve given problems
3. Manage time and work in a team
4. Take into account the historical, social and cultural differences of different civilizations
5. Write and present a professional or scientific work in which they will develop and defend the thesis
6. Set priorities and evaluate the options available to decision makers

Study Programme Learning Outcomes

Military Leadership and Management

1 Basic competences of the military profession

1.7 To be acquainted with and to respect historical, social and cultural diversities in the context of military activities

3 Basic competences in social and humanistic sciences

3.1 To analyze and interpret processes in international environment, and to act within international alliances and organizations in which the Republic of Croatia participates

3.6 To apply knowledge of the military history in resolving tactical and operational problems

3.8 To apply results of intelligence and counter-intelligence activities in leadership and management of military units

5. Social skills (team work and communication)

5.2 Organize and plan individual and team work in international and interdisciplinary work groups

5.3 To effectively present work results both orally and in writing to stakeholders in the military environment

Screening of student's work

- 1 ECTS Lectures attendance
- 2 ECTS Midterm exam
- 3 ECTS

Forms of Teaching

- » Lectures
 - » ex cathedra
- » Seminars and workshops
 - » student presentation
- » Field work
 - » active and experiential learning

Week by Week Schedule

1. Lectures: Introductory lecture
Exercises: seminar presentations
2. Lectures: Introduction in the subject of contemporary civilizations
Exercises: seminar presentation
3. Lectures: Cradle of civilization - Mesopotamia, Egypt, Judaism
4. Lectures: Foundations of Western Civilization - antiquity, Christianity, humanism
Exercises: seminar presentation
5. Lectures: The expansion of Western civilization / Reformation
6. Lectures: The expansion of Western civilization / Reformation
Exercises: seminar presentation
7. The first colloquium
8. Lectures: Orthodox civilization
9. Lectures: Orthodox civilization
10. Lectures: Islamic civilization and the Middle East
Exercises: seminar presentation
11. Lectures: Latin American Civilization
Exercises: seminar presentation
12. Lectures: India-Hindu Civilization
Exercises: seminar presentation
13. Lectures: Chinese civilization
14. Lectures: Japan and the Far East Maritime
African civilizations
Exercises: seminar presentation
15. The second colloquium

Literature



N. Ferguson (2012). *Civilizacija Zapad i ostali*, Profil, Zagreb



F. Zakaria (2009). *Svijet nakon Amerike*, Fatura, Zagreb



E. Kale, (2007). *Povijest civilizacija*, FPZG, Zagreb



(2002). *Opći religijski leksikon*, Leksikografski zavod M. Krleža, Zagreb,



*Čitanka-izabrani skenirani
tekstovi*

Similar Courses

» Contemporary Civilization,, West Point

Contemporary Combat Systems and Equipment

129981

Lecturer



prof. dr. sc.
Dario Matika

Course Description

Familiarize students with the development of modern combat systems and equipment, and the possibility of their use in contemporary operations. Acquire the basic understanding of the combat systems and equipment most appropriate for the Armed Forces and its modernization. Have an insight into NATO combat systems encountered by AF officers in the joint operations.

Study Programmes

» Infantry -> Military Leadership and Management (Course) (*elective course for the 7th semester mlm-infantry study, 7th semester, 4th year*)

Learning Outcomes

On successful completion of the course, students will be able to:

1. Explain key characteristics of the contemporary combat systems and equipment
2. Analyze and interpret relevant data on contemporary combat systems and equipment
3. Demonstrate knowledge of the use of books and contemporary literature in identifying the typology and the important characteristics of combat systems and equipment
4. Explain the process typical for the acquisition of the contemporary combat systems and resources and foresee the influence of the duration of the process of acquisition
5. Explain the use of combat systems and equipment in relation to the needs of asymmetric warfare
6. Explain the present and foresee future trends of the development of combat systems and equipment

Study Programme Learning Outcomes

Military Leadership and Management

- 1 Basic competences of the military profession
 - 1.2 To assess the situation and implement appropriate tactics for a basic tactical unit
 - 1.6 To nourish, channel and use creativity in accomplishing missions of a basic tactical unit
- 2 Special military competences
 - 2.2 To manage maintenance of combat and non-combat assets, ammunitions and mines of the branch/service

ECTS Credits	4.0
English Level	Lo
E-learning Level	L1
Study Hours	
Lectures	30
Seminar	15

Associate Lecturers

mr. sc. Darko Duhović
Mario Klun, mag. ing. mech.
Ivan Milanović
Nikola Mostarac
Darko Puklavec, pred.
Mladen Trnski, pred.
dr. sc. Ante Vučemilović, pred.

Teaching Assistant

Tomislav Kravaica

Grading

Grading: From seminar work is necessary to achieve 50% of the points as a prerequisite for the written final exam. Overall evaluation is formed as the sum of points from the seminar work and a written final exam. It is necessary to get at least 50% of the points from the sum of scores seminar and written final exam. Table linking the evaluation of the total number of points is formed at the beginning of the academic year: 100 - 87.5% = 5 (A), 87.5% - 75% = 4 (B), 75% - 62.5% = 3 (C), 62.5% - 50% = 2 (D), 49% and lower = 1 (F). Obligations: Students are required to attend lectures. Before the start of the program, students must choose a seminar offered and apply for it to the course leader.

- 2.3 To use combat and non-combat assets of the branch/service in a professional way
- 3 Basic competences in social and humanistic sciences
 - 3.4 To manage processes in the military environment using modern technologies
- 4. Personal and professional skills and characteristics
 - 4.2 To model and resolve a problem and to interpret problem solution by using appropriate knowledge and methods
- 5. Social skills (team work and communication)
 - 5.3 To effectively present work results both orally and in writing to stakeholders in the military environment

Screening of student's work

- 1 ECTS Lectures attendance
- 2 ECTS Written exam
- 1 ECTS Seminar report
- 4 ECTS

Forms of Teaching

- » Lectures
 - » Lectures will be conducted through presentations and active interaction between lecturers and students.
- » Seminars and workshops
 - » The Seminars will be geared toward practical application of knowledge and skills on concrete, real scenarios and examples. They will be conducted in groups up to 25 students.

Week by Week Schedule

1. Lectures: Introduction to the subject, seminars and exercises, learning outcomes and the exam procedures
Exercises: The main characteristics of the combat system from the old ages to the invention of black powder
2. Lectures: Armed Forces as a regulated system of collective defence
Exercises: Development of combat systems of the twentieth century (I and II. WWII)
3. Lectures: Development of combat systems, structures and equipment through history
Exercises: Development of combat systems during the Cold War
4. Lectures: Combat system, equipment and its components
Exercises: Small arms and light weapons
5. Lectures: Surveillance System and Electronic Reconnaissance
Exercises: Infantry and anti-armor weapons
6. Lectures: Strategic weapons systems
Exercises: Landmines, hand bombs and explosives
7. Lectures: Tactical weapons systems
Exercises: Nuclear, chemical and biological weapons
8. Lectures: Land Systems and Equipment
Exercises: Missile weapons and systems
9. Lectures: Air Systems and Equipment
Exercises: Artillery and Fire Control System
10. Lectures: Naval Systems and Equipment
Exercises: Combat and non-combat vehicles
11. Lectures: Weapons systems, modern arms and tools
Exercises: Combat aircraft, helicopters and air defence

12. Lectures: Combat systems of NATO and their perspectives
Exercises: Warships and coast guard vessels
13. Lectures: Combat Systems and Equipment of asymmetrical warfare and counter-terrorism activities
Exercises: Command and Communication Information Systems
14. Lectures: Prospects of further development of combat systems and equipment in the world
Exercises: Electronic combat systems and equipment
15. Lectures: Final exam
Exercises: Combat systems and equipment for the future

Literature



Grgić-Zarkić: Zrakoplovno naoružanje, 2006



MORH, Sredstva z aPO borbu, 1996



Janes, RadarElectronic warfare



*S. Bokan, I. Jukić, Z. Orehovec, M. Radalj, B. Ilijaš, A. Čížmek
Oružja za masovno uništavanje: nuklearno, kemijsko, biološko i toksinsko oružje, Pučko otvoreno učilište, Zagreb, 2004*



2. AJP-3.8-ALIDE JOINT DOCTRINE FOR NBC DEFENCE (2003.), NATO Standardization Agency, Brussels, Belgium

Corrosion and Protection

130157

Lecturer



prof. dr. sc.
Vesna Alar

ECTS Credits 4.0

English Level Lo

E-learning Level L1

Study Hours

Lectures 30

Exercises 15

Associate Lecturer

doc. dr. sc. Vinko Šimunović

Teaching Assistant

doc. dr. sc. Ivan Stojanović

Grading

Grading: Preliminary or final exam. Obligations: Regular attendance at lectures and auditory exercises.

Course Description

Detail access, review and analysis of corrosion damages of structural materials and modern technology of corrosion protection.

Study Programmes

» Technical Support -> Group of Courses Armour, Field Artillery, Engineers, Technical Support and Infantry (Course) (*required course, 7th semester, 4th year*)

Learning Outcomes

On successful completion of the course, students will be able to:

1. Identify the corrosion damages of structural materials
2. Know the corrosion properties of major structure materials
3. Know the corrosion protection methods
4. Know to apply the modern corrosion protection methods
5. Know to apply corrosion inhibitors for corrosion protection of army equipment
6. Know the corrosion testing methods

Study Programme Learning Outcomes

Military Engineering

2 Special military competences

2.2 To manage maintenance of combat and non-combat assets, ammunitions and mines of the branch/service

3 Basic technical knowledge

3.1. To identify, analyse, model and resolve military engineering problems by integrating basic knowledge of natural and technical sciences

4. Personal and professional skills and characteristics

4.4 To develop self-study abilities and the need for and methods of life-long learning in traditional and virtual environment

5. Social skills (team work and communication)

5.1 To communicate effectively in the Croatian and English language applying modern presentation skills and techniques

5.3 To effectively present work results both orally and in writing to stakeholders in the military environment

6 Development, implementation and operation of technical systems in economic and social environment

6.4. To plan, organise, create and implement engineering testing, and to

analyse and interpret the results

Screening of student's work

0.1 ECTS Lectures attendance
3.5 ECTS Midterm exam
0.4 ECTS Project
0 ECTS Other activities I (describe)
4 ECTS

Forms of Teaching

- » Lectures
- » Exercises
- » Independent assignments

Week by Week Schedule

1. Lectures: Chemical and electrochemical damages. Corrosion environments.
Seminar: Reviews and analysis corrosion damages with chemical and electrochemical corrosion.
2. Lectures: Phenomena of corrosion damages.
Seminar: Review and analysis samples different structural materials.
3. Lectures: Corrosion testing. Review, test methods, standards.
Seminar: Visit to the laboratory for corrosion testing.
4. Lectures: Corrosion testing in salt spray chamber. Corrosion testing in humidity chamber.
Seminar: Preparation samples for corrosion testing in salt and humidity chamber.
5. Lectures: Pitting corrosion . testing, standards. Intergranular corrosion.
Seminar: Preparation of samples and pitting corrosion testing.
6. Lectures: Bimetallic corrosion, testing, standards. Stress corrosion , testing, standards.
Seminar: Preparation samples for bimetallic and intergranular corrosion testing.
7. Lectures: Other types corrosion - selective corrosion, erosion corrosion, cavitation corrosion- testing-standards.
Seminar: Preparation samples for corrosion testing.
8. Lectures: Electrochemical methods of corrosion testing.
Seminar: Preparation samples for electrochemical corrosion testing.
9. Lectures: Protection with coatings systems. Principles, division of coating, application. Systems of corrosion protection.
Seminar: Types of coatings witch are used in technology of corrosion protection.
10. Lectures: Metallic coatings.
Seminar: Preparation samples and application of metallic coatings in laboratory. Hot dip galvanizing.
11. Lectures: Coatings corrosion protection. Shop primer.
Seminar: Practical review of coating thickness measurement.
12. Lectures: Corrosion protection by changing the environment. Corrosion inhibitors.
Seminar: Review of different methods in corrosion protection by changing the environment. Corrosion inhibitors.
13. Lectures: Electrochemical methods of corrosion protection.
Seminar: Preparation samples and cathodic protection.
14. Lectures: Corrosion protection by material selection.
Seminar: Review of corrosion resistance of modern structural materials.
15. Lectures: Corrosion protection by proper structural design.
Seminar: Analysis and review structural results.

Literature



Ivan Juraga, Vesna Alar, Ivan Stojanović (2014). *Korozija i zaštita premazima*, Fakultet strojarstva i brodogradnje



I. Esih (2003). *Osnove površinske zaštite*, FSB, Zagreb,



(2003). *Corrosion: Fundamentals, Testing, and Protection, ASM Handbook Vol. 13*, ASM International, Ohio, USA



D.A. Jones: (1996). *Principles and prevention of corrosion*, Principles and prevention of corrosion

Crime Investigation

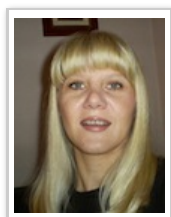
129996



Lecturers



doc. dr. sc.
Željko Karas



doc. dr. sc.
Dijana Gracin

Course Description

Acquisition of basic knowledge on empirical scientific research and best practice in detecting and investigating crimes. Developing basic skills required for inquiries and evidentiary measures in order to collect useful data for criminal proceedings. Developing skills for management of criminal investigation.

Study Programmes

» Infantry -> Military Leadership and Management (Course) (*elective course for the 7th semester mlm-infantry study, 7th semester, 4th year*)

Learning Outcomes

On successful completion of the course, students will be able to:

1. Explain the role of crime investigation
2. Compare the reactive and proactive criminal investigation and intelligence led policing
3. Understand the relationship between material and personal evidence, and the solvability factors
4. Acquire the skills of conducting inquiry measures
5. Acquire the skills of conducting evidentiary actions
6. Understand the methods of forensic science or criminalistics
7. Understand basic methods of investigating certain group of crimes
8. Critically evaluate collected information and write criminal report

Study Programme Learning Outcomes

Military Leadership and Management

1 Basic competences of the military profession

- 1.1 To communicate, organize and plan effectively the activities of a basic tactical unit
- 1.4 To train, develop and assess the abilities of soldiers and a basic tactical unit
- 1.6 To nourish, channel and use creativity in accomplishing missions of a basic tactical unit

2 Special military competences

- 2.2 To manage maintenance of combat and non-combat assets, ammunitions and mines of the branch/service

3 Basic competences in social and humanistic sciences

- 3.4 To manage processes in the military environment using modern technologies

ECTS Credits 5.0

English Level Lo

E-learning Level L1

Study Hours

Lectures 45

Seminar 15

Exercises 20

Teaching Assistants

Luka Kovač, dipl. ing.
mr. sc. Vlado Kovačević
Tatjana Šolaja

Grading

Grading: Through points by which are evaluated activities defined in sections 2.9. i 2.8. Obligations: Active attendance and participation in lectures and exercises, preparation and presentation of papers, periodical exams.

4. Personal and professional skills and characteristics
 - 4.1 To identify and analyze a problem in the military environment
 - 4.2 To model and resolve a problem and to interpret problem solution by using appropriate knowledge and methods
 - 4.3 To assume military, professional and ethical responsibility
5. Social skills (team work and communication)
 - 5.3 To effectively present work results both orally and in writing to stakeholders in the military environment

Forms of Teaching

- » Lectures
- » Seminars and workshops
- » Exercises

Week by Week Schedule

1. Lectures: Basic notions, division of crime investigation science and criminalistics, relations with other disciplines. Historical development of crime investigation and criminalistics as a science, development of police and the role of the military units in historical development. Basic indicators of efficiency, statistical data, comparative analysis. Relationship between criminal investigation and the homeland security, combating terrorism and private security subjects.
Seminar: Analysis of the data on reported crimes, clearance rate and conviction rate

Exercises: Analysis of the data on reported crimes, clearance rate and conviction rate
2. Lectures: Solvability factors on the strategic level (urbanization, the structure of crime, type of offender, etc.) factors related to the investigative bodies (staff number, equipment, personal characteristics of investigators, etc.) factors related to the legal powers. Models of proactive and reactive criminal investigation, feasibility, prevention, contemporary policing strategies. Relation of personal and real evidence in the detection stage and in the evidentiary stage of the criminal process, the historical development of the relationship. Types of evidence, circumstantial and direct evidence, beyond reasonable doubt, impact of the circumstantial evidence on the criminal investigation, chain of circumstantial evidence, the most common circumstantial evidence.
Seminar: Analysis of differences of clearance rate of homicides and burglary, ratio of real evidence, exercise on circumstantial evidence

Exercises: Analysis of differences of clearance rate of homicides and burglary, ratio of real evidence, exercise on circumstantial evidence
3. Lectures: Sources of crime detection (crime reports of the members of armed forces, selfreports, discovering crime by own activities, informants, reports from other authorities, etc.), verification of authenticity. Formal crime report and cooperation with the State Attorney
Seminar: Receiving a criminal report

Exercises: Receiving a criminal report
4. Lectures: Tactical aspects of inquiries - interrogations methods (RPM, Reid's technique, Peace model, cognitive interview etc.), main controversies, formal interrogation of suspect and witnesses, nonverbal communication. Polygraph testing, types of tests, interpretation of the results. Profiling crimes and suspects.
Seminar: Exercising of unconflict interrogation and polygraph testing

Exercises: Exercising of unconflict interrogation and polygraph testing

5. Lectures: Tactical aspects of evidentiary measures - search of the premises, movables and persons. Objectives and types of search, tactics of conducting, finding concealed items. Body search of a persons and taking of intimate samples. Temporary seizure of objects. Collecting digital evidence, securing, content analysis and search using the software applications.
Seminar: Search of premises, vehicle, baggage and persons

Exercises: Search of premises, vehicle, baggage and persons

6. Lectures: Securing the crime scene. Criminal investigation (view) at the crime scene, investigation phases, finding, marking and collecting traces, other activities at the scene and area screening. Tactical issues of reconstruction and experiment. Inspection of a person or property, field search.
Seminar: Securing the crime scene and conducting crime scene investigation in premises and in nature

Exercises: Securing the crime scene and conducting crime scene investigation in premises and in nature

7. Lectures: Tactical issues of covert inquiry measures (Art 207 CPA), collecting information concealing the purpose of the collection or concealing the capacity of a officer, a trap, an ambush, secret surveillance of persons and vehicles. Identification of the telecommunication addresses. The tactics of using informants, their motives, cooperation and supervision, role of informants in the crime detection and its relationship with other evidence, intelligence led policing.
Seminar: Planning of trap, ambush and surveillance, working with informant

Exercises: Planning of trap, ambush and surveillance, working with informant

8. Lectures: Tactical issues of special evidentiary actions (Art 332 CPA) - undercover agents, sting operations, simulated undercover activities. Avoiding entrapment and agent provocateur. Technical measures of surveillance of communications, premises, people, controlled delivery of substances. The role of the crown witness in criminal investigations, witness protection programs.
Seminar: Applying for court order for undercover measures

Exercises: Applying for court order for undercover measures

9. Lectures: Tactical issues of eyewitness identification, types and methods of lineup, using images, videos, etc.. Sequential and simultaneous lineup, memory factors, choosing and accuracy. Identification of objects. Personal description. Detecting crime tools and objects.
Seminar: Lineup identification, personal description

Exercises: Lineup identification, personal description

10. Lectures: Military police crime report and additional report to the State Attorney, content and type, objects, sketches, photographs, reports, records on measures and actions. Assessment of levels of doubt, probable cause and reasonable suspicion. Arresting procedure and custody officer. The role of the crime investigation in criminal proceedings. The role of the military police in the criminal procedure stages, testimony before the court. Grounds for rejecting criminal reports or indictments, errors in evidence gathering.
Seminar: Writing a Criminal Report to the State Attorney's Office, Filling Arrestees Templates

Exercises: Writing a Criminal Report to the State Attorney's Office, Filling Arrestees Templates

11. Lectures: Forensic science (criminalistics) - natural sciences discoveries and technical methods of determining facts in crime investigation, basic principles, integrity of traces. Dactiloscopia, mechanical traces, documents forgery.
Seminar: Dactiloscopia Comparison, False Personal Documents

Exercises: Dactiloscopia Comparison, False Personal Documents

12. Lectures: Forensic science (criminalistics) - Biological traces, glass traces, chemical, toxic and explosive materials, intoxicating drugs and narcotics, textile fibers, soil et al. Identity of persons (PCR-RFLP, analysis of mitochondrial DNA et al.).
Seminar: Narcotic drugs, DNA results

Exercises: Narcotic drugs, DNA results

13. Lectures: Investigating crimes against humanity, war crimes and terrorism, investigation of offenses against the armed forces, crimes against the state. Basic forms and modus operandi, detecting the criminal offenses and sources, proactive work and risk analysis, enforcement of the urgent measures, securing of evidence, follow-up investigation of an unknown perpetrators, co-operation with other services, the criminal record and arrests. The role of crime investigation in the misdemeanours and disciplinary violations of armed forces members, process, the actions undertaken and the role of information in the proceedings.
Seminar: Complete investigation and documentaion of a simple offense in field of CID MP

Exercises: Complete investigation and documentaion of a simple offense in field of CID MP

14. Lectures: Investigating offenses against life, physical integrity and sexual freedom - detection, investigation and proving groups of offenses. Work at the crime scene, identification, preservation and collecting of material traces. Determination of the time, the cause and mechanism of death. Investigating property crime - detection, investigation and proving of offenses, basic forms of burglary, theft, robberies, larcenies, criminal case analytics. Situation when the offender is undetected.
Seminar: Complete investigation and documentaion of simple offense in field of CID MP

Exercises: Complete investigation and documentaion of a simple offense in field of CID MP

15. Lectures: Investigating organized crime, corruption and white-collar crime. Basic features of victimless crime, tactics of covert actions. Culture and profile of the military officers and the impact of solidarity on the criminal investigation. Tracing and confiscation of proceedings of crime. Identification of the basic factors for white-collar crime.
Seminar: Basic activities in complex crime case with unknown suspect

Exercises: Basic activities in complex crime case with undetected suspect

Literature



B. Pavišić, D. Modly, P. Veić
(2006), *Kriminalistika*, Golden
marketing-Tehnička knjiga,
Knjiga prva

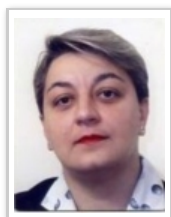


Karas, Ž., *Uvod u
kriminalistiku*, MUP, Zagreb,
2012.

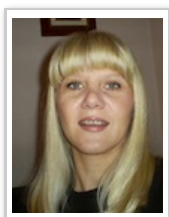
Criminology With the Criminal Law Basics

129997

Lecturers



red. prof. art. dr. sc.
Ksenija Butorac



doc. dr. sc.
Dijana Gracin

ECTS Credits	6.0
English Level	Lo
E-learning Level	L1
Study Hours	
Lectures	40
Seminar	15
Exercises	10

Grading

Grading: Based on the points earned by completing and evaluating activities defined in Section 2.9. Obligations: Active attendance and participation in lectures, preparation and presentation of seminar papers and taking the exam.

Course Description

Upon completion of the course students will acquire the basic knowledge of substantive criminal law, on the demarcation of crimes from other forms of criminal activity, to acquire the principles of substantive criminal law. Students will acquire the general and specific knowledge on the subject with regard to the criminal substantive law basics which will be necessary for coping with daily work when intervening in practice. Students will acquire the basic knowledge in a process of using the respective methodology aiming at evaluation of the real and hidden crime, for designing and implementation of simple models of crime prevention. All abovementioned will be necessary for coping with daily work when dealing with interventions in practice.

Study Programmes

- » Infantry -> Military Leadership and Management (Course) (*elective course for the 7th semester mlm-infantry study, 7th semester, 4th year*)

Learning Outcomes

On successful completion of the course, students will be able to:

1. Identify criminal act
2. Analyze certain criminal acts
3. Explain the basic principles and institutes on substantive criminal law
4. Identify the penalties and the basics of their execution
5. Explain the structure of the special part of the Criminal Code
6. Acquire the terminology and definitions to be used in the work
7. Develop critical thinking regarding situations arising in practice when dealing with interventions
8. Distinguish the legal from the criminological definitions of crime and socially pathological phenomena
9. Classify the criminological theories and apply them in practice
10. Compare the respective theoretical approaches and empirical research in relation to the particular forms of crime

Study Programme Learning Outcomes

Military Leadership and Management

- 1 Basic competences of the military profession
 - 1.2 To assess the situation and implement appropriate tactics for a basic tactical unit
- 2 Special military competences

- 2.1 To analyse the environment and to develop and apply tactics of the branch/service
- 3 Basic competences in social and humanistic sciences
 - 3.2 To comprehend civil-military relations and to act in accordance with democratic standards
 - 3.3 To apply International War and Humanitarian Law
- 4. Personal and professional skills and characteristics
 - 4.2 To model and resolve a problem and to interpret problem solution by using appropriate knowledge and methods

Screening of student's work

- 4 ECTS Written exam
- 2 ECTS Seminar report
- 6 ECTS

Forms of Teaching

- » Lectures
- » Seminars and workshops
- » Exercises
- » Independent assignments
- » Work with mentor

Week by Week Schedule

1. Lectures: Introduction – elementary knowledge in the area of legal dogmatics, the concept and the elements of the criminal act (2 classes)
Seminar: The concept and the elements of the criminal act: submitting false statements and non-reporting (1 class)

Exercises: Fundamental principles and institutes of a substantive criminal law (1 class)
2. Lectures: Unlawfulness and the reasons for exclusion of unlawfulness (2 classes)
Seminar: Unlawfulness and the reasons for exclusion of unlawfulness: case study (1 class)

Exercises: Accomplicity (1 class)
3. Lectures: Stages of committing criminal act (2 classes)
Seminar: Endangering life and property with a dangerous act or means (1 class)

Exercises: Stages of committing criminal act (1 class)
4. Lectures: Guilt and its elements, command responsibility and the issue of guilt, individual perpetrators of criminal act and participants (2 classes)
Seminar: Command responsibility and the issue of guilt: case study (1 class)

Exercises: Crimes against the life and the body (1 class)
5. Lectures: Criminal sanctions – types and their execution (2 classes)
Seminar: Disclosure of classified information (1 class)

Exercises: Crimes against the personal freedom (1 class)

6. Lectures: Crimes against humanity and human dignity, crimes against the life and the body, crimes against the property, crimes against personal freedom, privacy, honour and reputation, sexual freedom, crimes against the general security, public order and traffic safety, crimes against the acts of service (4 classes)
Seminar: Assault on a person under the international protection: case study (1 class)

Exercises: Crimes against the acts of service (1 class)

7. Lectures: Crimes against the the Armed Forces of the Republic of Croatia, crime against the Republic of Croatia (4 classes)
Seminar: Method for studying individual cases (2 classes)

Exercises: Crimes against the the Armed Forces of the Republic of Croatia (1 class)

8. Lectures: Defining criminology as a science, development of criminological thought, subject of criminology, relation between criminology and other sciences, methods of criminology, crimes as individual and mass social occurrence, traditional and wider concept of criminology, society reaction on criminal behaviour (3 classes)).
Seminar: Scope, structure and movement of crimes in the world and in the Republic of Croatia (2 classes)

Exercises: Crimes against the property (1 class)

9. Lectures: Method for studying individual cases (clinical, anamnestic), documentation method, content analysis, experiment, trial observing; Criminal profiling and criminal prognostics (3 classes)
Seminar: ,

Exercises: Scope, structure and movement of crimes in the world and in the Republic of Croatia (2 classes)

10. Lectures: Application of statistics in criminology and critique of statistical data sources, scope, structure and movement of crimes in the world and in the Republic of Croatia, methods of examination of dark number of crimes; triangulation method (4 classes)
Seminar: ,

Exercises: Modern crime theories and empirical researches (1 class)

11. Lectures: Criminological theory on the causes of criminal behaviours, modern neoclassicism, right realism, biological and psychological theories and explorations in criminology, sociological orientation in criminology: theory of anatomy, theory of cultural conflict and discrepancies, Chicago school and ecological theory, new social defence; theory of social interactionism and labelling, theory of differential association, control theories, modern crime theories and researches (4 classes)
Seminar: ,

Exercises: Situational prevention of crime (good practice examples) (1 class)

12. Lectures: A victim and the science on victims, theory and nature of victimisation, lifestyle theory, types of victims and „victimless felonies“ (3 classes)
Seminar: ,

Exercises: Criminological profiling and criminal prognostics (1 class)

13. Lectures: Crime of adult and juvenile offenders in the world and in Croatia, typology of delinquents-vulnerable groups, types of forms and typologies of offenders; Property crime in the world and in Croatia (2 classes)
Seminar: ,

Exercises: Formal and informal responses to crime (2 classes)

14. Lectures: Emerging forms of the personal data abuse and their sale on Darknet/ OSINT - Open Source (2 classes)
Seminar: ,

Exercises: Examples of criminal justice practice (2 classes)
15. Lectures: The abuse of modern technologies for criminal purposes - Deep Web / Darknet (2 classes)
Seminar:

Exercises: Examples of criminal justice practice (2 classes)

Literature



(2016). Cvitanović, L., Derenčinović, D., Horvatić, Ž. (2016.) *Kazneno pravo. Opći dio 1.* Zagreb. Hrvatska: Biblioteka Udžbenici, Pravni fakultet Sveučilišta u Zagrebu (odabrana poglavlja)



(2017). Cvitanović, L., Derenčinović, D., Horvatić, Ž. (2017.) *Kazneno pravo. Opći dio 2.* Zagreb. Hrvatska: Biblioteka Udžbenici, Pravni fakultet Sveučilišta u Zagrebu (odabrana poglavlja)



(2018). Cvitanović, L., Derenčinović, D., Turković, K., Munivrana Vajda, M., Dragičević Prtenjača, M., Maršavelski, A., Roksandić Vidlička, S. (2018.) *Kazneno pravo. Posebni dio.* Zagreb, Hrvatska: Biblioteka Udžbenici, Pravni fakultet Sveučilišta u Zagrebu (odabrana poglavlja)



Derenčinović, D., Getoš, A.M. (2008). *Uvod u kriminologiju s osnovama kaznenog prava.* Pravni fakultet Sveučilišta u Zagrebu, Zagreb



Singer, M., Kovčo Vukadin, I., Cajner Mraović, I. (2004). *Kriminologija.* Globus, Zagreb (poglavlje: I-VII)

Crises Management in CBRN Situation

130168



Lecturer



doc. dr. sc.
Vilko Mandić

Course Description

Teach students to apply theoretical knowledge in CBRN emergencies. Students to explain concepts in unconventional warfare, ROTA events and the role of emergency. Show students the psychological effects of a disaster. Present students ways of decision-making in the CBRN crisis.

Study Programmes

» Chemical, Biological, Radiological and Nuclear Defence -> Military Engineering
(Course) (required course, 7th semester, 4th year)

Learning Outcomes

On successful completion of the course, students will be able to:

1. Analyze type and nature of disaster
2. Explain the concept, importance and types of unconventional forms of warfare (CBRN terrorism)
3. Apply management and decisions principles in the CBRN crisis
4. Estimate the role and importance of emergency services, civil defence and military in disaster
5. Explain the concept and distinguish ROTA events
6. Estimate the psychological effects of disasters

Study Programme Learning Outcomes

Military Engineering

- 1 Basic competences of the military profession
 - 1.2 To assess the situation and implement appropriate tactics for a basic tactical unit
 - 1.4 To train, develop and assess the abilities of soldiers and a basic tactical unit
- 2 Special military competences
 - 2.1 To analyse the environment and to develop and apply tactics of the branch/service
 - 2.2 To manage maintenance of combat and non-combat assets, ammunitions and mines of the branch/service
 - 2.3 To use combat and non-combat assets of the branch/service in a professional way
- 3 Basic technical knowledge
 - 3.1. To identify, analyse, model and resolve military engineering problems by integrating basic knowledge of natural and technical sciences

ECTS Credits 4.0

English Level Lo

E-learning Level L1

Study Hours

Lectures 30

Laboratory exercises 15

Associate Lecturer

dr. sc. Dragutin Tušek, pred.

Teaching Assistant

Ivana Cetina, pred.

Grading

Grading: The final grade is determined by evaluating exercises and partial exam, pass the written and oral exam if a student fails the partial exam or wants a better grade. Obligations: Regularly attend classes. Be sure to participate in partial exams organized in semester for assessment.

ME

ME-M

ARM

ART

ENG

TS

IN-E

ME-E

SIG

MG

AD

CBR

MLM

IN-L

4. Personal and professional skills and characteristics
 - 4.2 To model and resolve a problem and to interpret problem solution by using appropriate knowledge and methods
5. Social skills (team work and communication)
 - 5.1 To communicate effectively in the Croatian and English language applying modern presentation skills and techniques
 - 5.3 To effectively present work results both orally and in writing to stakeholders in the military environment
- 6 Development, implementation and operation of technical systems in economic and social environment
 - 6.3. To apply and select knowledge and relevant facts from different areas, and to assume responsibility for assessing the impact of military technology in social environment

Screening of student's work

2 ECTS Midterm exam
 2 ECTS Written exam

 4 ECTS

Forms of Teaching

- » Lectures
 - » ex cathedra
- » Exercises
 - » ex cathedra
- » Field work
 - » polygon

Week by Week Schedule

1. Lectures: The type and nature of the disaster (the definition of concepts, classifications and types of disasters)
 Seminar: Visiting Civil Service Protection and Rescue (112)
2. Lectures: Unconventional forms of warfare (the definition of the term, kind of warfare)
 Seminar: Visiting Civil Service Protection and Rescue (112)
3. Lectures: The use of CBRN weapons in the form of unconventional warfare
 Seminar: Visiting Civil Service Protection and Rescue (112)
4. Lectures: Chemical Terrorism (definition of the term, the probability of implementation, examples)
 Seminar: Visiting Civil Service Protection and Rescue (112)
5. Lectures: Chemical accidents (definition of the term, timeliness issues, opportunities to avoid events of accidents, examples)
 Seminar: Visiting Civil Service Protection and Rescue (112)
6. Lectures: Nuclear terrorism (definition of the term, the probability of implementation, the possibilities of implementation)
 Seminar: A visit to the State Office for Nuclear Energy
7. Lectures: Nuclear accidents (definition of the term, the actuality of the problem, able to avoid the event of accidents, examples)
 Seminar: A visit to the State Office for Nuclear Energy
8. Lectures: Bioterrorism (definition of the term, the probability of implementation, enforcement capabilities, timeliness of such weapons)
 Seminar: A visit to the State Office for Nuclear Energy
9. Lectures: Bioakcidenti (definition of the term, the actuality of the problem, able to avoid the event of accidents, examples)
 Seminar: A visit to the State Office for Nuclear Energy

10. Lectures: ROTA events (definition of the concept, the classification of events according to the type of agents, examples)
Seminar: A visit to the State Office for Nuclear Energy
11. Lectures: The role of the emergency services and civil defence in disaster
Seminar: Visiting Battalion CBRN: Presentation Software NBC Analysis
12. Lectures: The role of the military in disaster (the need for connectivity services, coordinated action, the equipment for responding to disasters)
Seminar: Visiting Battalion CBRN: Presentation Software NBC Analysis
13. Lectures: The psychological effects of disasters (types of effects, ways to mitigate the effects)
Seminar: Visiting Battalion CBRN: Presentation Software NBC Analysis
14. Lectures: Management in the CBRN crisis (ways of management in crisis CBRN situations)
Seminar: Visiting Battalion CBRN: Presentation Software NBC Analysis
15. Lectures: Decisions in the CBRN crisis (the importance of making key decisions in crisis CBRN situations)
Seminar: Visiting Battalion CBRN: Presentation Software NBC Analysis

Literature



S. Bokan, I. Jukić, Z. Orehovec, M. Radalj, B. Ilijaš, A. Čížmek
Oružja za masovno uništavanje: nuklearno, kemijsko, biološko i toksinsko oružje, Pučko otvoreno učilište, Zagreb, 2004.;



AJP-3.8-ALIDE JOINT DOCTRINE FOR NBC DEFENCE (2003.), NATO Standardization Agency, Brussels, Belgium;



S. Barić, R. Barić: Asimetrično ratovanje i vojne doktrine; Veleučilište Velika Gorica, 2011. godina.



C.C. Harmon, Terorizam danas; Golden marketing, Zagreb, 2002.

Similar Courses

», The Citadel

Croatian Political History

129388



Lecturers



doc. dr. sc.
Stevo Đurašković



prof. dr. sc.
Zdravko Matić

ECTS Credits 4.0

English Level L2

E-learning Level L1

Study Hours

Lectures 30

Seminar 30

Grading

Grading: Two preliminary exams/ one final exam 75%, seminar (reaction papers, class participation, presentation) 25%. Obligations: Attendance to lectures and seminars.

Course Description

The aim of the course of lectures "Croatian Political History" is to familiarize students with Croatian state-creating policy from the begging of the modern state-creating process until the present moment. The special emphasis will be devoted to the political processes and development of political system, especially in respect to the Croatian nation- and state- building processes while Croatia was part of Austro-Hungary, as well of the Interwar and the Socialist Yugoslavia respectively.

Study Programmes

» Military Leadership and Management (Study) (*required course, 3rd semester, 2nd year*)

Learning Outcomes

On successful completion of the course, students will be able to:

1. Explain the development of Croatian state-building from the foundation of the Croatian state till present
2. Explain Croatian national identity-building processes from the begging of the 19th century till present
3. Describe Croatian political processes in the multinational polities of Habsburg Monarchy and Yugoslavia
4. Explain ideology and politics of main Croatian political parties in the 19th and the 20th century
5. Analyze the actions of the main agents of the Croatian politics during the WWII and in the period of the Socialist Yugoslavia.
6. Explain and analyze the struggle for Croatian independence during the Homeland War

Study Programme Learning Outcomes

Military Leadership and Management

- 1 Basic competences of the military profession
 - 1.7 To be acquainted with and to respect historical, social and cultural diversities in the context of military activities
- 3 Basic competences in social and humanistic sciences
 - 3.1 To analyze and interpret processes in international environment, and to act within international alliances and organizations in which the Republic of Croatia participates
 - 3.2 To comprehend civil-military relations and to act in accordance with democratic standards

- 3.6 To apply knowledge of the military history in resolving tactical and operational problems
- 4. Personal and professional skills and characteristics
 - 4.2 To model and resolve a problem and to interpret problem solution by using appropriate knowledge and methods
- 5. Social skills (team work and communication)
 - 5.3 To effectively present work results both orally and in writing to stakeholders in the military environment

Screening of student's work

- 1 ECTS Lectures attendance
- 2.25 ECTS Written exam
- 0.75 ECTS reaction papers, seminar participation
- 4 ECTS

Forms of Teaching

- » Lectures
 - » lecture
- » Seminars and workshops
 - » discussions about the assigned readings, presentations
- » Independent assignments
 - » assigned readings, reaction papers writing, preparation of presentation

Week by Week Schedule

1. Introduction to the course: explaining the course syllabus, tasks and students' workload and system of grading.
Lecture: Political history of the Croatian territories until the start of modern national identity-building processes.
2. Lecture: Political system of the Habsburg Monarchy.
Seminar: The Monarchy as a "community of Peoples" (Volksstämme); national identity-building processes in the Habsburg Monarchy.
3. Lecture: State-Creating Issue, the beginning of the Croatian national identity-building process and politics in Croatia 1830-1848. Seminar: Foundation of the first Croatian modern political parties- Illyrian Movement and Magjaron; the era of absolutism in Austria in the 1850s
4. Lecture: Austro-Hungarian Compromise 1867, Croatian-Hungarian Settlement 1868 and the politics in Croatia 1868-1918. Seminar: Croatian political parties in the Austro-Hungary, the terms of the bans (Viceroy) Ivan Mažuranić and Khuen Hedervary.
5. Lecture: Croatian Politics before and during the WWI and the foundation of the Kingdom of Serbs, Croats and Slovenes (Kingdom of SCS) in 1918. Seminar: Croatian Politics before and during the WWI and the foundation of the Kingdom of Serbs, Croats and Slovenes (Kingdom of SCS)
6. Lectures: Political System of the Kingdom of SCS. Seminar: Political Parties in the Kingdom of SCS; the politics of the Croatian Peasant Party and the Croatian National Question in the 1920s.
7. Lecture: The solution of the Croatian national question in the Kingdom of Yugoslavia and the establishment of the Banovina Hrvatska in the 1939. Seminar: the radical opposition- the communists and the Ustasha.
8. Midterm exam.
9. Lecture: Croatia during the WWII: The Independent State of Croatia vs. the Federal State of Croatia in Yugoslavia.
Seminar: Political System of the Independent State of Croatia (NDH) and the politics of the peasant, Ustasha and communist movement in Croatia during the WWII, the mass atrocities perpetrated by the Ustasha and by the Communists

10. Lecture: The foundation and consolidation of the communist dictatorship in Yugoslavia in the 1940s and the 1950s. Seminar: The creation of the Socialist Yugoslav Self-managing system, the national question in the Socialist Yugoslavia.
11. Lecture: Reforms of the political and economic system and the federalization processes in Yugoslavia in the 1960s and the 1970s. Seminar: Josip Broz Tito's statesman's role, Nonalignment Movement, the Ideology in the Socialist Yugoslavia.
12. Lectures: The Croatian Spring and its breakdown. Seminar: The position of Croatia in the Socialist Yugoslavia
13. Lectures: The crisis in Yugoslavia in the late 1970s and in the 1980s; the politics of Slobodan Milošević and the breakdown of the Socialist Yugoslavia. Seminar: The Great Serbian Nationalism in the 1980s and Memoranda of the Serbian Academy of Sciences and Arts from the 1986.
14. Lectures: The disintegration of the SFRY and the foundation of the Republic of Croatia. Seminar: Croatian Homeland War 1991-1995.
15. Final exam.

Literature



Josip Horvat (2009). *Povijest i kultura Hrvata kroz 1000 godina: gospodarski i društveni razvitak u 18. i 19. stoljeću*, Marjan Tisak, Split



Ljubomir Antić (ur.) (2006). *Hrvatska politika u XX. stoljeću*, Matica Hrvatska, Zagreb



Dušan Bilandžić (1999). *Hrvatska Moderna Povijest*, Golden Marketing, Zagreb



Zdenko Radelić (2006). *Hrvatska u Jugoslaviji: 1945-1991.: od zajedništva do razlaza*, Školska knjiga, Zagreb



S. Ramet, R. Lukić, K. Clewing (ur.) (2013). *Hrvatska od osamostaljenja: rat, politika, društvo, vanjski odnosi.*, Golden marketing- Tehnička knjiga, Zagreb



Ivo Banac (1995). *Nacionalno pitanje u Jugoslaviji*, Durieux, Zagreb



Cipek, Tihomir (2000). *Kraljevina SHS – ancien regime, u: Hans-Georg Fleck, Igor Graovac (ur.), Dijalog povjesničara/istoričara 2*, Zagreb: Zaklada Friedrich-Naumann

Data Structures, Software Engineering and Software Design

129416



Lecturers



izv. prof. dr. sc.
Tomislav Pribanić



doc. dr. sc.
Marija Seder

ECTS Credits 4.0

English Level Lo

E-learning Level L1

Study Hours

Lectures 45

Laboratory exercises 15

Associate Lecturer

izv. prof. dr. sc. Vedran
Podobnik

Teaching Assistant

doc. dr. sc. Jurica Babić

Grading

Grading: Class attendance is valued. On finals students undergo a oral exam.

Obligations: Attending classes and active participation in lectures. Solving problems and excercises.

Course Description

The goal of this course is to add the knowledge from of the Informatics and Programming course and to equip students with additional knowledge from software engineering. The students will be introduced with the advanced programming techniques and the whole software development life cycle (SDLC).

Study Programmes

» Signals -> Group of Courses Signals, Monitoring and Guidance and Air Defence (Course) (required course, 6th semester, 3rd year)

Learning Outcomes

On successful completion of the course, students will be able to:

1. Identify the main phases of program development
2. Recognize the importance of program testing and debugging
3. Value human factors in program development
4. Distinguish the main guidelines for teamwork in software development
5. Define the program specification and requirements
6. Value agile software development methodologies

Study Programme Learning Outcomes

Military Engineering

3 Basic technical knowledge

3.1. To identify, analyse, model and resolve military engineering problems by integrating basic knowledge of natural and technical sciences

3.2. To apply complex methodology by integrating engineering knowledge and skills in military engineering practice

3.3. To integrate and apply engineering principles and techniques in the operation of military system in unpredictable conditions

4. Personal and professional skills and characteristics

4.1 To identify and analyze a problem in the military environment

4.2 To model and resolve a problem and to interpret problem solution by using appropriate knowledge and methods

6 Development, implementation and operation of technical systems in economic and social environment

6.1. To analyse and evaluate the effect of engineering solutions on society and

environment

6.2. To apply and create engineering approaches in analysing and assessing products and processes in security environment

6.4. To plan, organise, create and implement engineering testing, and to analyse and interpret the results

Screening of student's work

2 ECTS Lectures attendance

1 ECTS Project

1 ECTS Practical work

4 ECTS

Forms of Teaching

» Lectures

» Lectures, with lecture notes and presentations available in advance on the web.

» Laboratory

» Software project.

Week by Week Schedule

1. Lectures: Software engineering processes. Object-oriented processes. Agile processes.
Seminar: Project: Kick Off
2. Lectures: Gathering requirements.
Seminar: Project implementation
3. Lectures: Specifications. UML.
Seminar: Project implementation
4. Lectures: Software design. Design patterns.
Seminar: Project implementation
5. Lectures: Version control.
Seminar: Project: Phase I - submission
6. Lectures: Program testing. Regression testing. Integration testing. Test generation.
Seminar: Project implementation
7. Lectures: Exams.
Seminar: Project implementation
8. Lectures: Debugging.
Seminar: Project implementation
9. Lectures: Runtime debugging.
Seminar: Project implementation
10. Lectures: Software security.
Seminar: Project implementation
11. Lectures: Verification.
Seminar: Project implementation
12. Lectures: Software reuse.
Seminar: Project implementation
13. Lectures: Teamwork.
Seminar: Project: Final Phase - submission
14. Lectures: Project: program design.
Seminar: Project implementation
15. Lectures: Project: program design.
Seminar: Project implementation

Literature



Steve McConnell, Code Complete: A Practical Handbook of Software Construction, Second Edition



Eric Evans, Domain-Driven Design: Tackling Complexity in the Heart of Software

Similar Courses

» Software Development Management, Oxford

Decision Analysis

129338

Lecturers



prof. dr. sc.
Tihomir Hunjak



izv. prof. dr. sc.
Nina Begičević
Redep

Course Description

Enable students (1) that in real life, given the available information, can identify and apply specific methods and tools for the analysis of decision problems and propose the business decisions, and (2) to analyze decisions in situations of certainty, uncertainty and risk, and for application of methods and tools specific to the analysis process.

Study Programmes

- » Group of Courses Armour, Field Artillery, Engineers, Technical Support and Infantry -> Military Engineering (Course) (*required course, 4th semester, 2nd year*)
- » Group of Courses Signals, Monitoring and Guidance and Air Defence -> Military Engineering (Course) (*required course, 4th semester, 2nd year*)
- » Chemical, Biological, Radiological and Nuclear Defence -> Military Engineering (Course) (*required course, 4th semester, 2nd year*) (**Note: course not offered in this academic year.**)
- » Military Leadership and Management (Study) (*required course, 6th semester, 3rd year*)

Learning Outcomes

On successful completion of the course, students will be able to:

1. Identify the elements of decision problems.
2. Explain the process of problem solving and decision making.
3. Explain the Army problem solving process
4. Apply the troop leading procedures (TLP).
5. Apply the Analytic Hierarchy Process for solving a decision making problem
6. Explain the The military decision making process (MDMP).
7. Use decision support systems in decision making.
8. Apply methods for decision making under uncertainty and risk.
9. Apply the basic group decision making methods.
10. Develop their ability of critical thinking, planning and decision making skills

Study Programme Learning Outcomes

Military Engineering

1 Basic competences of the military profession

- 1.3 To make decisions independently and command a basic tactical unit
- 1.5 To develop personal and collective determination, courage, enthusiasm and initiative of subordinates
- 1.6 To nourish, channel and use creativity in accomplishing missions of a basic

ECTS Credits 5.0

English Level Lo

E-learning Level L2

Study Hours

Lectures 30

Seminar 15

Exercises 15

Associate Lecturer

dr. sc. Bojan Žugec

Teaching Assistants

Suzana Filjak, pred.

mr. sc. Marina Jurčić

dr. sc. Nikola Kadoić

mr. sc. Marijan Kostanjevac,
pred.

Grading

Grading: Monitoring visits of students to classes, checking knowledge (through 2 tests), evaluation of the created project task (application method for multi-criteria decision-making methods and decision-making under uncertainty and risk) Obligations: Attendance, taking quizzes and tests, project task.

tactical unit

2 Special military competences

2.1 To analyse the environment and to develop and apply tactics of the branch/service

3 Basic technical knowledge

3.1. To identify, analyse, model and resolve military engineering problems by integrating basic knowledge of natural and technical sciences

4. Personal and professional skills and characteristics

4.1 To identify and analyze a problem in the military environment

4.2 To model and resolve a problem and to interpret problem solution by using appropriate knowledge and methods

5. Social skills (team work and communication)

5.3 To effectively present work results both orally and in writing to stakeholders in the military environment

6 Development, implementation and operation of technical systems in economic and social environment

6.1. To analyse and evaluate the effect of engineering solutions on society and environment

Military Leadership and Management

1 Basic competences of the military profession

1.3 To make decisions independently and command a basic tactical unit

1.6 To nourish, channel and use creativity in accomplishing missions of a basic tactical unit

3 Basic competences in social and humanistic sciences

3.1 To analyze and interpret processes in international environment, and to act within international alliances and organizations in which the Republic of Croatia participates

3.9 To make geographic and topographic analysis of the area and decide upon tactics of a basic tactical unit

4. Personal and professional skills and characteristics

4.1 To identify and analyze a problem in the military environment

4.3 To assume military, professional and ethical responsibility

5. Social skills (team work and communication)

5.3 To effectively present work results both orally and in writing to stakeholders in the military environment

Screening of student's work

1 ECTS Lectures attendance

1 ECTS Midterm exam

1 ECTS Oral exam

1 ECTS Project

1 ECTS Practical work

5 ECTS

Forms of Teaching

» Lectures

» Lectures will be conducted through presentations and active interaction between lecturers and students.

» Seminars and workshops

» Seminars aim at deepening the students' understanding of the content, its analysis, evaluation as well as forming a personal attitude towards the content.

» Exercises

- » Exercises will be geared toward practical application of knowledge and skills on concrete, real scenarios and examples.

Week by Week Schedule

1. Lectures: Introduction to the course - aims of the course. Business decisions. Problem solving and decision making. Elements of decision problems, objectives, alternatives, criteria. The link between the objectives and criteria. Hierarchical structure of the set of criteria; fundamental objectives, means objectives and goals. Decision analysis as part of the problem-solving process. Simon's, Mintzberg's and Boyd's decision-making models. The quality of decisions, the key factors of the quality of decisions.
Seminar: Problem solving and decision making.
Exercises: Problem solving and decision making.
2. Lectures: Types of decisions and approaches to decision making. Programmed and non programmed decisions, characteristics of programmed and non programmed decisions. Strategic, tactical and operational decision making and goals. Examples. Approaches to decision-making: the rational decision-making, decision-making based on intuitive judgment. Intuition and military decision making.
Seminar: Types of decisions and approaches to decision making
Exercises: Types of decisions and approaches to decision making
3. Lectures: Decision making styles. Autocratic and democratic style of decision-making. Analytical, conceptual, directive and behavioral style of decision-making. Janis Mann decision making style. Vroom-Yetton decision making model. Individual, organizational and cultural variables of the decision making styles. Military decisions and decision-making styles.
Seminar: Decision making styles . Decision making styles and The Army problem solving process.
Exercises: Decision making styles . Decision making styles and Troop leading procedures (TLP).
4. Lectures: Organizational context of business decision making. Organizational structure and its effect on managerial decision-making. The main variables that determine the organizational structure: formalization, centralization and structural differentiation. Command and control organization structure C2OS. Four kinds of decision-making entity organization structure (DMEOS) based on the analysis of military C2 organization. Decentralized organization structure (DCOS) and centralized organization structure (COS), and distributed organization structure with coordinator (DOSWC) and complete distributed organization structure (CDOS). The characteristics and performances of different DMEOS.
Seminar: Organizational context of business decision making.
Exercises: Organizational context of business decision making.
5. Lectures: Decision theories. Normative decision theory. Descriptive decision theory. Prescriptive decision theory.
Seminar: Decision theories.
Exercises: Decision theories.
6. Lectures: ProACT approach to decision-making: Problem, Objectives, Alternatives, Consequences, Tradeoffs. Ewen Swap method. Dominated alternatives, irrelevant attributes and practical domination.
Seminar: ProACT approach to decision-making and even-swap method.
Exercises: ProACT approach to decision-making and even-swap method.
7. Lectures: Psychological influences in decision-making: psychodynamic, behavioral, humanistic, neurobiological and cognitive approach to decision making. Traps in decision making: anchoring, status-quo trap, confirmation. Pitfalls of previous decisions, sunk-costs. Trap. Pitfalls of formulating the problem. Pitfalls of estimates and predictions. The consequences of errors in decision-making. How to avoid the most common errors in decision-making.
Seminar: Psychological influences in decision-making
Exercises: Psychological influences in decision-making

8. Lectures: Psychological influences in military decision making. Heuristics and biases in military decisions. Intuitive decision making, RPD process.
Seminar: Psychological influences in military decision making.
Exercises: Psychological influences in military decision making.
9. Lectures: Decision making under uncertainty and risk. Basic rules for decision-making under uncertainty: Wald's rule, Hurwicz's rule, Savage's rule, Laplace's rule and the expected value. The case where the expected value is not a good criterion for the decision.
Seminar: Decision making under uncertainty and risk.
Exercises: Decision making under uncertainty and risk.
10. Lectures: Decision tree and related decisions. The basic elements of a decision tree: decision node and event node. Relevant information for decision tree model: probability, payments and expected value. The value of complete information. Bayes' theorem and the value of sample information. Software support for the decision tree model: programs Treeplan or PrecisionTree.
Seminar: Decision tree.
Exercises: Decision tree.
11. Lectures: A method of priority determination based on pair comparisons. Saaty's scale and eigenvalue method for priority determination. Consistency measurement. A simplified procedure for calculating the priority of alternatives and criteria weights. Determination of weight criteria in a situation where alternatives are known; method SWING.
Seminar: A method of priority determination based on pair comparisons.
Exercises: A method of priority determination based on pair comparisons.
12. Lectures: Analytical Hierarchy Process. Axioms and theory for the AHP. Hierarchical structure of decision making problems. Measuring the consistency of pairwise comparisons. Software for AHP method: Expert Choice, DecisionLens, SuperDecisions.
Seminar: Analytical Hierarchy Process.
Exercises: Analytical Hierarchy Process.
13. Lectures: Application of AHP method in solving complex problems, equipment selection, analysis of strategic decisions, project portfolio planning.
Seminar: Application of AHP method in solving complex problems.
Exercises: Application of AHP method in solving complex problems.
14. Lectures: Group decision making. Techniques of group decision making, brainstorming, Delphi, nominal group technique. AHP and group decision making. Software for group decision.
Seminar: Group decision making.
Exercises: Group decision making.
15. Lectures: Decision Support Systems (DSS). Components of DSS. DSS and military decisions.
Seminar: Decision Support Systems (DSS).
Exercises: Decision Support Systems (DSS).

Literature



Pere Sikavica, Tomislav Hernaus, Tihomir Hunjak, Nina Begičević Ređep (2014). *Poslovno odlučivanje*, Školska knjiga



Teale, M., Dispenza, V., Flynn, J., Currie, D. (2007). *Management Decision-Making, Towards an Integrative Approach*, Addison-Wesley

Similar Courses

» MS300, West Point

Defence Economics

129954

Lecturer



dr. sc.
Kristina Detelj

ECTS Credits	4.0
English Level	Lo
E-learning Level	L1
Study Hours	
Lectures	30
Seminar	15
Exercises	15

Associate Lecturers

dr. sc. Tomislav Kovačević, pred.
mr. sc. Ante Kožul, pred.

Grading

Grading: seminar 40% and written exam 60% Obligations: Attending lectures and independent preparation and presentation of seminar

Course Description

The aim is to study application and methods of economic science in the field of defence and defence expenditure. On macro level, trends and relationship between defence and public expenditures is being studied as well as their influence on GDP. Subject of analysis are components of defence expenditures, options and methods for achieving overall efficiency, including NATO and EU membership.

Study Programmes

» Military Leadership and Management (Study) (*required course, 4th semester, 2nd year*)

Learning Outcomes

On successful completion of the course, students will be able to:

1. Define the relationship between security and economic welfare
2. Recognize the role of analytical tools in defence management
3. Describe the defence industrial base and the defence equipment market in the modernization of armed forces
4. Explain the economic characteristics of human resources in defence area and advantages as well as disadvantages of professional force
5. Analyze and classify military expenditures, and the trends in their relationship to GDP and to total public expenditures
6. Show the understanding of theory of military alliances
7. Recognize financial and resource aspects of military force and capability development issues regarding the Croatian membership in NATO and EU
8. Explain the structure and management of defence expenditures in Croatia

Study Programme Learning Outcomes

Military Leadership and Management

- 1 Basic competences of the military profession
 - 1.1 To communicate, organize and plan effectively the activities of a basic tactical unit
 - 1.5 To develop personal and collective determination, courage, enthusiasm and initiative of subordinates
 - 1.6 To nourish, channel and use creativity in accomplishing missions of a basic tactical unit
- 2 Special military competences
 - 2.2 To manage maintenance of combat and non-combat assets, ammunitions and mines of the branch/service

- 2.3 To use combat and non-combat assets of the branch/service in a professional way
- 3 Basic competences in social and humanistic sciences
 - 3.1 To analyze and interpret processes in international environment, and to act within international alliances and organizations in which the Republic of Croatia participates
 - 3.4 To manage processes in the military environment using modern technologies
 - 3.5 To apply knowledge of the structure and functioning of the political system, state and public administration in resolving unstructured problems
- 4. Personal and professional skills and characteristics
 - 4.1 To identify and analyze a problem in the military environment
 - 4.2 To model and resolve a problem and to interpret problem solution by using appropriate knowledge and methods
- 5. Social skills (team work and communication)
 - 5.3 To effectively present work results both orally and in writing to stakeholders in the military environment

Screening of student's work

- 2 ECTS Lectures attendance
- 1.5 ECTS Written exam
- 0.5 ECTS Seminar report
- 4 ECTS

Forms of Teaching

- » Lectures
 - » Lectures
- » Seminars and workshops
 - » Application of theoretical concepts in seminars and presentation of papers to colleagues
- » Exercises
 - » Solving practical problems of the field individually and in groups
- » Work with mentor
 - » Consulting with lecturers about the seminars and understanding of the learning contents

Week by Week Schedule

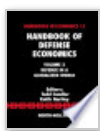
1. Seminar: Introductory seminar
Exercise: Introductory exercise
Lecture: Introductory economics - Microeconomics
2. Lecture: Introductory economics - Macroeconomics
Lecture: Introductory economics - Public finance
3. Seminar: Dynamics of defence and public expenditures in the world
Seminar: International cooperation in capability development
Seminar: Defence market - main features
Exercise: Economic considerations in the defence sector - historical review
4. Seminar: Financing of peace support operation
Seminar: Defence Market in EU
Lecture: National security and economics - review. Security and economic welfare
5. Lecture: Defence expenditures and expansion of public sector in 20th century.
Structure and dynamics of defence expenditures related to public sector and GDP
Lecture: Concept, definition and classification of military expenditures

6. Lecture: Defence as public good, characteristics of defence as pure public good.
Economic theories of military alliances: pure public good model and joint product model. Burden sharing in military alliances
Seminar: Supply and demand for human resources in defence sector
Exercise: International cooperation and efficiency gains on NATO and EU level
7. Midterm exams - 1. colloquium
8. Lecture: Development policy of defence industry
Seminar: War financing
Exercise: War and defence expenditures, full costs
9. Seminar: All volunteer vs. profesional army in history
Exercise: Drafting versus profesionalization, comparative advantages and disadvantages - international review
Lecture: Resource management in NATO and CSDP (EU)
10. Seminar: Defence expenditures structure in NATO
Exercise: Influence of NATO and EU membership on long term capability development of croatian armed forces
Lectures: Economic characteristics of human resources in armed forces
11. Seminar: Modern business methods in defence - outsourcing
Exercise: Military industrial sector - characteristics, opportunities, perils
Lecture: Management of expenditures for defence procurement
12. Lecture: Methods of evaluation of defence expenditures. Defence expenditures and economic growth
Seminar: Budgetary Legislation in Republic of Croatia
Seminar: Defence budgeting in MoD
13. Seminar: Programming phase of Planning Programming and Budgeting System
Seminar: Budget expenditures of MoD
Lecture: Financing of research and development activities in defence sector
14. Lecture: Size, structure and trends in defence and public expenditures in Republic of Croatia
Lecture: Structure and management of defence budget in Republic of Croatia
15. Midterm exams - 2. colloquium

Literature



Igor Karnjuš (2008).
Financiranje obrane, Golden
Markleting, IROS, Zagreb



Keith Hartley, Todd Sandler
(2007). *Handbook of Defence
Economics*, Elsevier

Additional Literature



Todd Sandler, Keith Hartley
(1999). *The Political Economy of
NATO*, Cambridge University
Press

Similar Courses

» SS477 - Economics of National Security, West Point

Defence Systems and Technologies

129376

Lecturer



prof. dr. sc.
Krešimir Čosić

Course Description

The course fosters students' understanding of interdependence between science and technology, industry and defence sector in NATO/EU member states. Concepts of organizational and project management, as well as system engineering, are illustrated by selected examples of the development of complex combat systems.

Study Programmes

- » Armour -> Group of Courses Armour, Field Artillery, Engineers, Technical Support and Infantry (Course) (*required course, 6th semester, 3rd year*) (Note: course not offered in this academic year.)
- » Field Artillery -> Group of Courses Armour, Field Artillery, Engineers, Technical Support and Infantry (Course) (*required course, 6th semester, 3rd year*)
- » Engineers -> Group of Courses Armour, Field Artillery, Engineers, Technical Support and Infantry (Course) (*required course, 6th semester, 3rd year*) (Note: course not offered in this academic year.)
- » Technical Support -> Group of Courses Armour, Field Artillery, Engineers, Technical Support and Infantry (Course) (*required course, 6th semester, 3rd year*)
- » Infantry -> Group of Courses Armour, Field Artillery, Engineers, Technical Support and Infantry (Course) (*required course, 6th semester, 3rd year*) (Note: course not offered in this academic year.)
- » Signals -> Group of Courses Signals, Monitoring and Guidance and Air Defence (Course) (*required course, 6th semester, 3rd year*)
- » Monitoring and Guidance -> Group of Courses Signals, Monitoring and Guidance and Air Defence (Course) (*required course, 6th semester, 3rd year*) (Note: course not offered in this academic year.)
- » Air Defence -> Group of Courses Signals, Monitoring and Guidance and Air Defence (Course) (*required course, 6th semester, 3rd year*) (Note: course not offered in this academic year.)
- » Chemical, Biological, Radiological and Nuclear Defence -> Military Engineering (Course) (*required course, 6th semester, 3rd year*) (Note: course not offered in this academic year.)

ECTS Credits	5.0
English Level	Lo
E-learning Level	L1
Study Hours	
Lectures	30
Seminar	30

Associate Lecturer

doc. dr. sc. Siniša Popović

Teaching Assistants

Ivan Kesedžić, mag. ing. inf. et comm. techn.

Marko Šarlija

Grading

Grading: Students are evaluated on lecture attendance, written midterm and final exam, and their independent work on selected seminar topics is evaluated based on the quality of the performed work, written report and oral presentation. Obligations: Attending lectures and laboratory sessions, taking exams, and independent student work on selected seminar topics that takes place continuously during the semester, in consultations with the course instructors.



Learning Outcomes

On successful completion of the course, students will be able to:

1. Explain economic and technological importance of defense sector in NATO and EU member states
2. Explain the principles and aims of system engineering by analysis of complex defense systems
3. Describe the role and importance of complex defence system life-cycle management
4. Explain importance of system architecture in the development of complex defense systems
5. Describe key characteristics of humans for successful operation of complex defence systems
6. Recognize the values and limitations of modeling and simulation

Study Programme Learning Outcomes

Military Engineering

2 Special military competences

- 2.1 To analyse the environment and to develop and apply tactics of the branch/service
- 2.2 To manage maintenance of combat and non-combat assets, ammunitions and mines of the branch/service
- 2.3 To use combat and non-combat assets of the branch/service in a professional way

3 Basic technical knowledge

- 3.1. To identify, analyse, model and resolve military engineering problems by integrating basic knowledge of natural and technical sciences
- 3.2. To apply complex methodology by integrating engineering knowledge and skills in military engineering practice
- 3.3. To integrate and apply engineering principles and techniques in the operation of military system in unpredictable conditions

4. Personal and professional skills and characteristics

- 4.1 To identify and analyze a problem in the military environment
- 4.2 To model and resolve a problem and to interpret problem solution by using appropriate knowledge and methods
- 4.4 To develop self-study abilities and the need for and methods of life-long learning in traditional and virtual environment

5. Social skills (team work and communication)

- 5.2 Organize and plan individual and team work in international and interdisciplinary work groups
- 5.3 To effectively present work results both orally and in writing to stakeholders in the military environment
- 5.5 To apply knowledge of military psychology and sociology in leadership and command in predictable and unpredictable situations

6 Development, implementation and operation of technical systems in economic and social environment

- 6.1. To analyse and evaluate the effect of engineering solutions on society and environment
- 6.2. To apply and create engineering approaches in analysing and assessing products and processes in security environment
- 6.4. To plan, organise, create and implement engineering testing, and to analyse and interpret the results

Screening of student's work

1 ECTS Lectures attendance
1.5 ECTS Written exam
2.5 ECTS Seminar report
<u>5 ECTS</u>

Forms of Teaching

» Lectures

» There are 15 weeks of classes. First cycle consists of 7 weeks of lectures, followed by midterm, while second cycle consists of 6 weeks of lectures, followed by final exam.

» Independent assignments

» Students in consultation with the teachers work on seminar reports during the semester.

» Laboratory

» Demonstration of the system for pilot stress and fatigue monitoring during flight and during simulator practice. Demonstration of the simulator for air defense missile system and flight simulators like Pilatus, MiG-21, etc. Demonstration of various systems for multimodal elicitation and estimation of emotional states.

» Other

» stručni posjeti

Week by Week Schedule

1. Lectures: Introductory lecture. "Defence systems and technologies" as a part of the world economy based on knowledge and high technologies.
Exercises: In the initial week, there are no students' activities regarding the student projects.
2. Lectures: Arms and military equipment industry in EU and NATO.
Exercises: Presentation of proposed topics for student projects.
3. Lectures: Strategic importance of technology sector in modernization of arms and military equipment industry and economic growth in the Republic of Croatia.
Exercises: Students' selection of proposed topics for student projects.
4. Lectures: Strategic planning and organizational management in the area of defence systems and technologies.
Exercises: Students' progress report presentations regarding the work on student projects.
5. Lectures: Financing models for complex "Defence Systems and Technologies".
Offset agreements, venture capital, licenses, coproduction...
Exercises: Students' progress report presentations regarding the work on student projects.
6. Lectures: Principles of Systems Engineering in design and development of complex "Defence Systems and Technologies".
Exercises: Students' progress report presentations regarding the work on student projects.
7. Lectures: Interaction of complex defence systems with users and environment.
Human factors in the area of defence and security.
Exercises: Students' progress report presentations regarding the work on student projects.
8. Lectures: Midterm exam.
Exercises: In the week of midterm exam, no progress reporting is required for student projects.
9. Lectures: Hardware- and software-in-the-loop simulations.
Exercises: Students' progress report presentations regarding the work on student projects.

10. Lectures: Interactive simulations of complex defence systems in virtual environment. Fighter airplane simulator, simulators for guided missile systems.
Exercises: Students' progress report presentations regarding the work on student projects.
11. Lectures: Systems for multimodal regulation of cognitive-emotional states in training, evaluation and selection of personnel for complex defence tasks.
Exercises: Students' progress report presentations regarding the work on student projects.
12. Lectures: Evaluation of effects of training by analysis of neural activations obtained with functional magnetic resonance imaging (fMRI) of brain.
Exercises: Students' progress report presentations regarding the work on student projects.
13. Lectures: Simulator for MiG-21 fighter jet. Helicopter Mi-171 simulator project. Simulator for armored vehicle AMV 8x8.
Exercises: Students' progress report presentations regarding the work on student projects.
14. Lectures: Dual use of technologies created in the course of development of complex "Defence Systems and Technologies".
Exercises: Final presentations of students' projects.
15. Lectures: Final exam.
Exercises: In the week of final exam, there are no students' activities regarding the student projects.

Literature



Materijali s predavanja: lekcije 1,2,3,4,...,13



Ćosić, Krešimir. *Strategy of Small Defence Oriented Enterprises in a Time of Defence Budget Downsizing – Croatian Case Study // Proceedings of NATO Advanced Research Workshop on Defence Related SME's Analysis and Description of Current Conditions / Fernando Duarte Carvalho (ur.). Madeira : IOS Press, 2002. Str. 9-17.*



Ćosić, Krešimir. *Strateški značaj tehnološkog sektora u modernizaciji industrije naoružanja i vojne opreme i gospodarskom rastu i razvoju Republike Hrvatske // Ekonomska politika Hrvatske u 2011. godini: Izlazak iz recesije ili daljnja stagnacija? - zbornik radova / Galetić, Lovorka ; Jurčić, Ljubo ; Lovrinčević, Željko ; Mlinarević, Mladen ; Perić, Jože ; Teodorović, Ivan ; Vedriš, Mladen ; Vojnić, Dragomir ; Vouk, Rudolf (ur.). Hrvatsko društvo ekonomista, 2011. 309-325*



Ćosić, Krešimir; Fabac, Robert. *Gospodarski rast, tehnološki razvitak i suvremeno obrazovanje. // Ekonomski pregled. 52 (2001), 5-6; 516.-544.*

Similar Courses

» ., Oxford

Democracy and Civil Society

129936



Lecturer



doc. dr. sc.
Dario Nikić Čakar

ECTS Credits 3.0

English Level Lo

E-learning Level L1

Study Hours

Lectures 30

Seminar 15

Grading

Grading: The exam consists of two parts: written and oral
Obligations: Arrive at lectures and seminar are obligatory and three absences will be tolerated.

Course Description

The aim of the course "Democracy and Civil Society" is to introduce students with the theoretical concepts and analytical instruments which are used in political science for functional analysis of political institutions in modern democracies and also for description and comparison of democratic and non-democratic/authoritarian systems.

Study Programmes

» Military Leadership and Management (Study) (*required course, 3rd semester, 2nd year*)

Learning Outcomes

On successful completion of the course, students will be able to:

1. Interpret of the contemporary understanding of democracy
2. Distinguish democratic and authoritarian systems
3. Interpret and distinguish consolidate and defect democracies
4. Define and analyze the most important models of democratic transition
5. Define and distinguish types of systems of government and classify their empirical examples
6. Contrast and assess different models of democracy

Study Programme Learning Outcomes

Military Leadership and Management

3 Basic competences in social and humanistic sciences

3.1 To analyze and interpret processes in international environment, and to act within international alliances and organizations in which the Republic of Croatia participates

3.2 To comprehend civil-military relations and to act in accordance with democratic standards

3.5 To apply knowledge of the structure and functioning of the political system, state and public administration in resolving unstructured problems

4. Personal and professional skills and characteristics

4.4 To develop self-study abilities and the need for and methods of life-long learning in traditional and virtual environment

5. Social skills (team work and communication)

5.1 To communicate effectively in the Croatian and English language applying modern presentation skills and techniques

5.2 Organize and plan individual and team work in international and

ME

ME-M

ARM

ART

ENG

TS

IN-E

ME-E

SIG

MG

AD

CBR

MLM

IN-L

interdisciplinary work groups

Screening of student's work

1.5 ECTS Lectures attendance
1 ECTS Written exam
0.5 ECTS Oral exam
<u>3 ECTS</u>

Forms of Teaching

- » Lectures
 - » Lectures will be held two hours per week.
- » Seminars and workshops
 - » Seminars will be held one our per week.

Week by Week Schedule

1. Explanation of the basic goals and purposes of the course. Overview of topics to be treated during the lectures. A review of the literature that will be used during lectures and seminars.
2. Democratic Systems
3. Westminster and Consensus Model of Democracy
4. Defect Democracies as Hybrid Regimes
5. Authoritarian and Totalitarian Systems
6. Transformations from Autocracies to Democracies
7. 1. exam
8. Typology of governments
9. Political System of the Great Britain
10. Political System of the USA
11. Political System of France
12. Political System of Switzerland
13. Political System of Israel
14. New Authoritarian Systems
15. 2. exam

Literature



Wolfgang Merkel (2011).
*Transformacija političkih
sustava*, Fakultet političkih
znanosti



Arend Lijphart (2014).
Modeli demokracije, Fakultet
političkih znanosti

Similar Courses

- » nema sličnog predmeta, Oxford

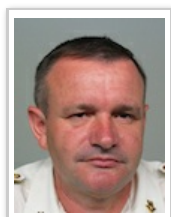
Design Elements

129539

Lecturers



izv. prof. dr. sc.
Krešimir Vučković



izv. prof. dr. sc.
Mirko Jakopčić

Course Description

Studying the most frequently used design elements and their functions. Analysis of influence of static and dynamic strength on designing and sizing of design elements with respect to acceptable safety criteria. Studying of the design elements damage mechanisms. Fundamentals of components and assemblies design. Studying of basic non mechanical design elements.

Study Programmes

- » Armour -> Group of Courses Armour, Field Artillery, Engineers, Technical Support and Infantry (Course) (*required course, 5th semester, 3rd year*) (Note: course not offered in this academic year.)
- » Field Artillery -> Group of Courses Armour, Field Artillery, Engineers, Technical Support and Infantry (Course) (*required course, 5th semester, 3rd year*)
- » Engineers -> Group of Courses Armour, Field Artillery, Engineers, Technical Support and Infantry (Course) (*required course, 5th semester, 3rd year*) (Note: course not offered in this academic year.)
- » Technical Support -> Group of Courses Armour, Field Artillery, Engineers, Technical Support and Infantry (Course) (*required course, 5th semester, 3rd year*)
- » Infantry -> Group of Courses Armour, Field Artillery, Engineers, Technical Support and Infantry (Course) (*required course, 5th semester, 3rd year*) (Note: course not offered in this academic year.)

Learning Outcomes

On successful completion of the course, students will be able to:

1. Explain terms of strength of materials.
2. Solve problems with tolerances.
3. Calculate load carrying capability of design elements and simple joints.
4. Design axles and shafts.
5. Select rolling bearing.
6. Describe couplings and clutches.
7. Analyze basic functional parameters of power transmission drive.
8. Identify specific design elements damage mechanisms.
9. Describe the most common piping elements.
10. Apply acquired knowledge in design problems solving.

Study Programme Learning Outcomes

Military Engineering

3 Basic technical knowledge

ECTS Credits 8.0

English Level Lo

E-learning Level L1

Study Hours

Lectures 60

Laboratory exercises 45

Associate Lecturer

doc. dr. sc. Zoran Domitran

Teaching Assistant

Ivan Čular, mag. ing. mech.

Grading

Grading: Presence at lectures and exercises with active participation: up to 10%. Development and oral defence of the design assignments: up to 30%. Two announced preliminary exams (colloquiums) or written exam in two parts (numerical + theoretical): up to 50%. Oral exam: up to 10%. Obligations: Regular attendance at lectures and exercises. Completion of both design assignments.



- 3.1. To identify, analyse, model and resolve military engineering problems by integrating basic knowledge of natural and technical sciences
- 3.2. To apply complex methodology by integrating engineering knowledge and skills in military engineering practice
- 4. Personal and professional skills and characteristics
 - 4.1 To identify and analyze a problem in the military environment
 - 4.2 To model and resolve a problem and to interpret problem solution by using appropriate knowledge and methods
 - 4.3 To assume military, professional and ethical responsibility
 - 4.4 To develop self-study abilities and the need for and methods of life-long learning in traditional and virtual environment
- 6 Development, implementation and operation of technical systems in economic and social environment
 - 6.1. To analyse and evaluate the effect of engineering solutions on society and environment
 - 6.2. To apply and create engineering approaches in analysing and assessing products and processes in security environment
 - 6.3. To apply and select knowledge and relevant facts from different areas, and to assume responsibility for assessing the impact of military technology in social environment

Screening of student's work

- o.8 ECTS Lectures attendance
- 4 ECTS Midterm exam
- o.8 ECTS Oral exam
- 1.2 ECTS 1. Design assignment
- 1.2 ECTS 2. Design assignment

- 8 ECTS

Forms of Teaching

- » Lectures
 - » Lectures will be held twice a week for 2 hours.
- » Exercises
 - » Exercises will be held once a week for 3 hours.
- » Other
 - » Two design assignments will be developed.

Week by Week Schedule

1. Lectures: Load, stress, material strength, allowable stress and safety of design elements.
Exercises: Basic terms of Strength of materials: load, stress, strength.
2. Lectures: Driving and operating machines. Kinematics of machine element (velocities and transmission ratio).
Exercises: Static and dynamic strength. Woehler curve, French curve, Smith diagram. 1st design assignment.
3. Lectures: Standardization and ISO tolerances.
Exercises: Characteristics of driving and operating machines. Design assignment audit.
4. Lectures: Press-fitted joints, rivets.
Exercises: Dimension tolerance and joint tolerance. Design assignment audit.
5. Lectures: Welded, soldered and adhesive joints.
Exercises: Estimating principles of welded joints. Example calculations of soldered and adhesive joints. Design assignment audit.

6. Lectures: Bolts, screws, springs.
Exercises: Bolts, screws and springs laboratory exercise. Calculation and measurement of tightening torque. Design assignment verification. 2nd design assignment.
7. 1st preliminary exam (colloquium).
8. Lectures: Taper keys, parallel keys, pins, axles, shafts, .
Exercises: Examples calculation.
9. Lectures: Sliding and rolling bearings, seals and sealing.
Exercises: Rolling bearing selection. Design assignment audit.
10. Lectures: Rigid and elastic couplings. Clutches.
Exercises: Couplings calculation examples. Design assignment audit.
11. Lectures: Friction, belt and chain drive.
Exercises: Example calculation of friction drives. Design assignment audit.
12. Lectures: Spur gear drive, basic calculation and design.
Exercises: Example calculation of belt chain drives. Design assignment audit.
13. Lectures: Other gear transmission types. Imaginary gear.
Exercises: Basic law of gearing. Construction of involute. Example calculation of cylindrical gears. Design assignment audit.
14. Lectures: Defect mechanisms and functionality loss, power loss.
Exercises: Laboratory exercise: Determination of shafts critical speed.
15. Lectures: Piping - valve, gate valve, valve flap, spigot.
Exercises: 2nd design assignment verification.

Literature



K. H. Decker (2006).
Elementi strojeva, Golden
marketing - Tehnička
knjiga, Zagreb



B. Kraut (2009). *Strojarski
priručnik*, Sajema, Zagreb



Z. Horvat i suradnici *Skripta:
Vratilo - proračun*, Sveučilište
u Zagrebu, Fakultet
strojarstva i brodogradnje



Z. Horvat (1995). *Mala zbirka
zadataka iz "Elementi strojeva
II"*, Sveučilište u Zagrebu,
Fakultet strojarstva i
brodogradnje

Additional Literature



B. Križan (2008). *Osnove
proračuna i oblikovanja
konstrukcijskih elemenata*,
Školska knjiga, Zagreb



E. Oberšmit (1982).
Ozubljenja i zupčanic, SNL,
Zagreb



M. Opalić (1998). *Prijenosnici
snage i gibanja*, HDESK, Zagreb

Similar Courses

- » Mechanical Systems Design, Stanford University
- » Machine Design, The Citadel

Digital Logic

129364

Lecturer



izv. prof. dr. sc.
Zoran Kalafatić

ECTS Credits 6.0

English Level Lo

E-learning Level L1

Study Hours

Lectures 60

Laboratory exercises 15

Teaching Assistant

doc. dr. sc. Mario Matijević

Grading

Grading: It is necessary to achieve 50% of the total number of points for the positive grade. Obligations: Attendance and participation in class, learning course lectures, homeworks, exams.

Course Description

Adoption of Boolean algebra as formalism for describing digital circuits. Getting familiar with the principles of Boolean expression minimization. Introduction to the methods of analysis and design of simple combinatorial and sequential digital circuits. Introduction to standard combinatorial and sequential modules.

Study Programmes

- » Group of Courses Signals, Monitoring and Guidance and Air Defence -> Military Engineering (Course) (*required course, 4th semester, 2nd year*)

Learning Outcomes

On successful completion of the course, students will be able to:

1. Choose the appropriate level of standard combinatorial and sequential components to design simple digital circuits
2. Apply Boolean algebra as a formalism for describing of combinatorial and sequential digital circuits
3. Design simple combinatorial digital circuits
4. Design simple sequential digital circuits
5. Analyze simple combinatorial digital circuits
6. Analyze simple sequential digital circuits
7. Identify and classify standard and programmable combinatorial and sequential digital circuits

Study Programme Learning Outcomes

Military Engineering

3 Basic technical knowledge

- 3.1. To identify, analyse, model and resolve military engineering problems by integrating basic knowledge of natural and technical sciences
- 3.2. To apply complex methodology by integrating engineering knowledge and skills in military engineering practice

4. Personal and professional skills and characteristics

- 4.1 To identify and analyze a problem in the military environment
- 4.2 To model and resolve a problem and to interpret problem solution by using appropriate knowledge and methods
- 4.4 To develop self-study abilities and the need for and methods of life-long learning in traditional and virtual environment

5. Social skills (team work and communication)

5.3 To effectively present work results both orally and in writing to stakeholders in the military environment

Screening of student's work

2 ECTS Lectures attendance
 2 ECTS Written exam
 2 ECTS Practical work
 6 ECTS

Forms of Teaching

- » Lectures
 - » Lectures will be given in two hours blocks twice a week.
- » Exercises
 - » Laboratory exercises will be held in two hours blocks.

Week by Week Schedule

1. Lectures: Introduction and course overview. Analog values and their digital representation. Number systems. Basic binary arithmetic.
 Exercises: Introduction and software installation.
2. Lectures: Binary codes and coding. Error detecting and error correcting codes.
 Exercises: Binary codes and coding.
3. Lectures: Propositional logic, Boolean algebra, Boolean functions, canonical forms for Boolean functions.
 Exercises: Error detecting and error correcting codes.
4. Lectures: Minimization of Boolean functions.
 Exercises: Boolean functions. Canonical forms for Boolean functions.
5. Lectures: Electronic implementations of logic circuits. Integrated digital circuits. Electrical characteristics.
 Exercises: Minimization of Boolean functions.
6. Lectures: Standard combinational modules: decoders, demultiplexors, multiplexors, ROMs, priority encoders, comparators. Implementation of Boolean functions with standard combinational modules.
 Exercises: Basic logic circuits.
7. Midterm exam.
8. Lectures: Arithmetic circuits: adders, subtractors, multipliers, shifters.
 Exercises: Standard combinational modules: decoders, demultiplexors, multiplexors.
9. Lectures: Programmable modules: PLDs and FPGAs. Programmable module implementation of Boolean functions.
 Exercises: Implementation of Boolean functions with standard combinational modules.
10. Lectures: Flip-flops: basic latch, flip-flop, flip-flop types, triggering, dynamic parameters.
 Exercises: Arithmetic circuits.
11. Lectures: Sequential circuits, finite state machines. Design and analysis of synchronous sequential circuits.
 Exercises: Programmable modules.
12. Lectures: Standard sequential modules: registers, shift registers, counters - ripple and synchronous.
 Exercises: Flip-flops.
13. Lectures: Memories: characteristic parameters; static and dynamic memories; memory modules organization.
 Exercises: Registers and counters.
14. Lectures: Interfacing digital systems with the analog environment, D/A and A/D conversion.
 Exercises: Sequential circuits.

15. Final exam.

Literature



Uroš Peruško, Vlado Glavinić (2005). *Digitalni sustavi*, Školska knjiga



Marko Čupić (2006). *Digitalna elektronika i digitalna logika, zbirka riješenih zadataka*, Kigen, 2006., Kigen

Similar Courses

- » Digital Systems, Oxford
- » Digital Logic and Circuits, The Citadel
- » Fundamentals of Digital Logic, West Point

Electronics

129325

Lecturer



izv. prof. dr. sc.
Igor Krois

ECTS Credits 6.0

English Level Lo

E-learning Level L1

Study Hours

Lectures 45

Exercises 30

Grading

Grading: The threshold for a passing grade is a 50% total score. Obligations: The students are required to attend lectures and actively participate in class. The students are also required to learn the course materials, to individually solve the problems and to take exams.

Course Description

Adoption of methods of linear circuit analysis with DC and AC sources. Introduction of electronic device characteristics and basic analogue electronic circuit properties. Adoption of methods of analogue electronic circuit analysis.

Study Programmes

- » Group of Courses Armour, Field Artillery, Engineers, Technical Support and Infantry -> Military Engineering (Course) (*required course, 3rd semester, 2nd year*)
- » Group of Courses Signals, Monitoring and Guidance and Air Defence -> Military Engineering (Course) (*required course, 3rd semester, 2nd year*)
- » Chemical, Biological, Radiological and Nuclear Defence -> Military Engineering (Course) (*required course, 3rd semester, 2nd year*) (Note: course not offered in this academic year.)

Learning Outcomes

On successful completion of the course, students will be able to:

1. Analyze of linear circuits in time and frequency domain
2. Analyze of basic properties of electron devices
3. Analyze of nonlinear circuits
4. Analyze of basic amplifier circuits
5. Compare the performance of amplifiers with different devices
6. Apply operational amplifier in linear and nonlinear circuits

Study Programme Learning Outcomes

Military Engineering

3 Basic technical knowledge

- 3.1. To identify, analyse, model and resolve military engineering problems by integrating basic knowledge of natural and technical sciences
- 3.2. To apply complex methodology by integrating engineering knowledge and skills in military engineering practice

4. Personal and professional skills and characteristics

- 4.1 To identify and analyze a problem in the military environment
- 4.2 To model and resolve a problem and to interpret problem solution by using appropriate knowledge and methods
- 4.4 To develop self-study abilities and the need for and methods of life-long learning in traditional and virtual environment

Screening of student's work

4 ECTS Written exam

2 ECTS Oral exam

6 ECTS

Forms of Teaching

» Lectures

» Oral lectures with problem solving

» Exercises

» Exercises with problem solving

Week by Week Schedule

1. Lectures: DC circuits - current, charge, voltage, power, energy. Circuit elements. Ohm
Exercises: Solving the problems of linear circuits with multiple sources and resistances.
2. Lectures: DC circuits analysis – nodal and mesh analysis, superposition. Voltage and current sources. Thevenin's and Norton's theorem.
Exercises: Analysis of linear circuits using the method of node voltages and loop currents.
3. Lectures: Capacitors and inductors in electric circuits - series and parallel capacitors and inductors. Transient response of RC and RL circuits.
Exercises: Transient response calculation of RC and LR circuits.
4. Lectures: AC circuits – sinusoids, average and effective values. AC circuits analysis – phasors.
Exercises: Frequency analysis of linear circuits.
5. Lectures: Role of electronics. Types of signals electronics. Amplifiers – gains, power supply, nonlinear characteristics of real amplifier. Types of amplifiers. Amplifier frequency characteristics. Amplifier transient response.
Exercises: Calculation of amplifiers efficiency and amplifier gain with finite loads.
6. Lectures: Diodes - basic properties, current-voltage characteristics, temperature effects, dynamic parameters and small-signal model. Nonlinear circuit analysis. Small and large signal operation.
Exercises: Diode circuit analysis using the superposition.
7. Lectures: Diodes in power supplies – diodes rectifiers and regulators.
Exercises: Calculation of basic rectifier parameters.
8. Lectures: Unipolar transistors – basic properties, current-voltage characteristics, temperature effects, dynamic parameters and small-signal model.
Exercises: Parameters calculation of small signal unipolar transistor model.
9. Lectures: Biasing of unipolar transistor amplifiers. Common-source amplifier.
Exercises: Calculation of unipolar transistor amplifier operating point and analysis of common-source amplifier.
10. Lectures: Common-gate and common-drain amplifier. Properties and comparison of unipolar transistor amplifiers.
Exercises: Analysis of common-gate and common-drain amplifiers
11. Lectures: Bipolar transistors – basic properties, current-voltage characteristics, temperature effects, dynamic parameters and small-signal model.
Exercises: Parameters calculation of small signal bipolar transistor model.
12. Lectures: Biasing of bipolar transistor amplifiers. Common-emitter amplifier.
Exercises: Calculation of bipolar transistor amplifier operating point and analysis of common-source amplifier.
13. Lectures: Common-base and common-collector amplifier. Properties and comparison of bipolar transistor amplifiers.
Exercises: Analysis of common-base and common-collector amplifiers

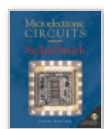
14. Lectures: Ideal operational amplifier (Op-Amp). Properties of real Op-Amps. Op-Amp amplifiers. Op-Amps in analogue computations.
Exercises: Analysis of Op-Amp amplifiers.
15. Lectures: Op-amp comparator. Op-Amp astable and monostable multivibrator. Op-Amp square and triangular waveform generators.
Exercises: Calculation of Op-Amp astable and monostable multivibrator parameters.

Literature



Ž. Butković, J. Divković-Pukšec,
A. Barić (2014). *Elektronika 1*,
Fakultet elektrotehnike i
računarstva, Zagreb - interna
skripta

Additional Literature



Adel S. Sedra, Kenneth
Carless Smith (2004).
Microelectronic Circuits,
Oxford University Press



Richard C. Jaeger, Travis N.
Blalock (2011).
Microelectronic Circuit Design



Charles Alexander, Matthew
Sadiku (2012). *Fundamentals of
Electric Circuits*, McGraw-Hill
Science/Engineering/Math

Similar Courses

- » EE 101A: Circuits I, Stanford University
- » EE362 Intro to Electronics, West Point

Electronic Warfare

130148



Lecturers



prof. dr. sc.
Davor Bonefačić



prof. dr. sc.
Dario Matika

Course Description

Learn the basic concepts of electronic warfare (EW), the electromagnetic spectrum and fundamental concepts in implementing the EW. Familiar with the basics of EW, EW definitions and divisions, as well as the principles of EW. Learn the process of planning and implementation of the EW; get familiar with EW force and threats of adversary elements of EW. Getting familiar with the place, role and importance of the EW in the NATO area.

Study Programmes

- » Signals -> Group of Courses Signals, Monitoring and Guidance and Air Defence (Course) (required course, 7th semester, 4th year) (Note: course not offered in this academic year.)
- » Monitoring and Guidance -> Group of Courses Signals, Monitoring and Guidance and Air Defence (Course) (required course, 7th semester, 4th year) (Note: course not offered in this academic year.)

Learning Outcomes

On successful completion of the course, students will be able to:

1. Knowing basic concepts of electronic warfare (ER)
2. Detect electromagnetic spectrum
3. Adopt and govern the basic concepts in the implementation of ER
4. Know the definition and division of ER
5. Know the principles of ER
6. Know the process of planning and implementation of ER
7. Know the available power for ER
8. Detect threats opposing elements ER
9. Know the place, role and importance of the ER in the NATO area
10. Detect the most important elements of the ER in the world

Study Programme Learning Outcomes

Military Engineering

- 1 Basic competences of the military profession
 - 1.1 To communicate, organize and plan effectively the activities of a basic tactical unit
 - 1.2 To assess the situation and implement appropriate tactics for a basic tactical unit
 - 1.3 To make decisions independently and command a basic tactical unit

ECTS Credits 5.0

English Level Lo

E-learning Level L1

Study Hours

Lectures 45

Laboratory exercises 15

Teaching Assistants

Mirko Jukl

dr. sc. Darko Možnik, doc.

Grading

Grading: It is necessary to achieve 50% of the total number of points for the exam.

Obligations: Attendance and participation in class, learning subject matter, Homework, exams.



- 1.5 To develop personal and collective determination, courage, enthusiasm and initiative of subordinates
- 2 Special military competences
 - 2.1 To analyse the environment and to develop and apply tactics of the branch/service
 - 2.2 To manage maintenance of combat and non-combat assets, ammunitions and mines of the branch/service
 - 2.3 To use combat and non-combat assets of the branch/service in a professional way
- 3 Basic technical knowledge
 - 3.2. To apply complex methodology by integrating engineering knowledge and skills in military engineering practice
- 4. Personal and professional skills and characteristics
 - 4.1 To identify and analyze a problem in the military environment
 - 4.2 To model and resolve a problem and to interpret problem solution by using appropriate knowledge and methods
- 5. Social skills (team work and communication)
 - 5.1 To communicate effectively in the Croatian and English language applying modern presentation skills and techniques
 - 5.2 Organize and plan individual and team work in international and interdisciplinary work groups
- 6 Development, implementation and operation of technical systems in economic and social environment
 - 6.1. To analyse and evaluate the effect of engineering solutions on society and environment
 - 6.2. To apply and create engineering approaches in analysing and assessing products and processes in security environment
 - 6.3. To apply and select knowledge and relevant facts from different areas, and to assume responsibility for assessing the impact of military technology in social environment

Screening of student's work

- 1 ECTS Lectures attendance
- 1 ECTS Written exam
- 1 ECTS Seminar report
- 1 ECTS Oral exam
- 1 ECTS Practical work
- 5 ECTS

Forms of Teaching

- » Lectures
 - » Lectures accompanied by slides and whiteboard
- » Exercises
 - » Numerical examples and experimental demonstration
- » Other
 - » stručna posjet

Week by Week Schedule

- 1. Lectures: T-1 Introduction to the course and the basic concepts of electronic warfare (EW) (2)
Seminar: Introduction to the organization of exercises
- 2. Lectures: T-2 About the electromagnetic spectrum (2)
Seminar: V-1 Principles of EW

3. Lectures: T-3 Basic concepts in the implementation of the EW (2)
Seminar: V-1 Planning of EW
4. Lectures: T-4 Basics, definition and classification of EW (4)
Seminar: V-1 Implementation of EW
5. Lectures: T-5 Principles EW (2)
Seminar: V-1 Organization of the elements of EW
6. Lectures: T-6 Planning EW (4)
Seminar: V-2 Tactics EW (elements)
7. Lectures: T-7 Implementation of EW (4)
Seminar: V-2 Tactics EW (implementation)
8. Lectures: T-8 Force EW (4)
Seminar: V-2 Tactics EW (processes)
9. Lectures: T-9 Threats ball element EW (2)
Seminar: V-3 Techniques EW (receivers)
10. Lectures: T-10 location, the role and importance of the EW in the NATO environment (4)
Seminar: V-3 Techniques EW (antennas)
11. Lectures: T-11 electronic warfare in the world (3)
Seminar: V-3 Techniques EW (demodulators)
12. Lectures: T-12 Examples of EW (5)
Seminar: V-3 Techniques EW (analyzers)
13. Lectures: T-13 Experiences EW (4)
Seminar: V-3 Techniques EW (subsystems) (5 ns)
14. Lectures: T-14 measures and activities EW (2)
Seminar: V-3 Techniques EW (systems) (5 ns)
15. Lectures: Final written exam (2)
Seminar: Final exam

Literature



*Mile Budiša Taktika
elektroničkog ratovanja 1993*



*Field manual FM 3-36
Electronic Warfare*



*Joint Publication for Electronic
Warfare 3-51*

Similar Courses

» ., Oxford

Energy and Drive Systems

129544

Lecturer



prof. dr. sc.
Željko Tomšić

Course Description

Comprehensive knowledge of production and utilization of energy and environmental impact and society development. Understanding of energy sector in Croatia. Basic knowledge about power system (production, transmission, distribution and use of electric power). Introduction to energy conversion processes and characteristics of energy and drive systems.

Study Programmes

- » Armour -> Group of Courses Armour, Field Artillery, Engineers, Technical Support and Infantry (Course) *(required course, 6th semester, 3rd year)* (Note: course not offered in this academic year.)
- » Field Artillery -> Group of Courses Armour, Field Artillery, Engineers, Technical Support and Infantry (Course) *(required course, 6th semester, 3rd year)*
- » Engineers -> Group of Courses Armour, Field Artillery, Engineers, Technical Support and Infantry (Course) *(required course, 6th semester, 3rd year)* (Note: course not offered in this academic year.)
- » Technical Support -> Group of Courses Armour, Field Artillery, Engineers, Technical Support and Infantry (Course) *(required course, 6th semester, 3rd year)*
- » Infantry -> Group of Courses Armour, Field Artillery, Engineers, Technical Support and Infantry (Course) *(required course, 6th semester, 3rd year)* (Note: course not offered in this academic year.)
- » Signals -> Group of Courses Signals, Monitoring and Guidance and Air Defence (Course) *(required course, 6th semester, 3rd year)*
- » Monitoring and Guidance -> Group of Courses Signals, Monitoring and Guidance and Air Defence (Course) *(required course, 6th semester, 3rd year)* (Note: course not offered in this academic year.)
- » Air Defence -> Group of Courses Signals, Monitoring and Guidance and Air Defence (Course) *(required course, 6th semester, 3rd year)* (Note: course not offered in this academic year.)
- » Chemical, Biological, Radiological and Nuclear Defence -> Military Engineering (Course) *(required course, 6th semester, 3rd year)* (Note: course not offered in this academic year.)

ECTS Credits	5.0
English Level	Lo
E-learning Level	L1
Study Hours	
Lectures	45
Laboratory exercises	15

Associate Lecturers

Dejan Barešić, pred.
prof. dr. sc. Marko Delimar
prof. dr. sc. Zvonimir Guzović
izv. prof. dr. sc. Mario Vražić

Teaching Assistants

Marina Barbarić, mag. ing. mech.
Goran Grdenić
doc. dr. sc. Ivan Rajšl

Grading

Grading: Evaluation of student work during teaching in the form of midterm and final written examine. Final examination is oral after successful written exam. It is necessary to achieve 50% of the total number of points for the positive grade. Obligations: Attendance and participation in class, learning course lectures, laboratories exercise and exams (written midterm, final written and oral).

Prerequisites for

Practical Military Training - Monitoring and Guidance

Learning Outcomes

On successful completion of the course, students will be able to:

1. Explain and identify about energy and development of society, energy sources and their use, impacts on human and environment of electricity production
2. Explain and identify importance of Sustainable Development of energy sectors, goals of Sustainable Development and purpose of Sustainable Development indicators
3. Explain basic functioning of power system (production, transmission, distribution of electricity).
4. Explain basics of electromechanical and electrical conversion. Recognize electric machine types. Quote parts of electric drive.
5. Recognize and compare different types of energy and drive systems.
6. Interpret the basics of energy conversion in various types of energy and drive systems.
7. Calculate the basic characteristics (eg, thermodynamic, hydrodynamic, aerodynamic) of certain types of energy and drive systems.
8. Recognize the operating characteristics of certain types of energy and drive systems.

Study Programme Learning Outcomes

Military Engineering

2 Special military competences

2.2 To manage maintenance of combat and non-combat assets, ammunitions and mines of the branch/service

2.3 To use combat and non-combat assets of the branch/service in a professional way

3 Basic technical knowledge

3.1. To identify, analyse, model and resolve military engineering problems by integrating basic knowledge of natural and technical sciences

3.2. To apply complex methodology by integrating engineering knowledge and skills in military engineering practice

4. Personal and professional skills and characteristics

4.2 To model and resolve a problem and to interpret problem solution by using appropriate knowledge and methods

5. Social skills (team work and communication)

5.1 To communicate effectively in the Croatian and English language applying modern presentation skills and techniques

5.3 To effectively present work results both orally and in writing to stakeholders in the military environment

6 Development, implementation and operation of technical systems in economic and social environment

6.1. To analyse and evaluate the effect of engineering solutions on society and environment

6.3. To apply and select knowledge and relevant facts from different areas, and to assume responsibility for assessing the impact of military technology in social environment

6.4. To plan, organise, create and implement engineering testing, and to analyse and interpret the results

Screening of student's work

3 ECTS	Written exam
1 ECTS	Research
1 ECTS	Homeworks
5 ECTS	

Forms of Teaching

» Lectures

» Course lectures are organized through 2 study cycles. First cycle consists of 7 weeks of lectures and mid-term exam. Second cycle consists of 6 weeks of lectures and final exam. Lectures are held through total of 15 weeks with weekly load of 2 hours.

» Exercises

» Calculation of elements from lectures.

» Independent assignments

» The tasks for the preparation of the written exam 4 times in semester.

Week by Week Schedule

1. Lectures: Introduction: energy and development of society, general terms, energy sources (coal, natural gas, oil, nuclear and renewable) and their use. Energy sector environmental impacts in general. Energy sources in the world (production and consumption of energy in the World and forecast for the future). Croatian energy strategy. Sustainable Development: introduction in technological, political, economic and ecological effects of sustainable development to energy sectors and society.
Exercises: Primary and transformed energy. Final consumption. Characteristics of energy sources.
2. Lectures: Basic about power system. Electric energy: production, transmission, distribution and use of electricity. Electricity consumption. Specificity of power systems.
Exercises: Power quality indicators in distribution networks.
3. Lectures: Apparent, active and reactive power, diagram of electricity consumption, peak power, lighting, power quality. Electricity end use and rationale consumption of electricity. Tariff systems for electricity and reduction of electricity costs (analyse of daily diagram of electricity consumption, electric motors, transformers and capacitors for compensation of reactive power).
Exercises: Electricity bill. Calculation of apparent, active and reactive power. Diagram of electricity consumption, peak power. Compensation of reactive power.
4. Lectures: The structure of an electromechanical energy conversion system and the basic laws. Basic types of electric machines, their structure and characteristics. Basic ways for all electric machine types control.
Exercises: Electric machines basic parameter calculations.
5. Lectures: Power transformers. Types and properties. No-load operation, short-circuit operation, loading, parallel operation. General structure of an electrical drive system. Concepts, definitions, motion equations. Drive components, motors, power converters, transmissions, working mechanisms, power supplies, transformers. Classifications and characteristics of drives.
Exercises: Electric drive basic parameter calculations.
6. Lectures: Substations and switchgear systems design. Characteristics and selection of the main elements of plants and distribution networks. The basic scheme of the main circuits. Protection in power plants and distribution networks of medium and low voltage. Overvoltage protection. Network rules.
Exercises: The main elements of the equipment (busbars, insulators, switches), low voltage switching devices, the secondary systems, circuit diagrams of the main currents, the protection of the power system. Connecting the power plants to the power system.

7. Lectures: Mid exam
Exercises: Mid exam
8. Lectures: Steam and gas turbines: The working principle and design of the turbine. Geometrical characteristics of axial turbine stage cascade. Analysis of forces on the rotor blades. Reaction of the turbine stage. Energy conversion in the turbine stage and the work and relative blade efficiency. Characteristics of the turbine stage. Multistage turbines with velocity and pressure staggering. Determining of the dimensions of the blades. Losses and isentropic efficiency. Reheat factor. Types of turbine control. Radial turbine stage. Cooling of the gas turbines. Polytrophic efficiency.
Exercises: Calculation of basic thermodynamic and aerodynamic characteristics of axial turbine stages: velocity triangles, reaction, the forces on the blades, work, losses, efficiency, height of blades, etc. Calculation of basic thermodynamic and aerodynamic characteristics of radial turbine stages: velocity triangles, reaction, the forces on the blades, work, losses, efficiency, height of blades, etc.
9. Lectures: Turbocompressors - Part I: The working principle and design of the axial and radial (centrifugal) compressors. Geometrical characteristics of turbocompressor cascade. Scheme and geometrical characteristics of axial and radial stage. The real pressure increase in stage. Stage reaction.
Exercises: Calculation of basic thermodynamic and aerodynamic characteristics of axial turbocompressor: velocity triangles, reaction, the forces on the blades, work, losses, efficiency, height of blades, etc.
10. Lectures: Turbocompressors - Part II: Energy conversion and losses. The flow and load coefficient. Characteristics of the compressor stage. Unsteady work of turbocompressor (pumping and stall). Multi-stage compressors and their characteristic. Diffuser at radial compressor.
Exercises: Calculation of basic thermodynamic and aerodynamic characteristics of centrifugal (radial) turbocompressor: velocity triangles, reaction, the forces on the blades, work, losses, efficiency, height of blades, etc.
11. Lectures: Pumps and fans - Part I: The working principle and design of the single-stage centrifugal and axial pumps and fans. Schemes of pumps and fans. Impeller. Radial cascade. Axial cascade. Non-stationary working regime. Multistage centrifugal pumps. Characteristics of pumps and fans.
Exercises: Calculation of basic hydrodynamic and geometric characteristics of centrifugal and axial pump: velocity triangles, reaction, the forces on the blades, work, losses, efficiency, height of blades, etc.
12. Lectures: Pumps and fans - Part II: Similarity-recalculation of characteristics of geometrically similar machines. Dimensionless characteristics of pumps and fans. Specific speed. Cavitation in pumps.
Exercises: Calculation of basic aerodynamic characteristics of radial (centrifugal) and axial fan: velocity triangles, reaction, the forces on the blades, work, losses, efficiency, height of blades, etc.
13. Lectures: Internal combustion engines - Part I: Reciprocating engine details. The two-stroke cycle. The four-stroke cycle. Piston position. Valve timing diagrams. The petrol engine. The carburettor and full injection. Ignition system. Modern ignition systems. The complete petrol engine. The oil engine. The full pump. The injection nozzle. The complete oil engine. The reciprocating gas engine.
Exercises: Calculation of basic thermodynamic and geometric characteristics of two-stroke and four-stroke internal combustion engine.
14. Lectures: Internal combustion engines - Part II: Engine trials - engine characteristics: Torque. The rope brake. The Prony brake. The hydraulic dynamometer. The electrical dynamometer. Brake power. Indicated power. The engine indicator. Indicated mean effective pressure. Calculation of indicated power. Friction power. Indication power by Morse test. Mechanical efficiency. Brake mean effective pressure. Fuel consumption. Thermal efficiency. Relative efficiency. The energy balance or energy audit. Typical graph shapes.
Exercises: Measurements on the internal combustion engine, the calculation of characteristic parameters and drawing of characteristic diagrams.
15. Lectures: Final exam
Seminar: Final exam

Literature



D. Feretić, Ž. Tomšić, D. Škanata, N. Čavlina, D. Subašić (2000). *Elektrane i okoliš*, Element, Zagreb



Zoran K. Morvay; Dusan D. Gvozdenac (2008). *Applied Industrial Energy and Environmental Management*, John Wiley Sons Ltd, UK



Jurković Berislav
Elektromotorni pogoni,
Školska knjiga Zagreb



Radenko Wolf *Osnove električnih strojeva*, Školska knjiga, Zagreb;



Guzović, Z.: *Toplinski strojevi (interna skripta)*, FSB, Zagreb

Similar Courses

- » Energy Systems, Oxford
- » ME 370. Energy Systems, Stanford University

English I

129213

Lecturers



doc. dr. sc.
Snježana Veselica
Majhut



dr. sc.
Tea Glavaš

Course Description

Further development of basic language skills (reading, writing, listening and speaking), acquisition and development of both general and specific vocabulary, as well as the development of intercultural competence with the aim of preparing students for successful fulfillment of professional duties in international surroundings. The focus is placed on the knowledge of grammar structures (the use of tenses and conditional sentences), the acquisition of reading strategies and further development of writing skills (paragraph organization, narrative essay, report).

Study Programmes

- » Military Engineering (Study) (*required course, 1st semester, 1st year*)
- » Military Leadership and Management (Study) (*required course, 1st semester, 1st year*)

Learning Outcomes

On successful completion of the course, students will be able to:

1. Understand the main ideas of a long speech in standard English on concrete and abstract topics
2. Understand main ideas of a linguistically more complex written text on more elaborate concrete and abstract topics
3. Acquire the skills of note taking while reading and listening
4. Improve writing skills in English
5. Be familiar with the norms in writing a CV
6. Accurately use tenses and conditional sentences in more complex communicative situations

Study Programme Learning Outcomes

Military Engineering

4. Personal and professional skills and characteristics
 - 4.2 To model and resolve a problem and to interpret problem solution by using appropriate knowledge and methods
 - 4.4 To develop self-study abilities and the need for and methods of life-long learning in traditional and virtual environment
5. Social skills (team work and communication)
 - 5.1 To communicate effectively in the Croatian and English language applying modern presentation skills and techniques
 - 5.2 Organize and plan individual and team work in international and interdisciplinary work groups
 - 5.3 To effectively present work results both orally and in writing to

ECTS Credits 2.0

English Level Lo

E-learning Level L1

Study Hours

Lectures 15

Seminar 15

Teaching Assistant

Milena Prošić, prof.

Grading

Grading: Students' work will be monitored and evaluated during the term. The final grade is composed of the following elements:

attendance+continuous assessment exams+oral exam+practical work.

Obligations: Students are expected to regularly attend classes, actively participate in classes and prepare individual and group assignments.

Prerequisites for

English III

English II

stakeholders in the military environment

Military Leadership and Management

4. Personal and professional skills and characteristics
 - 4.2 To model and resolve a problem and to interpret problem solution by using appropriate knowledge and methods
 - 4.4 To develop self-study abilities and the need for and methods of life-long learning in traditional and virtual environment
5. Social skills (team work and communication)
 - 5.1 To communicate effectively in the Croatian and English language applying modern presentation skills and techniques
 - 5.2 Organize and plan individual and team work in international and interdisciplinary work groups
 - 5.3 To effectively present work results both orally and in writing to stakeholders in the military environment

Screening of student's work

- 0.5 ECTS Lectures attendance
 1 ECTS Midterm exam
 0.5 ECTS Practical work

 2 ECTS

Forms of Teaching

- » Lectures
- » Exercises
- » Independent assignments

Week by Week Schedule

1. Lectures: Introductory session
 Exercises: Introductory class
2. Lectures: MILITARY ORGANISATION, the verb aspect in English, comparison of verb aspects in English and Croatian, use of present tenses
 Exercises: MILITARY ORGANISATION, use of present tenses, military alphabet, vocabulary acquisition (military ranks, services and branches of the army, describing military units)
3. Lectures: MILITARY UNIFORM AND EQUIPMENT, use of tenses, comparison of adjectives
 Exercises: MILITARY UNIFORM AND EQUIPMENT, comparison phrases, describing specifications
4. Lectures: MILITARY CAREER, past tenses in English and Croatian, use of Present Perfect
 Exercises: MILITARY CAREER, note-taking while reading, writing a military CV
5. Lectures: DESCRIBING HISTORICAL FIGURES, revision of tenses, phrasal verbs
 Exercises: DESCRIBING HISTORICAL FIGURES, phrasal verbs, note-taking while reading, writing a biographical profile
6. Lectures: LIFE ON A BASE, tvorba riječi
 Exercises: LIFE ON A BASE, vocabulary acquisition (places on a military base)
7. Lectures: CONTINUOUS ASSESSMENT EXAM
 Exercises: CONTINUOUS ASSESSMENT EXAM
8. Lectures: CONTINUOUS ASSESSMENT GRADES AND FEEDBACK
 Exercises: CONTINUOUS ASSESSMENT GRADES AND FEEDBACK
9. Lectures: LIFE IN THE ARMY, present and past tenses
 Exercises: LIFE IN THE ARMY, vocabulary acquisition(collocations: military routine)

10. Lectures: DESCRIBING A MILITARY OPERATION IN THE PAST, revision of tenses, note-taking
Exercises: DESCRIBING A MILITARY OPERATION IN THE PAST, revision of tenses, note-taking
11. Lectures: LIFE ON A BASE, modal verbs
Exercises: LIFE ON A BASE, vocabulary acquisition
12. Lectures: LIFE IN THE ARMY, modal verbs
Exercises: LIFE IN THE ARMY, modal verbs
13. Lectures: WAR, reading a newspaper article, collecting information from various sources
Exercises: WAR, practising strategies of reading a long text
14. Lectures: REVISION
Exercises: REVISION
15. Lectures: SECOND CONTINUOUS ASSESSMENT EXAM
Exercises: SECOND CONTINUOUS ASSESSMENT EXAM

Literature



Mellor-Clark, S. Baker de Altamirano, Y. (2004): Campaign 2, Oxford: Macmillan Education (Student's Book + Workbook)



Murphy, R. (2012): A self-study reference and practice book for intermediate learners of English, Fourth edition, Cambridge University Press



Reader with exercises (u pripremi)

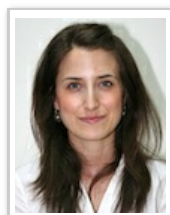
English II

129215

Lecturers



doc. dr. sc.
Snježana Veselica
Majhut



dr. sc.
Tea Glavaš

Course Description

Course objectives: further development of four basic language skills (reading, writing, listening and speaking), acquisition and expansion both of general and specific vocabulary, as well as the development of intercultural competence with the aim of preparing students for successful fulfillment of professional duties in international environments. The focus is on the use of verbs (modal verbs, tenses in subordinate clauses) in speech and writing. Students will become familiar with lexical and grammatical features contributing to the differences between formal and informal styles and learn how to use editing and proofreading strategies.

Study Programmes

- » Military Engineering (Study) (*required course, 2nd semester, 1st year*)
- » Military Leadership and Management (Study) (*required course, 2nd semester, 1st year*)

Learning Outcomes

On successful completion of the course, students will be able to:

1. Understand the main points of an extended and complex speech in standard English on concrete and abstract topics
2. Understand the main points of a linguistically and thematically complex written text on concrete and abstract topics
3. Be familiar with and use editing and proofreading strategies
4. Be familiar with the norms of writing letters and reports in English and follow the
5. Use modal verbs and know their function in various communicative situations
6. Koristiti pasivne konstrukcije i znati njihovu funkciju
7. Use the Passive voice and know its function

Study Programme Learning Outcomes

Military Engineering

4. Personal and professional skills and characteristics
 - 4.2 To model and resolve a problem and to interpret problem solution by using appropriate knowledge and methods
 - 4.4 To develop self-study abilities and the need for and methods of life-long learning in traditional and virtual environment
5. Social skills (team work and communication)
 - 5.1 To communicate effectively in the Croatian and English language applying modern presentation skills and techniques

ECTS Credits 2.0

English Level Lo

E-learning Level L1

Study Hours

Lectures 15

Seminar 15

Teaching Assistant

Milena Prošić, prof.

Grading

Grading: Students' work will be monitored and evaluated during the term. The final grade is composed of the following elements:

attendance+continuous assessment exams+practical work Obligations: Students are expected to regularly attend classes, actively participate in classes and prepare individual and group assignments.

Prerequisites

English I

Prerequisites for

English IV

English III

5.2 Organize and plan individual and team work in international and interdisciplinary work groups

5.3 To effectively present work results both orally and in writing to stakeholders in the military environment

Military Leadership and Management

4. Personal and professional skills and characteristics

4.2 To model and resolve a problem and to interpret problem solution by using appropriate knowledge and methods

4.4 To develop self-study abilities and the need for and methods of life-long learning in traditional and virtual environment

5. Social skills (team work and communication)

5.1 To communicate effectively in the Croatian and English language applying modern presentation skills and techniques

5.2 Organize and plan individual and team work in international and interdisciplinary work groups

5.3 To effectively present work results both orally and in writing to stakeholders in the military environment

Forms of Teaching

» Lectures

» Exercises

Week by Week Schedule

1. Lectures: Introductory session
Exercises: INTRODUCTORY CLASS
2. Lectures: FOOD IN THE ARMY, revision of present tenses and introduction of future tenses
Exercises: FOOD IN THE ARMY, vocabulary acquisition, practice of the use of future tenses
3. Lectures: FOOD IN THE ARMY, talking about future
Exercises: FOOD IN THE ARMY, expressing future
4. Lectures: FITNESS AND SPORTS, the passive voice
Exercises: SPORTOVI U VOJSCI, usvajanje vokabulara
5. Lectures: FITNESS AND SPORTS, the passive voice
Exercises: SPORTOVI U VOJSCI, vježbe slušanja
6. Lectures: the passive voice, modal verbs, expressing future
Exercises: revision
7. Lectures: CONTINUOUS ASSESSMENT EXAM
Exercises: CONTINUOUS ASSESSMENT EXAM
8. Lectures: CONTINUOUS ASSESSMENT FEEDBACK AND DISCUSSION
Exercises: CONTINUOUS ASSESSMENT FEEDBACK
9. Lectures: RECRUITMENT AND TRAINING, time clauses
Exercises: RECRUITMENT AND TRAINING, vocabulary acquisition, the use of time clauses
10. Lectures: RECRUITMENT AND TRAINING, time clauses
Exercises: RECRUITMENT AND TRAINING, vocabulary acquisition, the use of time clauses
11. Lectures: RECRUITMENT AND TRAINING, conditional clauses
Exercises: RECRUITMENT AND TRAINING, vocabulary acquisition, CV-a
12. Lectures: MILITARY EDUCATION, acronyms and abbreviations
Exercises: MILITARY EDUCATION, collocations practice
13. Lectures: MILITARY REPORTS, form and language of reports
Exercises: MILITARY REPORTS, writing a military report
14. Lectures: REVISION
Exercises: REVISION

15. Lectures: CONTINUOUS ASSESSMENT EXAM
Exercises: CONTINUOUS ASSESSMENT EXAM

Literature



Klotz, B. (et al) (1999): Tactical English for Land Forces in Peace Support Operations, Vilnius: UAB Laureta.



Mellor-Clark, S.; Baker de Altamirano, Y. (2004): Campaign 2, Oxford: Macmillan Education (Student's Book + Workbook)



Murphy, R. (2012): A self-study reference and practice book for intermediate learners of English, Fourth edition, Cambridge University Press



READER with exercises (u pripremi)

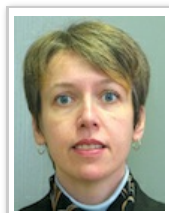
English III

129328

Lecturers



doc. dr. sc.
Snježana Veselica
Majhut



Irena Prpić Đurić,
pred. mr. sc.

Course Description

Course objectives: further development of four basic language skills (reading, writing, listening and speaking), acquisition and expansion both of general and specific vocabulary, as well as the development of intercultural competence with the aim of preparing students for successful fulfillment of professional duties in international environments. The focus is placed on the use of complex sentence structures and text organization. Students will practice communication in various profession-related communicative situations (a military briefing, a formal meeting, delivering a talk).

Study Programmes

- » Group of Courses Armour, Field Artillery, Engineers, Technical Support and Infantry -> Military Engineering (Course) (*required course, 3rd semester, 2nd year*)
- » Group of Courses Signals, Monitoring and Guidance and Air Defence -> Military Engineering (Course) (*required course, 3rd semester, 2nd year*)
- » Chemical, Biological, Radiological and Nuclear Defence -> Military Engineering (Course) (*required course, 3rd semester, 2nd year*) (*Note: course not offered in this academic year.*)
- » Military Leadership and Management (Study) (*required course, 3rd semester, 2nd year*)

Learning Outcomes

On successful completion of the course, students will be able to:

1. Understand a wide range of complex and extended texts and infer implicit meaning in a text
2. Process information from various sources
3. Produce a clear, well structured text showing controlled use of conjunctions and cohesive devices
4. Communicate accurately and fluently about a wide range of general and profession-related topics
5. Paraphrase parts of a text
6. Distinguish various language registers
7. Take part in a formal meeting

Study Programme Learning Outcomes

Military Engineering

4. Personal and professional skills and characteristics
 - 4.2 To model and resolve a problem and to interpret problem solution by using appropriate knowledge and methods

ECTS Credits 2.0

English Level Lo

E-learning Level L1

Study Hours

Lectures 15

Seminar 15

Teaching Assistant

mr. sc. Maja Ivanović

Grading

Grading: Students' work will be monitored and evaluated during the term. The final grade is composed of the following elements:

attendance+continuous assessment exams+oral exam+practical work

Obligations: Regular attendance, active participation, submission of individual and group tasks and taking of continuous assessment exams.

Prerequisites

English I

English II

Prerequisites for

English V

English V D

English IV

4.4 To develop self-study abilities and the need for and methods of life-long learning in traditional and virtual environment

5. Social skills (team work and communication)

5.1 To communicate effectively in the Croatian and English language applying modern presentation skills and techniques

5.2 Organize and plan individual and team work in international and interdisciplinary work groups

5.3 To effectively present work results both orally and in writing to stakeholders in the military environment

Military Leadership and Management

4. Personal and professional skills and characteristics

4.2 To model and resolve a problem and to interpret problem solution by using appropriate knowledge and methods

4.4 To develop self-study abilities and the need for and methods of life-long learning in traditional and virtual environment

5. Social skills (team work and communication)

5.1 To communicate effectively in the Croatian and English language applying modern presentation skills and techniques

5.2 Organize and plan individual and team work in international and interdisciplinary work groups

5.3 To effectively present work results both orally and in writing to stakeholders in the military environment

Forms of Teaching

» Lectures

» Exercises

Week by Week Schedule

1. Lectures: Introductory session
Exercises: Introductory class
2. Lectures: MILITARY PROTOCOL, verbs in subordinate clauses, use of infinitive and gerund
Exercises: MILITARY PROTOCOL, verbs in subordinate clauses, use of infinitive and gerund
3. Lectures: MILITARY BRIEFING 1, types of briefings, language of briefings
Exercises: MILITARY BRIEFING (1), note-taking while listening
4. Lectures: MILITARY BRIEFING 2, press briefing and information briefing
Exercises: MILITARY BRIEFING (2), role-play (press briefing)
5. Lectures: HISTORY OF MILITARY DIPLOMACY, linkers and cohesion devices
Exercises: HISTORY OF MILITARY DIPLOMACY, techniques of information gathering while reading, delivering a talk, making generalizations
6. Lectures: WELCOMING A FOREIGN DELEGATION, the language of formal meetings
Exercises: WELCOMING A FOREIGN DELEGATION, phrases, a formal meeting (role-play)
7. Lectures: CONTINUOUS ASSESSMENT EXAM
Exercises: CONTINUOUS ASSESSMENT EXAM
8. Lectures: FEEDBACK ON CONTINUOUS ASSESSMENT AND DISCUSSION
Exercises: FEEDBACK ON CONTINUOUS ASSESSMENT AND DISCUSSION
9. Lectures: MILITARY PEDAGOGY, text analysis, revision of tenses
Exercises: MILITARY PEDAGOGY, text analysis, revision of tenses
10. Lectures: MILITARY PSYCHOLOGY (1), linkers and cohesion devices, organizing a narrative
Exercises: MILITARY PSYCHOLOGY (1), linkers and cohesion devices, writing a narrative essay

11. Lectures: MILITARY PSYCHOLOGY (2), vocabulary acquisition and collocations
Exercises: MILITARY PSYCHOLOGY (2), feedback and discussion on narrative essays
12. Lectures: DEFENSE ECONOMICS 1, text analysis, recognizing implicit meaning
Exercises: DEFENSE ECONOMICS 1, text analysis, recognizing implicit meaning, information gathering techniques
13. Lectures: EKONOMIKA OBRANE 2, analiza teksta, prepoznavanje implicitnog značenja
Exercises: DEFENSE ECONOMICS 2, preparing a fact-sheet
14. Lectures: REVISION
Exercises: REVISION
15. Lectures: CONTINUOUS ASSESSMENT EXAM
Exercises: Second continuous assessment exam

Literature



1. *Advanced Military Modules* (2006), MORH, Zagreb



2. *Defense Language Institute* (2001): *Army Topics, Book 1*, Texas: DLIELC



3. *READER with exercises (u pripremi)*



4. Mellor-Clark, S. Baker de Altamirano, Y. (2004): *Campaign 2*, Oxford: Macmillan Education (Student's Book + Workbook)



5. Murphy, R. (2012): *A self-study reference and practice book for intermediate learners of English*, Fourth edition, Cambridge University Press

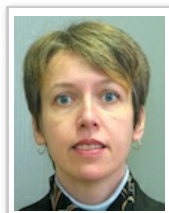
English IV

129340

Lecturers



doc. dr. sc.
Snježana Veselica
Majhut



Irena Prpić Đurić,
pred. mr. sc.

Course Description

Course objectives: development of four basic language skills (reading, writing, listening and speaking), expansion of both general and specific vocabulary, as well as the development of intercultural competence. The focus is on presentation skills and improvement of writing skills (writing a summary).

Study Programmes

- » Group of Courses Armour, Field Artillery, Engineers, Technical Support and Infantry -> Military Engineering (Course) (*required course, 4th semester, 2nd year*)
- » Group of Courses Signals, Monitoring and Guidance and Air Defence -> Military Engineering (Course) (*required course, 4th semester, 2nd year*)
- » Chemical, Biological, Radiological and Nuclear Defence -> Military Engineering (Course) (*required course, 4th semester, 2nd year*) (**Note: course not offered in this academic year.**)
- » Military Leadership and Management (Study) (*required course, 4th semester, 2nd year*)

Learning Outcomes

On successful completion of the course, students will be able to:

1. Understand a wide range of extended complex texts and infer implicit meaning in a text
2. Process information from various sources
3. Produce a clear, well structured summary showing controlled use of conjunctions and cohesive devices
4. Speak accurately and fluently using common collocations
5. Paraphrase parts of a text and avoid unnecessary repetition in writing
6. Distinguish various language registers and their main features
7. Prepare a presentation in English

Study Programme Learning Outcomes

Military Engineering

4. Personal and professional skills and characteristics
 - 4.2 To model and resolve a problem and to interpret problem solution by using appropriate knowledge and methods
 - 4.4 To develop self-study abilities and the need for and methods of life-long learning in traditional and virtual environment
5. Social skills (team work and communication)
 - 5.1 To communicate effectively in the Croatian and English language applying

ECTS Credits 2.0

English Level Lo

E-learning Level L1

Study Hours

Lectures 15

Seminar 15

Teaching Assistant
mr. sc. Maja Ivanović

Grading

Grading: Students' work will be monitored and evaluated during the term. The final grade is composed of the following elements:

attendance+continuous assessment exams+practical work. Obligations: It is expected that students have successfully completed the course English Language 3. Students are expected to attend classes regularly, actively participate in classes and prepare individual and group assignments.

Prerequisites

English II
English III

Prerequisites for

English VI D
English V
English V D
English VI

modern presentation skills and techniques

5.2 Organize and plan individual and team work in international and interdisciplinary work groups

5.3 To effectively present work results both orally and in writing to stakeholders in the military environment

Military Leadership and Management

4. Personal and professional skills and characteristics

4.2 To model and resolve a problem and to interpret problem solution by using appropriate knowledge and methods

4.4 To develop self-study abilities and the need for and methods of life-long learning in traditional and virtual environment

5. Social skills (team work and communication)

5.1 To communicate effectively in the Croatian and English language applying modern presentation skills and techniques

5.2 Organize and plan individual and team work in international and interdisciplinary work groups

5.3 To effectively present work results both orally and in writing to stakeholders in the military environment

Forms of Teaching

» Lectures

» Exercises

Week by Week Schedule

1. Lectures: Introductory session
Exercises: Introductory class
2. Lectures: MILITARY SERVICE (1), revision of tenses, types of nouns, use of articles
Exercises: MILITARY SERVICE (1), vocabulary acquisition (recruitment and enlistment), debate (a conscript or a professional)
3. Lectures: MILITARY SERVICE (2), paragraph organization
Exercises: MILITARY SERVICE (2), military career + assignment abroad,
4. Lectures: ASSIGNMENT ABROAD, introduction to summary writing
Exercises: ASSIGNMENT ABROAD, collocations, orientation briefing, practice in summary writing
5. Lectures: UN AND PSO (Peace Support Operations), active and passive voice
Exercises: UN AND PSO (Peace Support Operations), reading and vocabulary learning strategies, use of active and passive constructions
6. Lectures: REVISION
Exercises: REVISION
7. Lectures: CONTINUOUS ASSESSMENT EXAM
Exercises: Continuous assessment exam
8. Lectures: CONTINUOUS ASSESSMENT EXAM FEEDBACK AND DISCUSSION
Exercises: CONTINUOUS ASSESSMENT EXAM FEEDBACK AND DISCUSSION
9. Lectures: PEACEKEEPING MISSIONS (1), language of negotiations
Exercises: PEACEKEEPING MISSIONS (1), vocabulary acquisition, negotiations (role-play)
10. Lectures: PEACEKEEPING MISSIONS (2), reported speech
Exercises: PEACEKEEPING MISSIONS (2), use of reported speech
11. Lectures: CIMIC (CIVILIAN-MILITARY COOPERATION), presentation skills
Exercises: CIMIC (CIVILIAN-MILITARY COOPERATION), vocabulary acquisition + presentation skills
12. Lectures: STUDENTS' PRESENTATIONS
Exercises: STUDENTS' PRESENTATIONS

- 13. Lectures: WAR AND PEACE, revision
Exercises: WAR AND PEACE 1, use of paraphrase
- 14. Lectures: CONTINUOUS ASSESSMENT EXAM
Exercises: CONTINUOUS ASSESSMENT EXAM
- 15. Lectures: FEEDBACK AND DISCUSSION
Exercises: CONTINUOUS ASSESSMENT EXAM FEEDBACK AND DISCUSSION

Literature



1. *Advanced Military Modules* (2006), MORH, Zagreb.



2. *READER with exercises* (u pripremi)



3. Mellor-Clark, S. Baker de Altamirano, Y. (2004): *Campaign 3*, Oxford: Macmillan Education (Student's Book + Workbook)



4. *Defense Language Institute* (2010): *General Military Topics*, Texas: DLIELC.



5. Murphy, R. (2012): *A self-study reference and practice book for intermediate learners of English*, Fourth edition, Cambridge University Press

English V

129548

Lecturers



doc. dr. sc.
Snježana Veselica
Majhut



dr. sc.
Tea Glavaš

Course Description

Further development of basic language skills (reading, writing, listening and speaking), acquisition and development of both general and specific vocabulary, as well as the development of intercultural competence with the aim of preparing students for successful fulfillment of professional duties in international surroundings.

Study Programmes

- » Armour -> Group of Courses Armour, Field Artillery, Engineers, Technical Support and Infantry (Course) *(required course, 5th semester, 3rd year)* (Note: course not offered in this academic year.)
- » Field Artillery -> Group of Courses Armour, Field Artillery, Engineers, Technical Support and Infantry (Course) *(required course, 5th semester, 3rd year)*
- » Engineers -> Group of Courses Armour, Field Artillery, Engineers, Technical Support and Infantry (Course) *(required course, 5th semester, 3rd year)* (Note: course not offered in this academic year.)
- » Technical Support -> Group of Courses Armour, Field Artillery, Engineers, Technical Support and Infantry (Course) *(required course, 5th semester, 3rd year)*
- » Infantry -> Group of Courses Armour, Field Artillery, Engineers, Technical Support and Infantry (Course) *(required course, 5th semester, 3rd year)* (Note: course not offered in this academic year.)
- » Signals -> Group of Courses Signals, Monitoring and Guidance and Air Defence (Course) *(required course, 5th semester, 3rd year)*
- » Monitoring and Guidance -> Group of Courses Signals, Monitoring and Guidance and Air Defence (Course) *(required course, 5th semester, 3rd year)* (Note: course not offered in this academic year.)
- » Air Defence -> Group of Courses Signals, Monitoring and Guidance and Air Defence (Course) *(required course, 5th semester, 3rd year)* (Note: course not offered in this academic year.)
- » Chemical, Biological, Radiological and Nuclear Defence -> Military Engineering (Course) *(required course, 5th semester, 3rd year)* (Note: course not offered in this academic year.)

Learning Outcomes

On successful completion of the course, students will be able to:

1. Understand a spoken text even if it is not in standard English
2. Understand longer texts on complex topics
3. Analyse a text (identify the point of reference, the purpose of a text, identify the main ideas and infer implicit meanings)

ECTS Credits	2.0
English Level	Lo
E-learning Level	L1
Study Hours	
Lectures	15
Seminar	15

Teaching Assistant
mr. sc. Maja Ivanović

Grading

Grading: During the implementation of the teaching process, students will be monitored and evaluated. Overall assessment of the subject is composed of the following elements: attendance+continuous assessment exams+oral exam+practical work. Obligations: Students are expected to regularly attend classes, actively participate in classes and prepare individual and group assignments.

Prerequisites

English III
English IV

Prerequisites for
English VI

4. Perceive stylistic characteristics of various text types
5. Extract logical arguments from a text and apply them to support one's own opinion
6. Speak accurately and fluently, using common collocations and idiomatic expressions
7. Clearly and articulately present one's own opinions and ideas in discussions and negotiations

Study Programme Learning Outcomes

Military Engineering

4. Personal and professional skills and characteristics
 - 4.2 To model and resolve a problem and to interpret problem solution by using appropriate knowledge and methods
 - 4.4 To develop self-study abilities and the need for and methods of life-long learning in traditional and virtual environment
5. Social skills (team work and communication)
 - 5.1 To communicate effectively in the Croatian and English language applying modern presentation skills and techniques
 - 5.2 Organize and plan individual and team work in international and interdisciplinary work groups
 - 5.3 To effectively present work results both orally and in writing to stakeholders in the military environment

Forms of Teaching

- » Lectures
- » Seminars and workshops
- » Exercises
- » Independent assignments

Week by Week Schedule

1. Lectures: Introductory session
Exercises: Introductory class
2. Lectures: MILITARY ENGINEERING (1) / INTRODUCTION, revision of tenses in English,
Exercises: MILITARY ENGINEERING (1) / INTRODUCTION, revision of tenses, structure of questions
3. Lectures: MILITARY ENGINEERING (2) / ENGINEERS THROUGH HISTORY, text analysis, revision of the Passive voice
Exercises: MILITARY ENGINEERING (2) / ENGINEERS THROUGH HISTORY, summarizing
4. Lectures: TECHNOLOGY (1), conditional sentences, presenting arguments
Exercises: TECHNOLOGY (1), revision of conditional sentences, listening practice
5. Lectures: ENGINEER TASKS, relative clauses and postmodifying clauses
Exercises: ENGINEER TASKS, use of relative clauses
6. Lectures: REVISION
Exercises: REVISION
7. Lectures: CONTINUOUS ASSESSMENT EXAM
Exercises: CONTINUOUS ASSESSMENT EXAM
8. Lectures: FEEDBACK ON CONTINUOUS ASSESSMENT EXAM AND DISCUSSION
Exercises: FEEDBACK ON CONTINUOUS ASSESSMENT EXAM AND DISCUSSION

9. Lectures: MILITARY VEHICLES / VEHICLES OF THE FUTURE, conditional sentences, predicting
Exercises: MILITARY VEHICLES/ VEHICLES OF THE FUTURE, vocabulary work: mind maps, expressing possibilities
10. Lectures: WEAPONS, describing and defining, mechanics of mines, abbreviations
Exercises: WEAPONS, describing the technical characteristics
11. Lectures: ORDNANCE: UXO AND EOD, context clues
Exercises: ORDNANCE: UXO AND EOD, using context clues
12. Lectures: MINEMAN, finding arguments in a text
Exercises: MINEMAN, discussion, expressing one's opinion, discussion
13. Lectures: REVISION
Exercises: REVISION
14. Lectures: CONTINUOUS ASSESSMENT EXAM
Exercises: SECOND CONTINUOUS ASSESSMENT
15. Lectures: FEEDBACK ON SECOND CONTINUOUS ASSESSMENT AND DISCUSSION
Exercises: FEEDBACK ON SECOND CONTINUOUS ASSESSMENT AND DISCUSSION

Literature



READER with exercises (u pripremi)



Defense Language Institute (2006): Army Topics, Book 2, Texas: DLIELC.



Defense Language Institute (2010): General Military Topics, Texas: DLIELC.



Mellor-Clark, S. Baker de Altamirano, Y. (2004): Campaign 3, Oxford: Macmillan Education (Student's Book + Workbook)



Swann, M. (2007): Practical English Usage, Third Edition, Oxford University Press

English V D

129964

Lecturer



doc. dr. sc.
Snježana Veselica
Majhut

Course Description

Further development of basic language skills (reading, writing, listening and speaking), acquisition and development of both general and specific vocabulary, as well as the development of intercultural competence with the aim of preparing students for successful fulfillment of professional duties in international surroundings.

Study Programmes

- » Military Leadership and Management (Study) (*required course, 5th semester, 3rd year*)

Learning Outcomes

On successful completion of the course, students will be able to:

1. Understand a spoken text even if it is not in standard English
2. Understand extended texts on complex topics
3. Analyse a text (identify the point of reference, the purpose of the text, identify the main ideas and infer implicit meanings)
4. Noticing stylistic characteristics of various text types
5. Extract logical arguments from the text and apply them to support one's own opinion
6. Speak accurately and fluently using common collocations and idiomatic expressions
7. Clearly and articulately present one's own opinions and ideas in discussions and negotiations
8. Write an argumentative essay showing controlled use of linkers and grammar structures

Study Programme Learning Outcomes

Military Leadership and Management

4. Personal and professional skills and characteristics
 - 4.2 To model and resolve a problem and to interpret problem solution by using appropriate knowledge and methods
 - 4.4 To develop self-study abilities and the need for and methods of life-long learning in traditional and virtual environment
5. Social skills (team work and communication)
 - 5.1 To communicate effectively in the Croatian and English language applying modern presentation skills and techniques
 - 5.2 Organize and plan individual and team work in international and

ECTS Credits 2.0

English Level Lo

E-learning Level L1

Study Hours

Lectures 15

Seminar 15

Teaching Assistants

dr. sc. Tea Glavaš, pred.

mr. sc. Maja Ivanović

Milena Prošić, prof.

mr. sc. Irena Prpić Đurić, pred.

Grading

Grading: Students' work will be monitored and evaluated during the term. The final grade is composed of the following elements:

attendance+continuous assessment exams+oral exam+practical work.

Obligations: Students are expected to regularly attend classes, actively participate in classes and prepare individual and group assignments.

Prerequisites

English III

English IV

Prerequisites for

English VI D

interdisciplinary work groups

5.3 To effectively present work results both orally and in writing to stakeholders in the military environment

Forms of Teaching

- » Lectures
- » Exercises

Week by Week Schedule

1. Lectures: Introductory session
Exercises: Introductory class
2. Lectures: LEADERS AND LEADERSHIP (1) (LEADERSHIP STYLES), relative clauses
Exercises: LEADERS AND LEADERSHIP (1) (LEADERSHIP STYLES), listening exercises, describing people, using relative clauses
3. Lectures: LEADERS AND LEADERSHIP (2) (LEADERS IN THE PAST), relative clauses
Exercises: LEADERS AND LEADERSHIP (2) (LEADERS IN THE PAST), revision of past tenses, use of relative clauses
4. Lectures: LEADERS AND LEADERSHIP (3) (MILITARY HISTORY), text analysis (explicit and implicit meaning)
Exercises: LEADERS AND LEADERSHIP (3) (MILITARY HISTORY), revision of conditional sentences
5. Lectures: COMMAND DILEMMAS, finding arguments in a text
Exercises: COMMAND DILEMMAS, discussion, expressing one's opinion
6. Lectures: DECISION MAKING (1), stylistic analysis
Exercises: DECISION MAKING (1), steps in decision making, decision briefing, listening exercises
7. Lectures: REVISION
Exercises: REVISION - group discussion
8. Lectures: CONTINUOUS ASSESSMENT EXAM
Exercises: CONTINUOUS ASSESSMENT EXAM
9. Lectures: FEEDBACK ON CONTINUOUS ASSESSMENT EXAM AND DISCUSSION
Exercises: FEEDBACK ON CONTINUOUS ASSESSMENT EXAM AND DISCUSSION
10. Lectures: WOMEN IN THE ARMY 1, subordinate clauses (clauses of reason, purpose and result)
Exercises: WOMEN IN THE ARMY 1, reading strategies for longer texts, use of subordinate clauses
11. Lectures: WOMEN IN THE ARMY 2, introduction into writing an argumentative essay
Exercises: WOMEN IN THE ARMY 2, reading strategies for longer texts, use of subordinate clauses
12. Lectures: WOMEN IN THE ARMY 3, punctuation in English
Exercises: WOMEN IN THE ARMY 3, writing an argumentative essay
13. Lectures: REVISION
Exercises: peer assessment of argumentative essays
14. Lectures: Project assignment (writing an argumentative essay)
Exercises: CONTINUOUS ASSESSMENT EXAM
15. Lectures: CONTINUOUS ASSESSMENT EXAM
Exercises: FEEDBACK ON CONTINUOUS ASSESSMENT EXAM AND DISCUSSION

Literature



1. *Advanced Military Modules*
(2006), MORH, Zagreb.



2. *READER WITH EXERCISES*



3. Swann, M. (2007): *Practical English Usage*, Third Edition, Oxford University Press

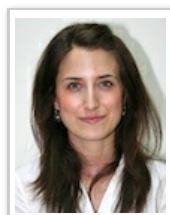
English VI

129374

Lecturers



doc. dr. sc.
Snježana Veselica
Majhut



dr. sc.
Tea Glavaš

Course Description

Further development of basic language skills (reading, writing, listening and speaking), acquisition and development of both general and specific vocabulary, as well as the development of intercultural competence with the aim of preparing students for successful fulfilment of professional duties in international surroundings.

Study Programmes

- » Armour -> Group of Courses Armour, Field Artillery, Engineers, Technical Support and Infantry (Course) (*required course, 6th semester, 3rd year*) (Note: course not offered in this academic year.)
- » Field Artillery -> Group of Courses Armour, Field Artillery, Engineers, Technical Support and Infantry (Course) (*required course, 6th semester, 3rd year*)
- » Engineers -> Group of Courses Armour, Field Artillery, Engineers, Technical Support and Infantry (Course) (*required course, 6th semester, 3rd year*) (Note: course not offered in this academic year.)
- » Technical Support -> Group of Courses Armour, Field Artillery, Engineers, Technical Support and Infantry (Course) (*required course, 6th semester, 3rd year*)
- » Infantry -> Group of Courses Armour, Field Artillery, Engineers, Technical Support and Infantry (Course) (*required course, 6th semester, 3rd year*) (Note: course not offered in this academic year.)
- » Signals -> Group of Courses Signals, Monitoring and Guidance and Air Defence (Course) (*required course, 6th semester, 3rd year*)
- » Monitoring and Guidance -> Group of Courses Signals, Monitoring and Guidance and Air Defence (Course) (*required course, 6th semester, 3rd year*) (Note: course not offered in this academic year.)
- » Air Defence -> Group of Courses Signals, Monitoring and Guidance and Air Defence (Course) (*required course, 6th semester, 3rd year*) (Note: course not offered in this academic year.)
- » Chemical, Biological, Radiological and Nuclear Defence -> Military Engineering (Course) (*required course, 6th semester, 3rd year*) (Note: course not offered in this academic year.)

Learning Outcomes

On successful completion of the course, students will be able to:

1. Understand a spoken text even if it is not in standard English
2. Understand extended texts of various types on complex topics
3. Analyse a text (identify the author's point of view, the purpose of a text, identify the main ideas and implicit meanings)
4. Perceive stylistic characteristics of various text types

ECTS Credits 2.0

English Level Lo

E-learning Level L1

Study Hours

Lectures 15

Seminar 15

Teaching Assistant
mr. sc. Maja Ivanović

Grading

Grading: During the implementation of the teaching process, students will be monitored and evaluated. Overall assessment of the subject is composed of the following elements: attendance+continuous assessment exams+oral exam+practical work. Obligations: Students are expected to regularly attend classes, actively participate in classes and prepare individual and group assignments.

Prerequisites

English IV
English V

5. Infer logical arguments from a text and apply them to support one's own opinion
6. Synthesise information received from various sources
7. Be familiar with literature citation norms in English academic texts
8. Speak accurately and fluently using common collocations and idiomatic expressions
9. Clearly and articulately presentat one's own opinions and ideas in discussions and negotiations

Study Programme Learning Outcomes

Military Engineering

4. Personal and professional skills and characteristics
 - 4.2 To model and resolve a problem and to interpret problem solution by using appropriate knowledge and methods
 - 4.4 To develop self-study abilities and the need for and methods of life-long learning in traditional and virtual environment
5. Social skills (team work and communication)
 - 5.1 To communicate effectively in the Croatian and English language applying modern presentation skills and techniques
 - 5.2 Organize and plan individual and team work in international and interdisciplinary work groups
 - 5.3 To effectively present work results both orally and in writing to stakeholders in the military environment

Forms of Teaching

- » Lectures
- » Seminars and workshops
- » Exercises
- » Independent assignments

Week by Week Schedule

1. Lectures: Introductory session
Exercises: Introductory class
2. Lectures: ELECTRONIC WARFARE (INTRODUCTION), word formation
Exercises: ELECTRONIC WARFARE (INTRODUCTION), word formation practice, listening exercise
3. Lectures: ELECTRONIC WARFARE IN OPERATION DESERT STORM, text analysis (explicit and implicit meaning)
Exercises: ELECTRONIC WARFARE IN OPERATION DESERT STORM, text argumentation practice
4. Lectures: FOURTH GENERATION WARFARE AND TERRORISM, subordinating conjunctions, compound prepositions
Exercises: FOURTH GENERATION WARFARE AND TERRORISM, expressing cause and effect
5. Lectures: LEARNING COUNTERINSURGENCY, tenses in subordinate clauses
Exercises: LEARNING COUNTERINSURGENCY, expressing wishes, importance and urgency
6. Lectures: BIOTERRORISM, planning a formal talk
Exercises: REVISION
7. Lectures: CONTINUOUS ASSESSEMENT EXAM
Exercises: CONTINUOUS ASSESSEMENT EXAM
8. Lectures: FEEDBACK ON CONTINUOUS ASSESSMENT EXAM AND DISCUSSION
Exercises: FEEDBACK ON CONTINUOUS ASSESSMENT EXAM AND DISCUSSION

9. Lectures: MILITARY ENGINEERING IN THE AIR FORCE, text analysis:
extracting the main ideas
Exercises: MILITARY ENGINEERING IN THE AIR FORCE, synthetising
information
10. Lectures: NATO, word formation: compound nouns
Exercises: NATO, group discussion
11. Lectures: NATO LANGUAGE POLICY / INTRODUCTION TO STANAG EXAM
Exercises: NATO LANGUAGE POLICY / INTRODUCTION TO STANAG
EXAM
12. Lectures: EU (INTRODUCTION AND DISCUSSION) AND EU DEFENSE
POLICY, collocations, prepositions
Exercises: EU (INTRODUCTION AND DISCUSSION) AND EU DEFENSE
POLICY, exchanging information through a discussion
13. Lectures: ENGINEER: MILITARY OR CIVILIAN?, argumentation, disagreeing,
quoting conventions
Exercises: ENGINEER: MILITARY OR CIVILIAN?, debate
14. Lectures: SECOND CONTINUOUS ASSESSMENT
Exercises: SECOND CONTINUOUS ASSESSMENT EXAM
15. Lectures: FEEDBACK ON SECOND CONTINUOUS ASSESSMENT AND
DISCUSSION
Exercises: FEEDBACK ON SECOND CONTINUOUS ASSESSMENT EXAM
AND DISCUSSION

Literature



Advanced Military Modules
(2006), MORH, Zagreb.



*READER with exercises (u
pripri)*



Defense Language Institute
(2008): *Topics in
Counterinsurgency, Texas:*
DLIELC.



*Swann, M. (2007): Practical
English Usage, Third Edition,*
Oxford University Press

English VI D

129970

Lecturer



doc. dr. sc.
Snježana Veselica
Majhut

Course Description

Further development of basic language skills (reading, writing, listening and speaking), acquisition and development of both general and specific vocabulary, as well as the development of intercultural competence with the aim of preparing students for successful fulfilment of professional duties in international surroundings.

Study Programmes

» Military Leadership and Management (Study) (*required course, 6th semester, 3rd year*)

Learning Outcomes

On successful completion of the course, students will be able to:

1. Understand a spoken text even if it is not in standard English
2. Understand extended texts on complex topics in various styles
3. Analyse a text (identify the point of reference, the purpose of the text, distinguishing the main ideas and implicit meanings)
4. Perceive stylistic characteristics of various types of texts
5. Infer logical arguments from a text and apply them to support one's opinion
6. Synthesise information received from various sources
7. Be familiar with literature citation norms in English academic texts
8. Accurately and fluently speak, using common collocations and idiomatic expressions
9. Clearly and articulately present one's own and other people's opinions and ideas in discussions and negotiations

Study Programme Learning Outcomes

Military Leadership and Management

4. Personal and professional skills and characteristics
 - 4.2 To model and resolve a problem and to interpret problem solution by using appropriate knowledge and methods
 - 4.4 To develop self-study abilities and the need for and methods of life-long learning in traditional and virtual environment
5. Social skills (team work and communication)
 - 5.1 To communicate effectively in the Croatian and English language applying modern presentation skills and techniques
 - 5.2 Organize and plan individual and team work in international and interdisciplinary work groups

ECTS Credits 2.0

English Level Lo

E-learning Level L1

Study Hours

Lectures 15

Seminar 15

Teaching Assistants

dr. sc. Tea Glavaš, pred.

mr. sc. Maja Ivanović

Milena Prošić, prof.

mr. sc. Irena Prpić Đurić, pred.

Grading

Grading: Students' work will be monitored and evaluated during the term. The final grade is composed of the following elements:

attendance+continuous assessment exams+practical work. Obligations: Students are expected to regularly attend classes, actively participate in classes and prepare individual and group assignments.

Prerequisites

English IV

English V D

5.3 To effectively present work results both orally and in writing to stakeholders in the military environment

Forms of Teaching

- » Lectures
- » Seminars and workshops
- » Exercises
- » Independent assignments

Week by Week Schedule

1. Lectures: Introductory session
Exercises: Introductory class
2. Lectures: MEDIA HANDLING (1), to infinitive vs. gerund, that clauses
Exercises: MEDIA HANDLING (1), to infinitive and gerund (practice), media interview, listening practice
3. Lectures: ORGANIZIRANJE MEĐUNARODNOG SASTANKA/KONFERENCIJE, pisana korespondencija, pisma i email poruke
Exercises: ORGANISING AN INTERNATIONAL MEETING/CONFERENCE, written correspondence: mail vs. letter
4. Lectures: MILITARY MEETING, structure of a meeting
Exercises: MILITARY MEETING, participation in meetings, presenting an argument
5. Lectures: NATO (1) Introduction to NATO, NATO history and enlargement;
Exercises: NATO (1), text analysis, writing a summary
6. Lectures: NATO (2), word formation revision (compound nouns)
Exercises: NATO (2), group discussion
7. Lectures: CONTINUOUS ASSESSMENT
Exercises: CONTINUOUS ASSESSMENT EXAM
8. Lectures: FEEDBACK ON CONTINUOUS ASSESSMENT EXAM AND DISCUSSION
Exercises: FEEDBACK ON CONTINUOUS ASSESSMENT EXAM AND DISCUSSION
9. Lectures: NATO LANGUAGE POLICY / INTRODUCTION TO STANAG EXAM
Exercises: NATO LANGUAGE POLICY / INTRODUCTION TO STANAG EXAM
10. Lectures: EU (INTRODUCTION AND INSTITUTIONS), collocations, prepositions
Exercises: EU (INTRODUCTION AND INSTITUTIONS), vocabulary reinforcement
11. Lectures: EU DEFENSE POLICY, argumentation, disagreeing, quoting
Exercises: EU DEFENSE POLICY, exchanging information through a discussion
12. Lectures: FOURTH GENERATION WARFARE AND TERRORISM, conjunctions, compound prepositions
Exercises: FOURTH GENERATION WARFARE AND TERRORISM, expressing cause and effect
13. Lectures: INSURGENCY BACKGROUND, referencing conventions
Exercises: INSURGENCY BACKGROUND, writing an essay
14. Lectures: CONTINUOUS ASSESSMENT EXAM
Exercises: SECOND CONTINUOUS ASSESSMENT
15. Lectures: FEEDBACK ON CONTINUOUS ASSESSMENT EXAM AND DISCUSSION
Exercises: FEEDBACK ON CONTINUOUS ASSESSMENT EXAM AND DISCUSSION

Literature



1. *Advanced Military Modules* (2006), MORH, Zagreb.



2. *Defense Language Institute* (2008): *Topics in Counterinsurgency*, Texas: DLIELC.



3. *Hewings M. (2011): Cambridge Academic English B2 Upper Intermediate Class Audio CD: An Integrated Skills Course for EAP (CD-Audio)*



4. *Swann, M. (2007): Practical English Usage, Third Edition*, Oxford University Press



5. *Reader with exercises (u pripremi)*

Environmental Protection

130095

Lecturer



prof. dr. sc.
Davor Ljubas

Course Description

The aim of the course is to provide the students with knowledge and understanding of main environmental issues in industrialized world, in the terms of concepts, connections and solutions for the protection of water, soil and air.

Study Programmes

- » Armour -> Group of Courses Armour, Field Artillery, Engineers, Technical Support and Infantry (Course) (*required course, 7th semester, 4th year*)
- » Field Artillery -> Group of Courses Armour, Field Artillery, Engineers, Technical Support and Infantry (Course) (*required course, 7th semester, 4th year*)
- » Engineers -> Group of Courses Armour, Field Artillery, Engineers, Technical Support and Infantry (Course) (*required course, 7th semester, 4th year*)
- » Technical Support -> Group of Courses Armour, Field Artillery, Engineers, Technical Support and Infantry (Course) (*required course, 7th semester, 4th year*)
- » Infantry -> Group of Courses Armour, Field Artillery, Engineers, Technical Support and Infantry (Course) (*required course, 7th semester, 4th year*) (**Note: course not offered in this academic year.**)
- » Signals -> Group of Courses Signals, Monitoring and Guidance and Air Defence (Course) (*required course, 7th semester, 4th year*) (**Note: course not offered in this academic year.**)
- » Monitoring and Guidance -> Group of Courses Signals, Monitoring and Guidance and Air Defence (Course) (*required course, 7th semester, 4th year*) (**Note: course not offered in this academic year.**)
- » Air Defence -> Group of Courses Signals, Monitoring and Guidance and Air Defence (Course) (*required course, 7th semester, 4th year*) (**Note: course not offered in this academic year.**)
- » Chemical, Biological, Radiological and Nuclear Defence -> Military Engineering (Course) (*required course, 7th semester, 4th year*)

Learning Outcomes

On successful completion of the course, students will be able to:

1. Apply advanced knowledge of science and technology to solve complex technical problems in an interdisciplinary context.
2. Solve new problems by applying acquired knowledge of the elements of technical systems and processes and their interactions during their entire life cycle.
3. Evaluate the materials, technologies and technical systems from the standpoint of business, social and environmental context.
4. Compare and estimate environmental impacts

ECTS Credits	4.0
English Level	Lo
E-learning Level	L1
Study Hours	
Lectures	30
Seminar	10
Laboratory exercises	5

Associate Lecturers

izv. prof. dr. sc. Slaven Dobrović
dr. sc. Ante Vučemilović, pred.
dr. sc. Maja Zebić Avdičević

Grading

Grading: Regular attendance and active participation brings max. 10 points. Through seminar work student can get max. 20 points. In the final written exam, students can get max. of 40 points and in oral exam 30 points. Points from these categories are added together and make a base for final assessment of the student. Obligations: Attending lectures and exercises, reading assigned material, seminar work.

Prerequisites for

Practical Military Training - Chemical, Biological, Radiological, and Nuclear Defence

5. Evaluate the application of different technological steps to reduce the environmental impacts
6. Recommend mitigation measures to address specific environmental problems

Study Programme Learning Outcomes

Military Engineering

- 2 Special military competences
 - 2.2 To manage maintenance of combat and non-combat assets, ammunitions and mines of the branch/service
- 3 Basic technical knowledge
 - 3.1. To identify, analyse, model and resolve military engineering problems by integrating basic knowledge of natural and technical sciences
4. Personal and professional skills and characteristics
 - 4.1 To identify and analyze a problem in the military environment
5. Social skills (team work and communication)
 - 5.1 To communicate effectively in the Croatian and English language applying modern presentation skills and techniques
- 6 Development, implementation and operation of technical systems in economic and social environment
 - 6.1. To analyse and evaluate the effect of engineering solutions on society and environment

Screening of student's work

- o ECTS Midterm exam
- 2 ECTS Written exam
- 1 ECTS Seminar report
- 1 ECTS Oral exam
- 4 ECTS

Forms of Teaching

- » Lectures
 - » Teachers present theory in front of students in one group where all students are present.
- » Seminars and workshops
 - » Students in the groups create seminars with a given theme and present them.
- » Exercises
 - » Teachers conduct demonstration lab exercises in the lab.

Week by Week Schedule

1. Lectures: Principals and terms: sustainable development, energy efficiency, renewable energy end resources. Natural cycle of materials. Air, water and soil as potentially renewable resources.
Seminar: Multimedia presentation. Debate.

Exercises: -

2. Lectures: Energy and Environment. The atmosphere - composition and structure. Climate system. Greenhouse effect - Global warming potential. Greenhouse gases and Earth's energy balance. Kyoto Protocol.
Seminar: Unit calculations - aqueous solutions, gases and solids.

Exercises: -

3. Lectures: Ozone in stratosphere. Chapman`s ozone cycle. Ozone depletion. OD gases. OD potential. Montreal Protocol.
Seminar: -

Exercises: ozone layer

4. Lectures: Sources and effects of Atmospheric pollution. Air pollutants of importance. Photochemical processes in throposphere. Atmospheric acid formation and deposition - influence on the environment.
Seminar: -

Exercises: acid rain

5. Lectures: Air pollution control in power generation sector. Equipment for dust particle separation - characteristics and efficiencies.
Seminar: Combustion calculations. Analytical methods

Exercises: -

6. Lectures: Flue gas desulphurisation technologies
Seminar: -

Exercises: sulphur in environment

7. Lectures: Flue gas denitrification technologies. Combined DESOx/DENOx process. NOx formation and primary measures for NOx reduction.
Seminar: -

Exercises: nitrogen oxides

8. Lectures: Pollution from traffic sector. Catalytic converters for Otto and Diesel, four and two stroke engines. Fuel quality.
Seminar: -

Exercises: waste waters

9. Lectures: The hydrosphere, characterization of natural waters. Sources and effects of hydrospheric pollution. Water pollutants of concern. Selfpurification processes.
Seminar: -

Exercises: military activities and their impacts on soil

10. Lectures: Waste water technology: Mechanical pretreatment and physico-chemical treatment: neutralization, coagulation, flocculation, sedimentation, filtration, oxidation, disinfection.
Seminar: -

Exercises: military activities and their impacts on water

11. Lectures: Biological waste water treatment. Activated sludge process. Fixed-film systems. Aerated lagoons. Sequencing batch reactors. Anaerobic treatment.
Seminar: -

Exercises: military activities and their impacts on atmosphere

12. Lectures: Solid waste - characterization, generation and composition.
Seminar: Material flow analysis - examples and calculations.

Exercises: -

13. Lectures: Solid waste management. Options for source segregated wastes. Options for NON-source segregated wastes. Reuse and recycling. Composting. Landfilling. Incineration. Mechanical biological treatment. Anaerobic treatment.
Seminar: -

Exercises: hazardous waste treatment and disposal

14. Lectures: Hazardous waste treatment and disposal. Sources and effects of persistent organic pollutants.
Seminar: Physico-chemical characteristics of chosen hazardous materials.

Exercises: -

15. Lectures: Environment Management Systems
Seminar: -

Exercises: standard HRN:EN:ISO 14001

Literature



STANDARD HANDBOOK OF ENVIRONMENTAL ENGINEERING, R.A. Corbitt, McGraw Hill 2004



Industrial Ecology and Global Change, R. SOCOLOW, C. ANDREWS, F. BERKHOUT, and V. THOMAS, Cambridge University Press, 2006



Fundamentals of Environmental Chemistry, Manahan, Stanley E. CRC Press, 2003.

Similar Courses

- » Environmental Change and Management, Oxford

Ethics of Military Profession

129375

Lecturers



prof. dr. sc.
Ozren Žunec



doc. dr. sc.
Danijela Lucić

Course Description

Having general ethical principles in mind, the course should familiarize future officers with core values of military ethics, initiate them into practical principles of ethical decision making in the military organization environment so that they are prepared for complex tasks assigned to them, especially under the circumstances involving violence and unclear situations.

Study Programmes

- » Armour -> Group of Courses Armour, Field Artillery, Engineers, Technical Support and Infantry (Course) (*required course, 6th semester, 3rd year*) (Note: course not offered in this academic year.)
- » Field Artillery -> Group of Courses Armour, Field Artillery, Engineers, Technical Support and Infantry (Course) (*required course, 6th semester, 3rd year*)
- » Engineers -> Group of Courses Armour, Field Artillery, Engineers, Technical Support and Infantry (Course) (*required course, 6th semester, 3rd year*) (Note: course not offered in this academic year.)
- » Technical Support -> Group of Courses Armour, Field Artillery, Engineers, Technical Support and Infantry (Course) (*required course, 6th semester, 3rd year*)
- » Infantry -> Group of Courses Armour, Field Artillery, Engineers, Technical Support and Infantry (Course) (*required course, 6th semester, 3rd year*) (Note: course not offered in this academic year.)
- » Signals -> Group of Courses Signals, Monitoring and Guidance and Air Defence (Course) (*required course, 6th semester, 3rd year*)
- » Monitoring and Guidance -> Group of Courses Signals, Monitoring and Guidance and Air Defence (Course) (*required course, 6th semester, 3rd year*) (Note: course not offered in this academic year.)
- » Air Defence -> Group of Courses Signals, Monitoring and Guidance and Air Defence (Course) (*required course, 6th semester, 3rd year*) (Note: course not offered in this academic year.)
- » Chemical, Biological, Radiological and Nuclear Defence -> Military Engineering (Course) (*required course, 6th semester, 3rd year*) (Note: course not offered in this academic year.)
- » Military Leadership and Management (Study) (*required course, 6th semester, 3rd year*)

ECTS Credits	3.0
English Level	Lo
E-learning Level	L1
Study Hours	
Lectures	30
Seminar	15

Associate Lecturer
dr. sc. Stjepan Domjančić, doc.

Teaching Assistant
Ivan Barić, mag. educ. hist.

Grading

Grading: Students are eligible to take the exam if they fulfill attendance requirements, if they actively participate in seminar discussions and submit a satisfactory seminar paper. Seminar paper will be graded 1-5. Performance in the exam will be graded 1-5. Obligations: Students should be present at 75% of lectures and seminars, should submit a seminar paper and take the oral exam.

Learning Outcomes

On successful completion of the course, students will be able to:

1. To define basic ethical terms: ethics, morale, virtues, the good, values, customary practices, duty, law, responsibility, belief
2. To differentiate between heteronomous and autonomous ethics and be acquainted with the roots of morality
3. To have knowledge of the ethical principles of democratic and plural political systems and core values of Croatian society
4. To have knowledge of military virtues and specificities of military profession regarding ethical issues
5. To have knowledge of leadership qualities and build their own leadership capabilities
6. To assess moral justification of every action undertaken in the chaotic circumstances of an armed conflict situation in a time-efficient, decisive and responsible manner
7. To internalize corporate spirit common to all members which is the basis for their actions in all circumstances
8. To apply adopted ethical principles and have clear guidelines for taking the right action in circumstances when appropriate orders or regulations do not exist
9. To have knowledge and understanding of ethical differences, relativism and multiculturalism
10. To write and deliver a motivational speech

Study Programme Learning Outcomes

Military Engineering

- 1 Basic competences of the military profession
 - 1.5 To develop personal and collective determination, courage, enthusiasm and initiative of subordinates
 - 1.7 To be acquainted with and to respect historical, social and cultural diversities in the context of military activities
- 3 Basic technical knowledge
 - 3.3 To integrate and apply engineering principles and techniques in the operation of military system in unpredictable conditions
- 4 Personal and professional skills and characteristics
 - 4.3 To assume military, professional and ethical responsibility
5. Social skills (team work and communication)
 - 5.3 To effectively present work results both orally and in writing to stakeholders in the military environment

Military Leadership and Management

- 1 Basic competences of the military profession
 - 1.5 To develop personal and collective determination, courage, enthusiasm and initiative of subordinates
 - 1.7 To be acquainted with and to respect historical, social and cultural diversities in the context of military activities
- 3 Basic competences in social and humanistic sciences
 - 3.3 To apply International War and Humanitarian Law
- 4 Personal and professional skills and characteristics
 - 4.3 To assume military, professional and ethical responsibility
5. Social skills (team work and communication)
 - 5.3 To effectively present work results both orally and in writing to stakeholders in the military environment

Forms of Teaching

- » Lectures
- » Seminars and workshops
- » Field work
- » Work with mentor

Week by Week Schedule

1. Lectures: Basic terms: ethics, morale, virtue, the good, values, customary practices, duty, law, responsibility, belief
Exercises: Homerus and antic warrior ethics
2. Lectures: Different approaches in making ethical decisions: descriptive, normative, consequentialist (utilitarian) and applied ethics. Ethics of virtue, duty and belief.
Exercises: Herodotus and Thucydides
3. Lectures: Basics of the ethical: heteronomous and autonomous ethics. The roots of morality: religion, legality, morality, culture. Ethical relativism and interculturalism.
Exercises: Plato's ethics of guardians
4. Lectures: Brief history of general ethics and professional ethics, especially ethics of military profession (introduction to the basic ideas of the most prominent philosophers: Plato, Aristotle, Kant, Mill, Scheler, Weber etc)
Exercises: Aristotle and ethics of the golden mean
5. Lectures: Morality as a prerequisite of human society. Ethical principles of democratic and plural political systems. Core values of Croatian society and basic human rights.
Exercises: Kant and morality
6. Lectures: Specific qualities of military organisation and profession in relation to ethical issues and dilemmas. The importance of ethical development of military personnel for efficient operation of the military organisation. The concept of inner leadership and the organisation spirit.
Exercises: Contemporary ethical theories and foundation of ethics (selected texts)
7. Lectures: Military virtues and officers' ethical standards: integrity, loyalty, courage, responsibility, unselfishness, dedication, determination, fairness, truthfulness, leading by example, caring for others, team work, honesty, elegance, tactfulness and refinement.
Exercises: Howard (selected chapters)
8. Lectures: Duty and honour. Moral and character flaws and their consequences.
Exercises: Walzer (selected chapters)
9. Lectures: The role, development and responsibility of a leader in a military organisation.
Exercises: Codes of ethics of military organization (selected texts)
10. Lectures: Basic ethical dilemmas of the military profession, resolving dilemmas, dealing with the consequences: freedom and necessity, service and family, imperative of combat and victory, legal and ethical restrictions of the use of violence, military organisation policy and consciousness of the individual, execution of orders, individual initiative and disobedience, military and democracy, military and politics.
Exercises: Constitution of the Republic of Croatia
11. Lectures: Just war theories (bellum iustum).
Exercises: Code of ethics of Croatian Armed Forces
12. Lectures: Conduct in combat. Principles of commensurability, discrimination, military necessity and force majeure. Collateral and material damage. Treatment of civilians and war prisoners.
Exercises: Code of ethics of the Croatian Armed Forces
13. Lectures: Use and abuse of violence and power. Conduct in specific missions (terrorism, rebellions, riots, peacekeeping missions, etc.).
Exercises: Examples of ethical texts from other cultures and civilizations

14. Lectures: Cultural differences and relativity of ethical and moral standards.
Conduct in other cultural and civilizational contexts.
Exercises: Great military orators and famous speeches (Pericles, Lincoln, Churchill, Patton, Stepinac, etc.)
15. Lectures: Principles of military rhetoric.
Exercises: Topics of exam papers

Literature



Bohrmann, Thomas (2013.) Handbuch Militärische Berufsethik. Wiesbaden: VS Verlag für Sozialwissenschaften.



Howard, Michael et al. (Eds.) (1994.) The Laws of War. Constraints on Warfare in the Western World. New Haven – London: Yale University Press.



Van Baarda, Th.A. - D.E.M Verweij (Eds.) (2006.) Military Ethics: The Dutch Approach - A Practical Guide. Martinus Nijhoff Publishers.



Walzer, Michael (1992.) Just and Ujust Wars. A Moral Argument with Historical Illustrations. S.l.: Basic Books

Field Artillery Gunnery

130116



Lecturer



doc. dr. sc.
Matija Hoić

Course Description

Enable students for the preparation, training and leading of the Fire Direction Center and Fire Support Teams integrated in fire support channel as a part of combat support at the battlefield. Teach them how to apply standard procedures while preparing firing data, adjustment of artillery fire and achievement of planned effects on the target.

Study Programmes

» Field Artillery -> Group of Courses Armour, Field Artillery, Engineers, Technical Support and Infantry (Course) (*required course, 7th semester, 4th year*)

Learning Outcomes

On successful completion of the course, students will be able to:

1. Know how to apply basic laws of ballistics in the field artillery
2. Know how to follow the muzzle velocity
3. Know how to explain structure and meaning of the artillery weapons tabular firing tables
4. Organize and conduct the work of the fire direction center
5. Organize and lead the work of forward observers in the fire support team
6. Apply all available means, tools, and accessories for manual and automatic data processing that are being used for the purpose of conduct and direction of fire
7. Conduct emergency and surveyed firing data procedures
8. Conduct accurate firing data procedures

Study Programme Learning Outcomes

Military Engineering

- 1 Basic competences of the military profession
 - 1.1 To communicate, organize and plan effectively the activities of a basic tactical unit
 - 1.2 To assess the situation and implement appropriate tactics for a basic tactical unit
 - 1.3 To make decisions independently and command a basic tactical unit
 - 1.4 To train, develop and assess the abilities of soldiers and a basic tactical unit
- 2 Special military competences
 - 2.1 To analyse the environment and to develop and apply tactics of the branch/service
 - 2.2 To manage maintenance of combat and non-combat assets, ammunitions

ECTS Credits 7.0

English Level Lo

E-learning Level L1

Study Hours

Lectures 30

Laboratory exercises 60

Teaching Assistants

Ivan Putnik, bac.

Mario Šipoš, mag.ing.el.

Grading

Grading: During their classes, the students will be valuated, practical and seminar work. A Student who fails the written test will repeat the exam. A student who is not satisfied with the mark from the written test or overall mark, takes an oral exam. The mark from the practical work is made of diligence, initiatives, creativity and organizational skills. Total mark from the subject is made from the written exam, seminar and practical work if all of them are positive. Obligations: Students are obligated to attend classes, training exercises and shooting. Overall education and training from the subject Field Artillery is conducted by means of the protection equipment of the CAF. During the education process, obey military relationships and hierarchy with the purpose of safe conduct of activities. Each student should make a seminar paper from the field of infantry tactics exclusively. Students agree on the organization of life and work within the CAF training range, shooting and exercise areas.

Prerequisites for

Practical Military Training - Field Artillery

ME

ME-M

ARM

ART

ENG

TS

IN-E

ME-E

SIG

MG

AD

CBR

MLM

IN-L

- and mines of the branch/service
- 2.3 To use combat and non-combat assets of the branch/service in a professional way
- 3 Basic technical knowledge
 - 3.3. To integrate and apply engineering principles and techniques in the operation of military system in unpredictable conditions
- 4. Personal and professional skills and characteristics
 - 4.3 To assume military, professional and ethical responsibility
- 5. Social skills (team work and communication)
 - 5.1 To communicate effectively in the Croatian and English language applying modern presentation skills and techniques
 - 5.2 Organize and plan individual and team work in international and interdisciplinary work groups
- 6 Development, implementation and operation of technical systems in economic and social environment
 - 6.1. To analyse and evaluate the effect of engineering solutions on society and environment
 - 6.2. To apply and create engineering approaches in analysing and assessing products and processes in security environment

Screening of student's work

- 1 ECTS Lectures attendance
- 2 ECTS Midterm exam
- 2 ECTS Written exam
- 2 ECTS Oral exam
- 7 ECTS

Forms of Teaching

- » Lectures
 - » Once a week, 3 hours in a row
- » Seminars and workshops
 - » Lectures by junior officers from artillery units
- » Exercises
 - » Tactical exercises on a map
- » Field work
 - » Visit to an artillery unit in barracks and during firing practice
- » Other
 - » provedba topničkih bojnih gađanja

Week by Week Schedule

1. Lecture: Introducing the Field Artillery Gunnery subject;
Introducing the subject; Definition of Field Artillery Gunnery; Definition of artillery shooting; Source and field of Field Artillery Gunnery interest
2. Lecture: Angles and angle measurement units in artillery
Angle measurement system in Artillery; Artillery triangle; Recalculation of angles in artillery
Exercise: Angles and angle measurement units in artillery
3. Lecture: Fire support channel
Forward artillery observer;; Company fire support team; Battalion fire support section; Brigade fire support section
4. Lecture: Call for fire procedures
Forward observer identification; Preparation order; Target locations; Types of conduct; Fire and control measures
Exercise: Call for fire procedures

5. Lecture: Squad for Fire control
Composition; Tasks and positioning of the Squad for Fire control; Role and tasks of the squad for fire control in the combat order of an artillery unit in the process of control and handling of fire (within the fire support channel); Tasks of individual squad members
firing tables according to „Russian“ format
Exercise: Squad for Fire control
6. Lecture: Military meteorological report „meteo-firing“ and „meteo-average“
Meteorological report definition; Processing and composition of a meteo-report; Decoding of „meteo-firing“; Decoding of „meteo-average“;
Determining of barometric degree; Filling the forms UV-2 and UV-3
Exercises: Military meteorological report „meteo-firing“ and „meteo-average“
7. First midterm
8. Lecture: Short preparation of initial firing data
General conditions; Determination of topographic elements; Choice of charge and verification of firing solution for a specific target; calculations of meteo-balistic corrections; Calculations of initial corrected firing data (based on meteo-balistic corrections or adjusted corrections)
Filing the forms UV-1; UV-2; UV-4 i UV-5
Exercises: Preparation of Squad for Fire control equipment
9. Lecture: Corrections
General conditions on corrections and adjustments in corrections; Surveillance; report on surveillance and logging of surveillance (of shooting); Correction based on the measured error of hits; Correction based on the assessment of direction of hits; Determination of corrected element for firing during adjustment by graphical means
Exercises: Correction
10. Lecture: Complete preparation of firing data
Calculation of initial adjusted firing data for and area with a width of 6-00; and a depth of 4 km (meteo-balistic marker) or indirectly on the target based on general and mountain range table; Filing the forms UV_2; and UV-3
Lectures: Complete preparation of firing data
11. Lecture: Transfer of fire on topographic-geodetic base
Determination of correction data for the case of meteo-balistic adjustment determined for a single marker; Determination of correction data after completing the adjustment on a real marker; Determination of correction data after completing the adjustment on a fictive marker; Determination of adjustment parameters; Determination of initial adjusted firing data
Exercise: Transfer of fire on topographic-geodetic base
12. Lecture: Vertical and Special firing types
Specific of vertical firing; Calculations of initial firing data for vertical firing; Timed firing; Cover smoke firing; Illumination firing
Exercises: Vertical and Special firing types
13. Lecture: Integrated artillery STANAGs and range tables format according to NATO standard (STANAG 4119)
HRVN 4044 (ICAO atmosphere); HRVN 4061 (METB3); meteo-report for range tables according to NATO standard; HRVN 4082 (METCM); meteo-report for fire control programs in accordance with MPMM ili 6DOF model; Tables A; B; C; D; E; F; G; I; J; K
Exercise: Integrated artillery STANAG and range tables format according to NATO standard (STANG 4119)
14. Lecture: Program for automatic data processing (ADP) in Artillery
Principle of the Program for automatic data processing in Artillery; Principle of calculation of initial firing data by means of ADP; Principle of corrections by means of ADP; Principle of fire transfer by means of ADP
15. Second midterm

Literature



*AArty P-1 Topničke procedure
STANAG 2934 (2007), Z
HKoV, Karlovac*



*Golub, Mladen (1993.)
Izvršitelj gađanja i korektura
(skripta), HVU, Zagreb*



*Babić, Damir (1998.) Priprema
početnih elemenata (korekcija i
prijenos paljbe) (skripta),
UHKoV, Zagreb*



*Kuftinec, Zdenko (2011.)
Balistika nevođenih projektila,
HVU, Zagreb*



*Artiljerijsko pravilo gađanja
(1981.), VIZ, Beograd*

Field Artillery Tactical Doctrine

130114

Lecturer



doc. dr. sc.
Matija Hoić

Course Description

Introduction to the basics of tactical use of artillery units and enabling for the command over artillery and fire support rocket platoon, mortar platoon and command platoons. Enabling for effective training of artillery, rocket and mortar military specialists.

Study Programmes

» Field Artillery -> Group of Courses Armour, Field Artillery, Engineers, Technical Support and Infantry (Course) (*required course, 7th semester, 4th year*)

Learning Outcomes

On successful completion of the course, students will be able to:

1. Select the suitable terrain for the filed artillery unit deployment.
2. Apply tactics and techniques for units movement.
3. Prepare artillery unit for shooting.
4. Organize unit activity at fire position.
5. Organize communication within fire support system.
6. Organize activity at the front observer position.
7. Organize fire direction.
8. Apply knowledge of soldiers and lower level units training.
9. .
10. .

Study Programme Learning Outcomes

Military Engineering

- 1 Basic competences of the military profession
 - 1.1 To communicate, organize and plan effectively the activities of a basic tactical unit
 - 1.2 To assess the situation and implement appropriate tactics for a basic tactical unit
 - 1.3 To make decisions independently and command a basic tactical unit
 - 1.4 To train, develop and assess the abilities of soldiers and a basic tactical unit
 - 1.5 To develop personal and collective determination, courage, enthusiasm and initiative of subordinates
 - 1.6 To nourish, channel and use creativity in accomplishing missions of a basic tactical unit
 - 1.7 To be acquainted with and to respect historical, social and cultural

ECTS Credits 7.0

English Level Lo

E-learning Level L1

Study Hours

Lectures 45

Laboratory exercises 45

Associate Lecturer

Neven Klarić

Teaching Assistants

Leopold Gelemanović, mag. ing. mech.

Mirko Ištuk, prof.

Ivan Putnik, bac.

Grading

Grading: Evaluation of the exercises - practical work, evaluation of live shooting and passing of the final exam that consists of written and oral part. Obligations: Attendance and participation in teachings, taking exams. Doing practical exercises during the course.

Prerequisites for

Practical Military Training - Field Artillery



diversities in the context of military activities

2 Special military competences

- 2.1 To analyse the environment and to develop and apply tactics of the branch/service
- 2.2 To manage maintenance of combat and non-combat assets, ammunitions and mines of the branch/service
- 2.3 To use combat and non-combat assets of the branch/service in a professional way
- 2.4. To apply International War and Humanitarian Law
- 2.5 To apply knowledge of the military history in resolving tactical and operational problems

3 Basic technical knowledge

- 3.1. To identify, analyse, model and resolve military engineering problems by integrating basic knowledge of natural and technical sciences
- 3.2. To apply complex methodology by integrating engineering knowledge and skills in military engineering practice
- 3.3. To integrate and apply engineering principles and techniques in the operation of military system in unpredictable conditions

4. Personal and professional skills and characteristics

- 4.1 To identify and analyze a problem in the military environment
- 4.2 To model and resolve a problem and to interpret problem solution by using appropriate knowledge and methods
- 4.3 To assume military, professional and ethical responsibility
- 4.4 To develop self-study abilities and the need for and methods of life-long learning in traditional and virtual environment

5. Social skills (team work and communication)

- 5.1 To communicate effectively in the Croatian and English language applying modern presentation skills and techniques
- 5.2 Organize and plan individual and team work in international and interdisciplinary work groups
- 5.3 To effectively present work results both orally and in writing to stakeholders in the military environment

6 Development, implementation and operation of technical systems in economic and social environment

- 6.1. To analyse and evaluate the effect of engineering solutions on society and environment

Screening of student's work

- 2 ECTS Lectures attendance
- 2 ECTS Midterm exam
- 1 ECTS Written exam
- 2 ECTS Oral exam
- 7 ECTS

Forms of Teaching

- » Lectures
 - » Lectures on individual subjects from the artillery tactics
- » Exercises
 - » Tactical excersises using maps
- » Field work
 - » Application of tactical conduct in field conditions
- » Independent assignments
 - » Detailed independent coverage of one of the subjects from the lectures

- » Multimedia and the internet
 - » Video presentations of artillery units actions
- » Other
 - » Topnička bojna gađanja

Week by Week Schedule

1. Lectures: Fire Support. Organizational structure, tasks and function of the field artillery. Capabilities and means of artillery.
Seminar: .
2. Lectures: Fire support system.
Seminar: .
3. Lectures: Command and control.
Seminar: .
4. Lectures: Target processing.
Seminar: Organizational chart and functioning of artillery, rocket and mortar units.
5. Lectures: Planning and coordination of fire support.
Seminar: Presentation of fire support system and establishing of command and control relationship.
6. Lectures: Planning and coordination of fire support.
Seminar: Basic elements for fire support planning.
7. Lectures: Fire support plan.
Seminar: Targeting on terrain.
8. Lectures: Fire support plan. (preliminary exam) Artillery movement.
Seminar: Making of fire support plan.
9. Lectures: Artillery movement. Field artillery combat deployment. Manoeuvre areas of artillery. Reserved areas of artillery.
Seminar: Tactical road march. Reconnaissance and designation of combat artillery deployment.
10. Lectures: Artillery survivability: reconnaissance, combat protection, engineering protection, NBC protection,
Seminar: Reconnaissance and designation of combat artillery deployment.
11. Lectures: Artillery combat support services: storage, handling, transport, maintenance and repair, health care and taking care of the wounded, personnel manning, equipment fulfilment, social services aid.
Seminar: Artillery deployment and functioning. Organization and tasks of logistics in artillery.
12. Lectures: Communication in artillery: tasks, means, organization of planning and functioning of communication in artillery units.
Seminar: Organization and tasks of logistics in artillery. Survey of communication functioning in artillery unit.
13. Lectures: Fire Support in basic combat operations. Fire support in basic combat operations: assault fire support.
Seminar: Survey of communication functioning in artillery unit. Fire support system in basic combat operations.
14. Lectures: Fire support in basic combat operations: assault fire support. Fire support in basic combat operations: defence fire support.
Seminar: Assault artillery support.
15. Lectures: Fire support in basic combat operations: defence fire support. Exam.
Seminar: Defence artillery support.

Literature



AArty P-1(A) Topničke procedure, ZHKoV, Karlovac, 2007.,



AArty P-5 Taktička doktrina topništva, ZHKoV, Karlovac, 2008.,



Opće pravilo o vojnom odlučivanju u OS RH, Zagreb, 1999



APP 6 (A) – Vojni simboli kopnenih sustava, GSOS RH, Zagreb, 2008.



*STANAG 2014 (9. izdanje) -
Formati zapovijedi i
označavanje vremena, lokacija
i granica,*

Final BSc Thesis – Air Defence

129627

Course Description

The final thesis is a comprehensive and highly independent task where the student has to demonstrate the ability to analyse the given problem from theoretical and practical aspects, devise a solution using the knowledge acquired in multiple courses and literature, implement the solution, write the documentation and instructions for use and/or for further work and finally to present his or her work in written and oral form. The accent is given on demonstration of ability in all these aspects rather than to force students to pursue some work intensive repetitive activities. Student has two advisors; the first one is the university professor who is a member of the Faculty that is responsible for the Final BSc Thesis, while the second advisor is an officer or military expert of the Armed Forces of Republic of Croatia. Topic of the Final BSc Thesis is chosen by advisors and it is related to the students' study program specialization, i.e. a field of the military branch or service.

Study Programmes

- » Air Defence -> Group of Courses Signals, Monitoring and Guidance and Air Defence (Course) (*required course, 8th semester, 4th year*) (Note: course not offered in this academic year.)

Learning Outcomes

On successful completion of the course, students will be able to:

1. Integrate acquired knowledge and skills, develop ability to additionally consult the mandatory or supplementary textbooks and literature with consultations with advisors
2. Choose, argue and defend proposed solution
3. Realize a solution through modelling, simulation or prototyping for an assigned task of defined functionality
4. Conceive and write a Final BSc Thesis and draw conclusions in a formally, linguistically and ethically correct manner, according to instructions, of the average overall size of 30 pages
5. Publically present acquired results using computer prepared presentation through 10 minutes oral presentation
6. Recommend possible directions for further development of the proposed solution using the principles of the scientific research and development

Study Programme Learning Outcomes

Military Engineering

- 1 Basic competences of the military profession
 - 1.1 To communicate, organize and plan effectively the activities of a basic tactical unit
 - 1.3 To make decisions independently and command a basic tactical unit
- 2 Special military competences
 - 2.1 To analyse the environment and to develop and apply tactics of the branch/service
 - 2.2 To manage maintenance of combat and non-combat assets, ammunitions and mines of the branch/service
 - 2.3 To use combat and non-combat assets of the branch/service in a professional way
- 3 Basic technical knowledge
 - 3.1. To identify, analyse, model and resolve military engineering problems by integrating basic knowledge of natural and technical sciences

ECTS Credits	15.0
English Level	Lo
E-learning Level	L1
Study Hours	
Seminar	180
Grading	
Grading: The student, whose Final BSc Thesis is graded as satisfactory by advisors, defends his work in front of the examination commission for defence of the final work that is appointed by the committee for the final work of the specialisation Obligations: Fulfil all assigned tasks of the Final BSc Thesis	

- 3.2. To apply complex methodology by integrating engineering knowledge and skills in military engineering practice
- 3.3. To integrate and apply engineering principles and techniques in the operation of military system in unpredictable conditions
4. Personal and professional skills and characteristics
 - 4.1 To identify and analyze a problem in the military environment
 - 4.2 To model and resolve a problem and to interpret problem solution by using appropriate knowledge and methods
 - 4.4 To develop self-study abilities and the need for and methods of life-long learning in traditional and virtual environment
5. Social skills (team work and communication)
 - 5.1 To communicate effectively in the Croatian and English language applying modern presentation skills and techniques
 - 5.3 To effectively present work results both orally and in writing to stakeholders in the military environment
- 6 Development, implementation and operation of technical systems in economic and social environment
 - 6.1. To analyse and evaluate the effect of engineering solutions on society and environment
 - 6.2. To apply and create engineering approaches in analysing and assessing products and processes in security environment
 - 6.3. To apply and select knowledge and relevant facts from different areas, and to assume responsibility for assessing the impact of military technology in social environment
 - 6.4. To plan, organise, create and implement engineering testing, and to analyse and interpret the results

Forms of Teaching

- » Seminars and workshops
- » Independent assignments
- » Laboratory
- » Work with mentor

Week by Week Schedule

1. Exercises: Work on Final BSc Thesis
2. Exercises: Work on Final BSc Thesis
3. Exercises: Work on Final BSc Thesis
4. Exercises: Work on Final BSc Thesis
5. Exercises: Work on Final BSc Thesis
6. Exercises: Work on Final BSc Thesis
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10. Exercises: Work on Final BSc Thesis
11. Exercises: Work on Final BSc Thesis
12. Exercises: Work on Final BSc Thesis
13. Exercises: Work on Final BSc Thesis
14. Exercises: Work on Final BSc Thesis
15. Exercises: Work on Final BSc Thesis

Literature



*Literatura preporučena od
strane mentora*



Advisor recommended literature

Final BSc Thesis – Armour

129462

Course Description

The final thesis is a comprehensive and highly independent task where the student has to demonstrate the ability to analyse the given problem from theoretical and practical aspects, devise a solution using the knowledge acquired in multiple courses and literature, implement the solution, write the documentation and instructions for use and/or for further work and finally to present his or her work in written and oral form. The accent is given on demonstration of ability in all these aspects rather than to force students to pursue some work intensive repetitive activities. Student has two advisors; the first one is the university professor who is a member of the Faculty that is responsible for the Final BSc Thesis, while the second advisor is an officer or military expert of the Armed Forces of Republic of Croatia. Topic of the Final BSc Thesis is chosen by advisors and it is related to the students' study program specialization, i.e. a field of the military branch or service.

Study Programmes

» Armour -> Group of Courses Armour, Field Artillery, Engineers, Technical Support and Infantry (Course) (*required course, 8th semester, 4th year*)

Learning Outcomes

On successful completion of the course, students will be able to:

1. Integrate acquired knowledge and skills, develop ability to additionally consult the mandatory or supplementary textbooks and literature with consultations with advisors
2. Choose, argue and defend proposed solution
3. Realize a solution through modelling, simulation or prototyping for an assigned task of defined functionality
4. Conceive and write a Final BSc Thesis and draw conclusions in a formally, linguistically and ethically correct manner, according to instructions, of the average overall size of 30 pages
5. Publically present acquired results using computer prepared presentation through 10 minutes oral presentation
6. Recommend possible directions for further development of the proposed solution using the principles of the scientific research and development

Study Programme Learning Outcomes

Military Engineering

- 1 Basic competences of the military profession
 - 1.1 To communicate, organize and plan effectively the activities of a basic tactical unit
 - 1.3 To make decisions independently and command a basic tactical unit
- 2 Special military competences
 - 2.1 To analyse the environment and to develop and apply tactics of the branch/service
 - 2.2 To manage maintenance of combat and non-combat assets, ammunitions and mines of the branch/service
 - 2.3 To use combat and non-combat assets of the branch/service in a professional way
- 3 Basic technical knowledge
 - 3.1. To identify, analyse, model and resolve military engineering problems by integrating basic knowledge of natural and technical sciences
 - 3.2. To apply complex methodology by integrating engineering knowledge and

ECTS Credits 15.0

English Level Lo

E-learning Level L1

Study Hours

Seminar 180

Grading

Grading: The student, whose Final BSc Thesis is graded as satisfactory by advisors, defends his work in front of the examination commission for defence of the final work that is appointed by the committee for the final work of the specialisation Obligations: Fulfil all assigned tasks of the Final BSc Thesis

- skills in military engineering practice
- 3.3. To integrate and apply engineering principles and techniques in the operation of military system in unpredictable conditions
- 4. Personal and professional skills and characteristics
 - 4.1 To identify and analyze a problem in the military environment
 - 4.2 To model and resolve a problem and to interpret problem solution by using appropriate knowledge and methods
 - 4.4 To develop self-study abilities and the need for and methods of life-long learning in traditional and virtual environment
- 5. Social skills (team work and communication)
 - 5.1 To communicate effectively in the Croatian and English language applying modern presentation skills and techniques
 - 5.3 To effectively present work results both orally and in writing to stakeholders in the military environment
- 6 Development, implementation and operation of technical systems in economic and social environment
 - 6.1. To analyse and evaluate the effect of engineering solutions on society and environment
 - 6.2. To apply and create engineering approaches in analysing and assessing products and processes in security environment
 - 6.3. To apply and select knowledge and relevant facts from different areas, and to assume responsibility for assessing the impact of military technology in social environment
 - 6.4. To plan, organise, create and implement engineering testing, and to analyse and interpret the results

Forms of Teaching

- » Seminars and workshops
- » Independent assignments
- » Laboratory
- » Work with mentor

Week by Week Schedule

1. Exercises: Work on Final BSc Thesis
2. Exercises: Work on Final BSc Thesis
3. Exercises: Work on Final BSc Thesis
4. Exercises: Work on Final BSc Thesis
5. Exercises: Work on Final BSc Thesis
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11. Exercises: Work on Final BSc Thesis
12. Exercises: Work on Final BSc Thesis
13. Exercises: Work on Final BSc Thesis
14. Exercises: Work on Final BSc Thesis
15. Exercises: Work on Final BSc Thesis

Literature



*Literatura preporučena od
strane mentora*



Advisor recommended literature

Final BSc Thesis – Chemical, Biological, Radiological, and Nuclear Defence

129617



Course Description

The final thesis is a comprehensive and highly independent task where the student has to demonstrate the ability to analyse the given problem from theoretical and practical aspects, devise a solution using the knowledge acquired in multiple courses and literature, implement the solution, write the documentation and instructions for use and/or for further work and finally to present his or her work in written and oral form. The accent is given on demonstration of ability in all these aspects rather than to force students to pursue some work intensive repetitive activities. Student has two advisors; the first one is the university professor who is a member of the Faculty that is responsible for the Final BSc Thesis, while the second advisor is an officer or military expert of the Armed Forces of Republic of Croatia. Topic of the Final BSc Thesis is chosen by advisors and it is related to the students' study program specialization, i.e. of the field of the military branch or service.

Study Programmes

- » Chemical, Biological, Radiological and Nuclear Defence -> Military Engineering (Course) (required course, 8th semester, 4th year)

Learning Outcomes

On successful completion of the course, students will be able to:

1. Integrate acquired knowledge and skills, develop ability to additionally consult the mandatory or supplementary textbooks and literature with consultations with advisors
2. Choose, argue and defend proposed solution
3. Realize a solution through modelling, simulation or prototyping for an assigned task of defined functionality
4. Conceive and write a Final BSc Thesis and draw conclusions in a formally, linguistically and ethically correct manner, according to instructions, of the average overall size of 30 pages
5. Publically present acquired results using computer prepared presentation through 10 minutes oral presentation
6. Recommend possible directions for further development of the proposed solution using the principles of the scientific research and development

Study Programme Learning Outcomes

Military Engineering

- 1 Basic competences of the military profession
 - 1.1 To communicate, organize and plan effectively the activities of a basic tactical unit
 - 1.3 To make decisions independently and command a basic tactical unit
- 2 Special military competences
 - 2.1 To analyse the environment and to develop and apply tactics of the branch/service
 - 2.2 To manage maintenance of combat and non-combat assets, ammunitions and mines of the branch/service
 - 2.3 To use combat and non-combat assets of the branch/service in a professional way
- 3 Basic technical knowledge

ECTS Credits 15.0

English Level Lo

E-learning Level L1

Study Hours

Seminar 180

Grading

Grading: The student, whose Final BSc Thesis is graded as satisfactory by advisors, defends his work in front of the examination commission for defence of the final work that is appointed by the committee for the final work of the specialisation Obligations: Fulfil all assigned tasks of the Final BSc Thesis

- 3.1. To identify, analyse, model and resolve military engineering problems by integrating basic knowledge of natural and technical sciences
- 3.2. To apply complex methodology by integrating engineering knowledge and skills in military engineering practice
- 3.3. To integrate and apply engineering principles and techniques in the operation of military system in unpredictable conditions
4. Personal and professional skills and characteristics
 - 4.1 To identify and analyze a problem in the military environment
 - 4.2 To model and resolve a problem and to interpret problem solution by using appropriate knowledge and methods
 - 4.4 To develop self-study abilities and the need for and methods of life-long learning in traditional and virtual environment
5. Social skills (team work and communication)
 - 5.1 To communicate effectively in the Croatian and English language applying modern presentation skills and techniques
 - 5.3 To effectively present work results both orally and in writing to stakeholders in the military environment
- 6 Development, implementation and operation of technical systems in economic and social environment
 - 6.1. To analyse and evaluate the effect of engineering solutions on society and environment
 - 6.2. To apply and create engineering approaches in analysing and assessing products and processes in security environment
 - 6.3. To apply and select knowledge and relevant facts from different areas, and to assume responsibility for assessing the impact of military technology in social environment
 - 6.4. To plan, organise, create and implement engineering testing, and to analyse and interpret the results

Forms of Teaching

- » Seminars and workshops
- » Independent assignments
- » Laboratory
- » Work with mentor

Week by Week Schedule

1. Exercises: Work on Final BSc Thesis
2. Exercises: Work on Final BSc Thesis
3. Exercises: Work on Final BSc Thesis
4. Exercises: Work on Final BSc Thesis
5. Exercises: Work on Final BSc Thesis
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10. Exercises: Work on Final BSc Thesis
11. Exercises: Work on Final BSc Thesis
12. Exercises: Work on Final BSc Thesis
13. Exercises: Work on Final BSc Thesis
14. Exercises: Work on Final BSc Thesis
15. Exercises: Work on Final BSc Thesis

Literature



*Literatura preporučena od
strane mentora*



Advisor recommended literature

Final BSc Thesis – Engineers

129477

Course Description

The final thesis is a comprehensive and highly independent task where the student has to demonstrate the ability to analyse the given problem from theoretical and practical aspects, devise a solution using the knowledge acquired in multiple courses and literature, implement the solution, write the documentation and instructions for use and/or for further work and finally to present his or her work in written and oral form. The accent is given on demonstration of ability in all these aspects rather than to force students to pursue some work intensive repetitive activities. Student has two advisors; the first one is the university professor who is a member of the Faculty that is responsible for the Final BSc Thesis, while the second advisor is an officer or military expert of the Armed Forces of Republic of Croatia. Topic of the Final BSc Thesis is chosen by advisors and it is related to the students' study program specialization, i.e. a field of the military branch or service.

Study Programmes

- » Engineers -> Group of Courses Armour, Field Artillery, Engineers, Technical Support and Infantry (Course) (*required course, 8th semester, 4th year*)

Learning Outcomes

On successful completion of the course, students will be able to:

1. Integrate acquired knowledge and skills, develop ability to additionally consult the mandatory or supplementary textbooks and literature with consultations with advisors
2. Choose, argue and defend proposed solution
3. Realize a solution through modelling, simulation or prototyping for an assigned task of defined functionality
4. Conceive and write a Final BSc Thesis and draw conclusions in a formally, linguistically and ethically correct manner, according to instructions, of the average overall size of 30 pages
5. Publically present acquired results using computer prepared presentation through 10 minutes oral presentation
6. Recommend possible directions for further development of the proposed solution using the principles of the scientific research and development

Study Programme Learning Outcomes

Military Engineering

- 1 Basic competences of the military profession
 - 1.1 To communicate, organize and plan effectively the activities of a basic tactical unit
 - 1.3 To make decisions independently and command a basic tactical unit
- 2 Special military competences
 - 2.1 To analyse the environment and to develop and apply tactics of the branch/service
 - 2.2 To manage maintenance of combat and non-combat assets, ammunitions and mines of the branch/service
 - 2.3 To use combat and non-combat assets of the branch/service in a professional way
- 3 Basic technical knowledge
 - 3.1. To identify, analyse, model and resolve military engineering problems by integrating basic knowledge of natural and technical sciences
 - 3.2. To apply complex methodology by integrating engineering knowledge and

ECTS Credits 15.0

English Level Lo

E-learning Level L1

Study Hours

Seminar 180

Grading

Grading: The student, whose Final BSc Thesis is graded as satisfactory by advisors, defends his work in front of the examination commission for defence of the final work that is appointed by the committee for the final work of the specialisation Obligations: Fulfil all assigned tasks of the Final BSc Thesis

- skills in military engineering practice
- 3.3. To integrate and apply engineering principles and techniques in the operation of military system in unpredictable conditions
- 4. Personal and professional skills and characteristics
 - 4.1 To identify and analyze a problem in the military environment
 - 4.2 To model and resolve a problem and to interpret problem solution by using appropriate knowledge and methods
 - 4.4 To develop self-study abilities and the need for and methods of life-long learning in traditional and virtual environment
- 5. Social skills (team work and communication)
 - 5.1 To communicate effectively in the Croatian and English language applying modern presentation skills and techniques
 - 5.3 To effectively present work results both orally and in writing to stakeholders in the military environment
- 6 Development, implementation and operation of technical systems in economic and social environment
 - 6.1. To analyse and evaluate the effect of engineering solutions on society and environment
 - 6.2. To apply and create engineering approaches in analysing and assessing products and processes in security environment
 - 6.3. To apply and select knowledge and relevant facts from different areas, and to assume responsibility for assessing the impact of military technology in social environment
 - 6.4. To plan, organise, create and implement engineering testing, and to analyse and interpret the results

Forms of Teaching

- » Seminars and workshops
- » Independent assignments
- » Laboratory
- » Work with mentor

Week by Week Schedule

1. Exercises: Work on Final BSc Thesis
2. Exercises: Work on Final BSc Thesis
3. Exercises: Work on Final BSc Thesis
4. Exercises: Work on Final BSc Thesis
5. Exercises: Work on Final BSc Thesis
6. Exercises: Work on Final BSc Thesis
7. Exercises: Work on Final BSc Thesis
8. Exercises: Work on Final BSc Thesis
9. Exercises: Work on Final BSc Thesis
10. Exercises: Work on Final BSc Thesis
11. Exercises: Work on Final BSc Thesis
12. Exercises: Work on Final BSc Thesis
13. Exercises: Work on Final BSc Thesis
14. Exercises: Work on Final BSc Thesis
15. Exercises: Work on Final BSc Thesis

Literature



*Literatura preporučena od
strane mentora*



Advisor recommended literature

Final BSc Thesis – Field Artillery

129465

Course Description

The final thesis is a comprehensive and highly independent task where the student has to demonstrate the ability to analyse the given problem from theoretical and practical aspects, devise a solution using the knowledge acquired in multiple courses and literature, implement the solution, write the documentation and instructions for use and/or for further work and finally to present his or her work in written and oral form. The accent is given on demonstration of ability in all these aspects rather than to force students to pursue some work intensive repetitive activities. Student has two advisors; the first one is the university professor who is a member of the Faculty that is responsible for the Final BSc Thesis, while the second advisor is an officer or military expert of the Armed Forces of Republic of Croatia. Topic of the Final BSc Thesis is chosen by advisors and it is related to the students' study program specialization, i.e. a field of the military branch or service.

Study Programmes

- » Field Artillery -> Group of Courses Armour, Field Artillery, Engineers, Technical Support and Infantry (Course) (*required course, 8th semester, 4th year*)

Learning Outcomes

On successful completion of the course, students will be able to:

1. Integrate acquired knowledge and skills, develop ability to additionally consult the mandatory or supplementary textbooks and literature with consultations with advisors
2. Choose, argue and defend proposed solution
3. Realize a solution through modelling, simulation or prototyping for an assigned task of defined functionality
4. Conceive and write a Final BSc Thesis and draw conclusions in a formally, linguistically and ethically correct manner, according to instructions, of the average overall size of 30 pages
5. Publically present acquired results using computer prepared presentation through 10 minutes oral presentation
6. Recommend possible directions for further development of the proposed solution using the principles of the scientific research and development

Study Programme Learning Outcomes

Military Engineering

- 1 Basic competences of the military profession
 - 1.1 To communicate, organize and plan effectively the activities of a basic tactical unit
 - 1.3 To make decisions independently and command a basic tactical unit
- 2 Special military competences
 - 2.1 To analyse the environment and to develop and apply tactics of the branch/service
 - 2.2 To manage maintenance of combat and non-combat assets, ammunitions and mines of the branch/service
 - 2.3 To use combat and non-combat assets of the branch/service in a professional way
- 3 Basic technical knowledge
 - 3.1. To identify, analyse, model and resolve military engineering problems by integrating basic knowledge of natural and technical sciences
 - 3.2. To apply complex methodology by integrating engineering knowledge and

ECTS Credits	15.0
English Level	Lo
E-learning Level	L1
Study Hours	
Seminar	180
Grading	
Grading: The student, whose Final BSc Thesis is graded as satisfactory by advisors, defends his work in front of the examination commission for defence of the final work that is appointed by the committee for the final work of the specialisation Obligations: Fulfil all assigned tasks of the Final BSc Thesis	

- skills in military engineering practice
- 3.3. To integrate and apply engineering principles and techniques in the operation of military system in unpredictable conditions
4. Personal and professional skills and characteristics
- 4.1 To identify and analyze a problem in the military environment
- 4.2 To model and resolve a problem and to interpret problem solution by using appropriate knowledge and methods
- 4.4 To develop self-study abilities and the need for and methods of life-long learning in traditional and virtual environment
5. Social skills (team work and communication)
- 5.1 To communicate effectively in the Croatian and English language applying modern presentation skills and techniques
- 5.3 To effectively present work results both orally and in writing to stakeholders in the military environment
- 6 Development, implementation and operation of technical systems in economic and social environment
- 6.1. To analyse and evaluate the effect of engineering solutions on society and environment
- 6.2. To apply and create engineering approaches in analysing and assessing products and processes in security environment
- 6.3. To apply and select knowledge and relevant facts from different areas, and to assume responsibility for assessing the impact of military technology in social environment
- 6.4. To plan, organise, create and implement engineering testing, and to analyse and interpret the results

Forms of Teaching

- » Seminars and workshops
- » Independent assignments
- » Laboratory
- » Work with mentor

Week by Week Schedule

1. Exercises: Work on Final BSc Thesis
2. Exercises: Work on Final BSc Thesis
3. Exercises: Work on Final BSc Thesis
4. Exercises: Work on Final BSc Thesis
5. Exercises: Work on Final BSc Thesis
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9. Exercises: Work on Final BSc Thesis
10. Exercises: Work on Final BSc Thesis
11. Exercises: Work on Final BSc Thesis
12. Exercises: Work on Final BSc Thesis
13. Exercises: Work on Final BSc Thesis
14. Exercises: Work on Final BSc Thesis
15. Exercises: Work on Final BSc Thesis

Literature



*Literatura preporučena od
strane mentora*



Advisor recommended literature

Final BSc Thesis – Infantry

129470

Course Description

The final thesis is a comprehensive and highly independent task where the student has to demonstrate the ability to analyse the given problem from theoretical and practical aspects, devise a solution using the knowledge acquired in multiple courses and literature, implement the solution, write the documentation and instructions for use and/or for further work and finally to present his or her work in written and oral form. The accent is given on demonstration of ability in all these aspects rather than to force students to pursue some work intensive repetitive activities. Student has two advisors; the first one is the university professor who is a member of the Faculty that is responsible for the Final BSc Thesis, while the second advisor is an officer or military expert of the Armed Forces of Republic of Croatia. The topic of the Final BSc Thesis is chosen by advisors and it is related to the students' study program specialization, i.e. a field of the military branch or service.

Study Programmes

- » Infantry -> Group of Courses Armour, Field Artillery, Engineers, Technical Support and Infantry (Course) (*required course, 8th semester, 4th year*) (Note: course not offered in this academic year.)

Learning Outcomes

On successful completion of the course, students will be able to:

1. Integrate acquired knowledge and skills, develop ability to additionally consult the mandatory or supplementary textbooks and literature with consultations with advisors
2. Choose, argue and defend proposed solution
3. Realize a solution through modelling, simulation or prototyping for an assigned task of defined functionality
4. Conceive and write a Final BSc Thesis and draw conclusions in a formally, linguistically and ethically correct manner, according to instructions, of the average overall size of 30 pages
5. Publically present acquired results using computer prepared presentation through 10 minutes oral presentation
6. Recommend possible directions for further development of the proposed solution using the principles of the scientific research and development

Study Programme Learning Outcomes

Military Engineering

- 1 Basic competences of the military profession
 - 1.1 To communicate, organize and plan effectively the activities of a basic tactical unit
 - 1.3 To make decisions independently and command a basic tactical unit
- 2 Special military competences
 - 2.1 To analyse the environment and to develop and apply tactics of the branch/service
 - 2.2 To manage maintenance of combat and non-combat assets, ammunitions and mines of the branch/service
 - 2.3 To use combat and non-combat assets of the branch/service in a professional way
- 3 Basic technical knowledge
 - 3.1. To identify, analyse, model and resolve military engineering problems by integrating basic knowledge of natural and technical sciences

ECTS Credits	15.0
English Level	Lo
E-learning Level	L1
Study Hours	
Seminar	180
Grading	
Grading: The student, whose Final BSc Thesis is graded as satisfactory by advisors, defends his work in front of the examination commission for defence of the final work that is appointed by the committee for the final work of the specialisation Obligations: Fulfil all assigned tasks of the Final BSc Thesis	

- 3.2. To apply complex methodology by integrating engineering knowledge and skills in military engineering practice
- 3.3. To integrate and apply engineering principles and techniques in the operation of military system in unpredictable conditions
4. Personal and professional skills and characteristics
 - 4.1 To identify and analyze a problem in the military environment
 - 4.2 To model and resolve a problem and to interpret problem solution by using appropriate knowledge and methods
 - 4.4 To develop self-study abilities and the need for and methods of life-long learning in traditional and virtual environment
5. Social skills (team work and communication)
 - 5.1 To communicate effectively in the Croatian and English language applying modern presentation skills and techniques
 - 5.3 To effectively present work results both orally and in writing to stakeholders in the military environment
- 6 Development, implementation and operation of technical systems in economic and social environment
 - 6.1. To analyse and evaluate the effect of engineering solutions on society and environment
 - 6.2. To apply and create engineering approaches in analysing and assessing products and processes in security environment
 - 6.3. To apply and select knowledge and relevant facts from different areas, and to assume responsibility for assessing the impact of military technology in social environment
 - 6.4. To plan, organise, create and implement engineering testing, and to analyse and interpret the results

Forms of Teaching

- » Seminars and workshops
- » Independent assignments
- » Laboratory
- » Work with mentor

Week by Week Schedule

1. Exercises: Work on Final BSc Thesis
2. Exercises: Work on Final BSc Thesis
3. Exercises: Work on Final BSc Thesis
4. Exercises: Work on Final BSc Thesis
5. Exercises: Work on Final BSc Thesis
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9. Exercises: Work on Final BSc Thesis
10. Exercises: Work on Final BSc Thesis
11. Exercises: Work on Final BSc Thesis
12. Exercises: Work on Final BSc Thesis
13. Exercises: Work on Final BSc Thesis
14. Exercises: Work on Final BSc Thesis
15. Exercises: Work on Final BSc Thesis

Literature

*Literatura preporučena od
strane mentora*



Advisor recommended literature

Final BSc Thesis – Infantry

133753

Course Description

The final thesis is a comprehensive and highly independent task where the student has to demonstrate the ability to analyse the given problem from theoretical and practical aspects, devise a solution using the knowledge acquired in multiple courses and literature, implement the solution, write the documentation and instructions for use and/or for further work and finally to present his or her work in written and oral form. The accent is given on demonstration of ability in all these aspects rather than to force students to pursue some work intensive repetitive activities. Student has two advisors; the first one is the university professor who is a member of the Faculty that is responsible for the Final BSc Thesis, while the second advisor is an officer or military expert of the Armed Forces of Republic of Croatia. The topic of the Final BSc Thesis is chosen by advisors and it is related to the students' study program specialization, i.e. a field of the military branch or service.

Study Programmes

- » Infantry -> Military Leadership and Management (Course) (*elective course for the 8th semester mlm-infantry study, 8th semester, 4th year*)

Learning Outcomes

On successful completion of the course, students will be able to:

1. Integrate acquired knowledge and skills, develop ability to additionally consult the mandatory or supplementary textbooks and literature with consultations with advisors
2. Choose, argue and defend proposed solution
3. Realize a solution through modelling, simulation or prototyping for an assigned task of defined functionality
4. Conceive and write a Final BSc Thesis and draw conclusions in a formally, linguistically and ethically correct manner, according to instructions, of the average overall size of 30 pages
5. Publically present acquired results using computer prepared presentation through 10 minutes oral presentation
6. Recommend possible directions for further development of the proposed solution using the principles of the scientific research and development

Study Programme Learning Outcomes

Military Leadership and Management

- 1 Basic competences of the military profession
 - 1.1 To communicate, organize and plan effectively the activities of a basic tactical unit
 - 1.3 To make decisions independently and command a basic tactical unit
- 2 Special military competences
 - 2.1 To analyse the environment and to develop and apply tactics of the branch/service
 - 2.2 To manage maintenance of combat and non-combat assets, ammunitions and mines of the branch/service
 - 2.3 To use combat and non-combat assets of the branch/service in a professional way
- 3 Basic competences in social and humanistic sciences
 - 3.1 To analyze and interpret processes in international environment, and to act within international alliances and organizations in which the Republic of Croatia participates

ECTS Credits 15.0

English Level Lo

E-learning Level L1

Study Hours

Seminar 180

Grading

Grading: The student, whose Final BSc Thesis is graded as satisfactory by advisors, defends his work in front of the examination commission for defence of the final work that is appointed by the committee for the final work of the specialisation Obligations: Fulfil all assigned tasks of the Final BSc Thesis



- 3.4 To manage processes in the military environment using modern technologies
- 3.5 To apply knowledge of the structure and functioning of the political system, state and public administration in resolving unstructured problems
- 4. Personal and professional skills and characteristics
 - 4.1 To identify and analyze a problem in the military environment
 - 4.2 To model and resolve a problem and to interpret problem solution by using appropriate knowledge and methods
 - 4.4 To develop self-study abilities and the need for and methods of life-long learning in traditional and virtual environment
- 5. Social skills (team work and communication)
 - 5.1 To communicate effectively in the Croatian and English language applying modern presentation skills and techniques
 - 5.2 Organize and plan individual and team work in international and interdisciplinary work groups
 - 5.3 To effectively present work results both orally and in writing to stakeholders in the military environment

Screening of student's work

- 4 ECTS Experimental work
- 4 ECTS Research
- 4 ECTS Practical work
- 3 ECTS Writing a Thesis, presentation and defense
- 15 ECTS

Forms of Teaching

- » Seminars and workshops
 - » Seminars and Workshops
- » Independent assignments
 - » Individual Assignments
- » Laboratory
 - » Laboratory work
- » Work with mentor
 - » Mentor advised work

Week by Week Schedule

1. Work on Final BSc Thesis
2. Work on Final BSc Thesis
3. Work on Final BSc Thesis
4. Work on Final BSc Thesis
5. Work on Final BSc Thesis
6. Work on Final BSc Thesis
7. Work on Final BSc Thesis
8. Work on Final BSc Thesis
9. Work on Final BSc Thesis
10. Work on Final BSc Thesis
11. Work on Final BSc Thesis
12. Work on Final BSc Thesis
13. Work on Final BSc Thesis
14. Work on Final BSc Thesis
15. Work on Final BSc Thesis

Literature



*Literatura preporučena od strane
mentora / Advisor recommended
literature*

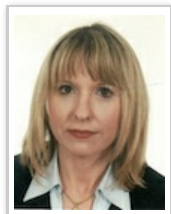
Final BSc Thesis – Military Intelligence

171900

Teaching Assistants



prof. dr. sc.
Mirko Bilandžić



prof. dr. sc.
Lidija Kos-Stanišić

Course Description

The final thesis is a comprehensive and highly independent task where the student has to demonstrate the ability to analyse the given problem from theoretical and practical aspects, devise a solution using the knowledge acquired in multiple courses and literature, implement the solution, write the documentation and instructions for use and/or for further work and finally to present his or her work in written and oral form. The accent is given on demonstration of ability in all these aspects rather than to force students to pursue some work intensive repetitive activities. Student has two advisors; the first one is the university professor who is a member of the Faculty that is responsible for the Final BSc Thesis, while the second advisor is an officer or military expert of the Armed Forces of Republic of Croatia. The topic of the Final BSc Thesis is chosen by advisors and it is related to the students' study program specialization, i.e. a field of the military branch or service.

Study Programmes

» Infantry -> Military Leadership and Management (Course) (*elective course for the 8th semester mlm-infantry study, 8th semester, 4th year*)

Learning Outcomes

On successful completion of the course, students will be able to:

1. Integrate acquired knowledge and skills, develop ability to additionally consult the mandatory or supplementary textbooks and literature with consultations with advisors
2. Choose, argue and defend proposed solution
3. Realize a solution through modelling, simulation or prototyping for an assigned task of defined functionality
4. Conceive and write a Final BSc Thesis and draw conclusions in a formally, linguistically and ethically correct manner, according to instructions, of the average overall size of 30 pages
5. Publically present acquired results using computer prepared presentation through 10 minutes oral presentation
6. Recommend possible directions for further development of the proposed solution using the principles of the scientific research and development

Study Programme Learning Outcomes

Military Leadership and Management

- 1 Basic competences of the military profession
 - 1.1 To communicate, organize and plan effectively the activities of a basic tactical unit
 - 1.3 To make decisions independently and command a basic tactical unit

ECTS Credits 15.0

English Level Lo

E-learning Level L1

Study Hours

Seminar 180

Grading

Grading: The student, whose Final BSc Thesis is graded as satisfactory by advisors, defends his work in front of the examination commission for defence of the final work that is appointed by the committee for the final work of the specialisation Obligations: Fulfil all assigned tasks of the Final BSc Thesis

2 Special military competences

- 2.1 To analyse the environment and to develop and apply tactics of the branch/service
- 2.2 To manage maintenance of combat and non-combat assets, ammunitions and mines of the branch/service
- 2.3 To use combat and non-combat assets of the branch/service in a professional way

3 Basic competences in social and humanistic sciences

- 3.1 To analyze and interpret processes in international environment, and to act within international alliances and organizations in which the Republic of Croatia participates
- 3.4 To manage processes in the military environment using modern technologies
- 3.5 To apply knowledge of the structure and functioning of the political system, state and public administration in resolving unstructured problems
- 3.8 To apply results of intelligence and counter-intelligence activities in leadership and management of military units

4. Personal and professional skills and characteristics

- 4.1 To identify and analyze a problem in the military environment
- 4.2 To model and resolve a problem and to interpret problem solution by using appropriate knowledge and methods
- 4.4 To develop self-study abilities and the need for and methods of life-long learning in traditional and virtual environment

5. Social skills (team work and communication)

- 5.1 To communicate effectively in the Croatian and English language applying modern presentation skills and techniques
- 5.2 Organize and plan individual and team work in international and interdisciplinary work groups
- 5.3 To effectively present work results both orally and in writing to stakeholders in the military environment

Screening of student's work

- 4 ECTS Experimental work
- 4 ECTS Research
- 4 ECTS Practical work
- 3 ECTS Writing a Thesis, presentation and defense
- 15 ECTS

Forms of Teaching

- » Seminars and workshops
 - » Seminars and Workshops
- » Independent assignments
 - » Individual Assignments
- » Laboratory
 - » Laboratory work
- » Work with mentor
 - » Mentor advised work

Week by Week Schedule

- 1. Work on Final BSc Thesis
- 2. Work on Final BSc Thesis
- 3. Work on Final BSc Thesis

4. Work on Final BSc Thesis
5. Work on Final BSc Thesis
6. Work on Final BSc Thesis
7. Work on Final BSc Thesis
8. Work on Final BSc Thesis
9. Work on Final BSc Thesis
10. Work on Final BSc Thesis
11. Work on Final BSc Thesis
12. Work on Final BSc Thesis
13. Work on Final BSc Thesis
14. Work on Final BSc Thesis
15. Work on Final BSc Thesis

Literature

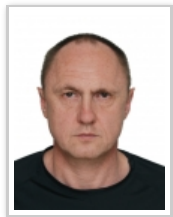


*Literatura preporučena od strane
mentora / Advisor recommended
literature*

Final BSc Thesis – Military Police

171899

Teaching Assistant



prof. dr. sc.
Denis Bratko

Course Description

The final thesis is a comprehensive and highly independent task where the student has to demonstrate the ability to analyse the given problem from theoretical and practical aspects, devise a solution using the knowledge acquired in multiple courses and literature, implement the solution, write the documentation and instructions for use and/or for further work and finally to present his or her work in written and oral form. The accent is given on demonstration of ability in all these aspects rather than to force students to pursue some work intensive repetitive activities. Student has two advisors; the first one is the university professor who is a member of the Faculty that is responsible for the Final BSc Thesis, while the second advisor is an officer or military expert of the Armed Forces of Republic of Croatia. The topic of the Final BSc Thesis is chosen by advisors and it is related to the students' study program specialization, i.e. a field of the military branch or service.

Study Programmes

» Infantry -> Military Leadership and Management (Course) (*elective course for the 8th semester mlm-infantry study, 8th semester, 4th year*)

Learning Outcomes

On successful completion of the course, students will be able to:

1. Integrate acquired knowledge and skills, develop ability to additionally consult the mandatory or supplementary textbooks and literature with consultations with advisors
2. Choose, argue and defend proposed solution
3. Realize a solution through modelling, simulation or prototyping for an assigned task of defined functionality
4. Conceive and write a Final BSc Thesis and draw conclusions in a formally, linguistically and ethically correct manner, according to instructions, of the average overall size of 30 pages
5. Publically present acquired results using computer prepared presentation through 10 minutes oral presentation
6. Recommend possible directions for further development of the proposed solution using the principles of the scientific research and development

Study Programme Learning Outcomes

Military Leadership and Management

- 1 Basic competences of the military profession
 - 1.1 To communicate, organize and plan effectively the activities of a basic tactical unit
 - 1.3 To make decisions independently and command a basic tactical unit

ECTS Credits 15.0

English Level Lo

E-learning Level L1

Study Hours

Seminar 180

Grading

Grading: The student, whose Final BSc Thesis is graded as satisfactory by advisors, defends his work in front of the examination commission for defence of the final work that is appointed by the committee for the final work of the specialisation Obligations: Fulfil all assigned tasks of the Final BSc Thesis



- 2 Special military competences
 - 2.1 To analyse the environment and to develop and apply tactics of the branch/service
 - 2.2 To manage maintenance of combat and non-combat assets, ammunitions and mines of the branch/service
 - 2.3 To use combat and non-combat assets of the branch/service in a professional way
- 3 Basic competences in social and humanistic sciences
 - 3.1 To analyze and interpret processes in international environment, and to act within international alliances and organizations in which the Republic of Croatia participates
 - 3.4 To manage processes in the military environment using modern technologies
 - 3.5 To apply knowledge of the structure and functioning of the political system, state and public administration in resolving unstructured problems
- 4. Personal and professional skills and characteristics
 - 4.1 To identify and analyze a problem in the military environment
 - 4.2 To model and resolve a problem and to interpret problem solution by using appropriate knowledge and methods
 - 4.4 To develop self-study abilities and the need for and methods of life-long learning in traditional and virtual environment
- 5. Social skills (team work and communication)
 - 5.1 To communicate effectively in the Croatian and English language applying modern presentation skills and techniques
 - 5.2 Organize and plan individual and team work in international and interdisciplinary work groups
 - 5.3 To effectively present work results both orally and in writing to stakeholders in the military environment

Screening of student's work

- 4 ECTS Experimental work
- 4 ECTS Research
- 4 ECTS Practical work
- 3 ECTS Writing a Thesis, presentation and defense
- 15 ECTS

Forms of Teaching

- » Seminars and workshops
 - » Seminars and Workshops
- » Independent assignments
 - » Individual Assignments
- » Laboratory
 - » Laboratory work
- » Work with mentor
 - » Mentor advised work

Week by Week Schedule

- 1. Work on Final BSc Thesis
- 2. Work on Final BSc Thesis
- 3. Work on Final BSc Thesis
- 4. Work on Final BSc Thesis
- 5. Work on Final BSc Thesis

6. Work on Final BSc Thesis
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11. Work on Final BSc Thesis
12. Work on Final BSc Thesis
13. Work on Final BSc Thesis
14. Work on Final BSc Thesis
15. Work on Final BSc Thesis

Literature



*Literatura preporučena od strane
mentora / Advisor recommended
literature*

Final BSc Thesis – Monitoring and Guidance

129630

Course Description

The final thesis is a comprehensive and highly independent task where the student has to demonstrate the ability to analyse the given problem from theoretical and practical aspects, devise a solution using the knowledge acquired in multiple courses and literature, implement the solution, write the documentation and instructions for use and/or for further work and finally to present his or her work in written and oral form. The accent is given on demonstration of ability in all these aspects rather than to force students to pursue some work intensive repetitive activities. Student has two advisors; the first one is the university professor who is a member of the Faculty that is responsible for the Final BSc Thesis, while the second advisor is an officer or military expert of the Armed Forces of Republic of Croatia. Topic of the Final BSc Thesis is chosen by advisors and it is related to the students' study program specialization, i.e. a field of the military branch or service.

Study Programmes

- » Monitoring and Guidance -> Group of Courses Signals, Monitoring and Guidance and Air Defence (Course) (*required course, 8th semester, 4th year*) (Note: course not offered in this academic year.)

Learning Outcomes

On successful completion of the course, students will be able to:

1. Integrate acquired knowledge and skills, develop ability to additionally consult the mandatory or supplementary textbooks and literature with consultations with advisors
2. Choose, argue and defend proposed solution
3. Realize a solution through modelling, simulation or prototyping for an assigned task of defined functionality
4. Conceive and write a Final BSc Thesis and draw conclusions in a formally, linguistically and ethically correct manner, according to instructions, of the average overall size of 30 pages
5. Publically present acquired results using computer prepared presentation through 10 minutes oral presentation
6. Recommend possible directions for further development of the proposed solution using the principles of the scientific research and development

Study Programme Learning Outcomes

Military Engineering

- 1 Basic competences of the military profession
 - 1.1 To communicate, organize and plan effectively the activities of a basic tactical unit
 - 1.3 To make decisions independently and command a basic tactical unit
- 2 Special military competences
 - 2.1 To analyse the environment and to develop and apply tactics of the branch/service
 - 2.2 To manage maintenance of combat and non-combat assets, ammunitions and mines of the branch/service
 - 2.3 To use combat and non-combat assets of the branch/service in a professional way
- 3 Basic technical knowledge
 - 3.1. To identify, analyse, model and resolve military engineering problems by integrating basic knowledge of natural and technical sciences

ECTS Credits 15.0

English Level Lo

E-learning Level L1

Study Hours

Seminar 180

Grading

Grading: The student, whose Final BSc Thesis is graded as satisfactory by advisors, defends his work in front of the examination commission for defence of the final work that is appointed by the committee for the final work of the specialisation Obligations: Fulfil all assigned tasks of the Final BSc Thesis



ME

ME-M

ARM

ART

ENG

TS

IN-E

ME-E

SIG

MG

AD

CBR

MLM

IN-L

- 3.2. To apply complex methodology by integrating engineering knowledge and skills in military engineering practice
- 3.3. To integrate and apply engineering principles and techniques in the operation of military system in unpredictable conditions
- 4. Personal and professional skills and characteristics
 - 4.1 To identify and analyze a problem in the military environment
 - 4.2 To model and resolve a problem and to interpret problem solution by using appropriate knowledge and methods
 - 4.4 To develop self-study abilities and the need for and methods of life-long learning in traditional and virtual environment
- 5. Social skills (team work and communication)
 - 5.1 To communicate effectively in the Croatian and English language applying modern presentation skills and techniques
 - 5.3 To effectively present work results both orally and in writing to stakeholders in the military environment
- 6 Development, implementation and operation of technical systems in economic and social environment
 - 6.1. To analyse and evaluate the effect of engineering solutions on society and environment
 - 6.2. To apply and create engineering approaches in analysing and assessing products and processes in security environment
 - 6.3. To apply and select knowledge and relevant facts from different areas, and to assume responsibility for assessing the impact of military technology in social environment
 - 6.4. To plan, organise, create and implement engineering testing, and to analyse and interpret the results

Forms of Teaching

- » Seminars and workshops
- » Independent assignments
- » Laboratory
- » Work with mentor

Week by Week Schedule

- 1. Exercises: Work on Final BSc Thesis
- 2. Exercises: Work on Final BSc Thesis
- 3. Exercises: Work on Final BSc Thesis
- 4. Exercises: Work on Final BSc Thesis
- 5. Exercises: Work on Final BSc Thesis
- 6. Exercises: Work on Final BSc Thesis
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- 9. Exercises: Work on Final BSc Thesis
- 10. Exercises: Work on Final BSc Thesis
- 11. Exercises: Work on Final BSc Thesis
- 12. Exercises: Work on Final BSc Thesis
- 13. Exercises: Work on Final BSc Thesis
- 14. Exercises: Work on Final BSc Thesis
- 15. Exercises: Work on Final BSc Thesis

Literature



*Literatura preporučena od
strane mentora*



Advisor recommended literature

Final BSc Thesis – Signals

129489

Course Description

The final thesis is a comprehensive and highly independent task where the student has to demonstrate the ability to analyse the given problem from theoretical and practical aspects, devise a solution using the knowledge acquired in multiple courses and literature, implement the solution, write the documentation and instructions for use and/or for further work and finally to present his or her work in written and oral form. The accent is given on demonstration of ability in all these aspects rather than to force students to pursue some work intensive repetitive activities. Student has two advisors; the first one is the university professor who is a member of the Faculty that is responsible for the Final BSc Thesis, while the second advisor is an officer or military expert of the Armed Forces of Republic of Croatia. Topic of the Final BSc Thesis is chosen by advisors and it is related to the students' study program specialization, i.e. a field of the military branch or service.

Study Programmes

- » Signals -> Group of Courses Signals, Monitoring and Guidance and Air Defence (Course) (required course, 8th semester, 4th year) (Note: course not offered in this academic year.)

Learning Outcomes

On successful completion of the course, students will be able to:

1. Integrate acquired knowledge and skills, develop ability to additionally consult the mandatory or supplementary textbooks and literature with consultations with advisors
2. Choose, argue and defend proposed solution
3. Realize a solution through modelling, simulation or prototyping for an assigned task of defined functionality
4. Conceive and write a Final BSc Thesis and draw conclusions in a formally, linguistically and ethically correct manner, according to instructions, of the average overall size of 30 pages
5. Publically present acquired results using computer prepared presentation through 10 minutes oral presentation
6. Recommend possible directions for further development of the proposed solution using the principles of the scientific research and development

Study Programme Learning Outcomes

Military Engineering

- 1 Basic competences of the military profession
 - 1.1 To communicate, organize and plan effectively the activities of a basic tactical unit
 - 1.3 To make decisions independently and command a basic tactical unit
- 2 Special military competences
 - 2.1 To analyse the environment and to develop and apply tactics of the branch/service
 - 2.2 To manage maintenance of combat and non-combat assets, ammunitions and mines of the branch/service
 - 2.3 To use combat and non-combat assets of the branch/service in a professional way
- 3 Basic technical knowledge
 - 3.1. To identify, analyse, model and resolve military engineering problems by integrating basic knowledge of natural and technical sciences

ECTS Credits	15.0
English Level	Lo
E-learning Level	L1
Study Hours	
Seminar	180
Grading	
Grading: The student, whose Final BSc Thesis is graded as satisfactory by advisors, defends his work in front of the examination commission for defence of the final work that is appointed by the committee for the final work of the specialisation Obligations: Fulfil all assigned tasks of the Final BSc Thesis	

- 3.2. To apply complex methodology by integrating engineering knowledge and skills in military engineering practice
- 3.3. To integrate and apply engineering principles and techniques in the operation of military system in unpredictable conditions
4. Personal and professional skills and characteristics
 - 4.1 To identify and analyze a problem in the military environment
 - 4.2 To model and resolve a problem and to interpret problem solution by using appropriate knowledge and methods
 - 4.4 To develop self-study abilities and the need for and methods of life-long learning in traditional and virtual environment
5. Social skills (team work and communication)
 - 5.1 To communicate effectively in the Croatian and English language applying modern presentation skills and techniques
 - 5.3 To effectively present work results both orally and in writing to stakeholders in the military environment
- 6 Development, implementation and operation of technical systems in economic and social environment
 - 6.1. To analyse and evaluate the effect of engineering solutions on society and environment
 - 6.2. To apply and create engineering approaches in analysing and assessing products and processes in security environment
 - 6.3. To apply and select knowledge and relevant facts from different areas, and to assume responsibility for assessing the impact of military technology in social environment
 - 6.4. To plan, organise, create and implement engineering testing, and to analyse and interpret the results

Forms of Teaching

- » Seminars and workshops
- » Independent assignments
- » Laboratory
- » Work with mentor

Week by Week Schedule

1. Exercises: Work on Final BSc Thesis
2. Exercises: Work on Final BSc Thesis
3. Exercises: Work on Final BSc Thesis
4. Exercises: Work on Final BSc Thesis
5. Exercises: Work on Final BSc Thesis
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13. Exercises: Work on Final BSc Thesis
14. Exercises: Work on Final BSc Thesis
15. Exercises: Work on Final BSc Thesis

Literature



*Literatura preporučena od
strane mentora*



Advisor recommended literature

Final BSc Thesis – Technical Services

129608

Course Description

The final thesis is a comprehensive and highly independent task where the student has to demonstrate the ability to analyse the given problem from theoretical and practical aspects, devise a solution using the knowledge acquired in multiple courses and literature, implement the solution, write the documentation and instructions for use and/or for further work and finally to present his or her work in written and oral form. The accent is given on demonstration of ability in all these aspects rather than to force students to pursue some work intensive repetitive activities. Student has two advisors; the first one is the university professor who is a member of the Faculty that is responsible for the Final BSc Thesis, while the second advisor is an officer or military expert of the Armed Forces of Republic of Croatia. Topic of the Final BSc Thesis is chosen by advisors and it is related to the students' study program specialization, i.e. a field of the military branch or service.

Study Programmes

- » Technical Support -> Group of Courses Armour, Field Artillery, Engineers, Technical Support and Infantry (Course) (*required course, 8th semester, 4th year*)

Learning Outcomes

On successful completion of the course, students will be able to:

1. Integrate acquired knowledge and skills, develop ability to additionally consult the mandatory or supplementary textbooks and literature with consultations with advisors
2. Choose, argue and defend proposed solution
3. Realize a solution through modelling, simulation or prototyping for an assigned task of defined functionality
4. Conceive and write a Final BSc Thesis and draw conclusions in a formally, linguistically and ethically correct manner, according to instructions, of the average overall size of 30 pages
5. Publically present acquired results using computer prepared presentation through 10 minutes oral presentation
6. Recommend possible directions for further development of the proposed solution using the principles of the scientific research and development

Study Programme Learning Outcomes

Military Engineering

- 1 Basic competences of the military profession
 - 1.1 To communicate, organize and plan effectively the activities of a basic tactical unit
 - 1.3 To make decisions independently and command a basic tactical unit
- 2 Special military competences
 - 2.1 To analyse the environment and to develop and apply tactics of the branch/service
 - 2.2 To manage maintenance of combat and non-combat assets, ammunitions and mines of the branch/service
 - 2.3 To use combat and non-combat assets of the branch/service in a professional way
- 3 Basic technical knowledge
 - 3.1. To identify, analyse, model and resolve military engineering problems by integrating basic knowledge of natural and technical sciences
 - 3.2. To apply complex methodology by integrating engineering knowledge and

ECTS Credits	15.0
English Level	Lo
E-learning Level	L1
Study Hours	
Seminar	180
Grading	
Grading: The student, whose Final BSc Thesis is graded as satisfactory by advisors, defends his work in front of the examination commission for defence of the final work that is appointed by the committee for the final work of the specialisation Obligations: Fulfil all assigned tasks of the Final BSc Thesis	

- skills in military engineering practice
- 3.3. To integrate and apply engineering principles and techniques in the operation of military system in unpredictable conditions
- 4. Personal and professional skills and characteristics
 - 4.1 To identify and analyze a problem in the military environment
 - 4.2 To model and resolve a problem and to interpret problem solution by using appropriate knowledge and methods
 - 4.4 To develop self-study abilities and the need for and methods of life-long learning in traditional and virtual environment
- 5. Social skills (team work and communication)
 - 5.1 To communicate effectively in the Croatian and English language applying modern presentation skills and techniques
 - 5.3 To effectively present work results both orally and in writing to stakeholders in the military environment
- 6 Development, implementation and operation of technical systems in economic and social environment
 - 6.1. To analyse and evaluate the effect of engineering solutions on society and environment
 - 6.2. To apply and create engineering approaches in analysing and assessing products and processes in security environment
 - 6.3. To apply and select knowledge and relevant facts from different areas, and to assume responsibility for assessing the impact of military technology in social environment
 - 6.4. To plan, organise, create and implement engineering testing, and to analyse and interpret the results

Forms of Teaching

- » Seminars and workshops
- » Independent assignments
- » Laboratory
- » Work with mentor

Week by Week Schedule

1. Exercises: Work on Final BSc Thesis
2. Exercises: Work on Final BSc Thesis
3. Exercises: Work on Final BSc Thesis
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14. Exercises: Work on Final BSc Thesis
15. Exercises: Work on Final BSc Thesis

Literature



*Literatura preporučena od
strane mentora*



Advisor recommended literature

Fluid Mechanics

130097



Lecturers



prof. dr. sc.
Mario Šavar



prof. dr. sc.
Ivo Džijan

Course Description

Teach students about the forces and pressure distribution in a resting fluid. To introduce students to the basic laws of fluid dynamics and they explain the application of those laws in cases of 1D flow. To teach students to apply the basic laws of fluid dynamics to the hydraulic machinery, and to predict fluid flow in pipelines.

Study Programmes

- » Armour -> Group of Courses Armour, Field Artillery, Engineers, Technical Support and Infantry (Course) (*required course, 7th semester, 4th year*)
- » Field Artillery -> Group of Courses Armour, Field Artillery, Engineers, Technical Support and Infantry (Course) (*required course, 7th semester, 4th year*)
- » Engineers -> Group of Courses Armour, Field Artillery, Engineers, Technical Support and Infantry (Course) (*required course, 7th semester, 4th year*)
- » Technical Support -> Group of Courses Armour, Field Artillery, Engineers, Technical Support and Infantry (Course) (*required course, 7th semester, 4th year*)
- » Infantry -> Group of Courses Armour, Field Artillery, Engineers, Technical Support and Infantry (Course) (*required course, 7th semester, 4th year*) (**Note: course not offered in this academic year.**)

Learning Outcomes

On successful completion of the course, students will be able to:

1. Calculate the pressure force on the flat and curved surfaces immersed in a fluid at rest
2. Apply the basic laws (continuity equation, Bernoulli equation, the equation of momentum and angular momentum) to control volume - one-dimensional flow
3. Explain phenomenon of cavity and principles of velocity, flow and pressure measurement
4. Apply the concept of lift and drag forces
5. Apply the basic laws of fluid dynamics to hydraulic machines and devices (propellers, wind turbines, Pelton turbines, centrifugal and axial turbomachinery)
6. Calculate the laminar and turbulent flow in pipelines with pump and turbine

Study Programme Learning Outcomes

Military Engineering

2 Special military competences

- 2.2 To manage maintenance of combat and non-combat assets, ammunitions and mines of the branch/service

ECTS Credits	3.0
English Level	Lo
E-learning Level	L1
Study Hours	
Lectures	30
Laboratory exercises	15

Associate Lecturer

doc. dr. sc. Severino Krizmanić

Teaching Assistants

dr. sc. Andrija Buljac

Mihael Cindori, mag. ing. mech.

dr. sc. Ivan Korade

Vedrana Markučić, mag. ing. mech.

Grading

Grading: Final grade is based on knowledge and activity during semester and on exam. Final grade is determined as follows: 1. tests for continuous verification of learning (Moodle) 10%, 2. written exam (or three colloquium) 50% 3. oral exam 40%. Obligations: Attending lectures and exercises is obligatory. Requested that the student continually adopts theoretical and practical knowledge through tests in the Moodle.

3 Basic technical knowledge

3.1. To identify, analyse, model and resolve military engineering problems by integrating basic knowledge of natural and technical sciences

3.3. To integrate and apply engineering principles and techniques in the operation of military system in unpredictable conditions

4. Personal and professional skills and characteristics

4.4 To develop self-study abilities and the need for and methods of life-long learning in traditional and virtual environment

5. Social skills (team work and communication)

5.2 Organize and plan individual and team work in international and interdisciplinary work groups

Forms of Teaching

» Lectures

» Exercises

» Independent assignments

Week by Week Schedule

1. Lectures: Basic definitions, The continuum hypothesis, Surface and mass forces in the fluid
Seminar: Surface and mass forces in the fluid
2. Lectures: Viscosity; Basic equation of fluid statics; Hydrostatic pressure gauges
Seminar: Hydrostatic pressure gauges
3. Lectures: Forces on the flat and curved surfaces, buoyancy force
Seminar: Calculating pressure force on a flat surfaces
4. Lectures: Fluid kinematics, Streamlines and pathlines, Flowrate
Seminar: Calculating pressure force on a flat surfaces
5. Lectures: Basic laws of fluid dynamics applied to one-dimensional fluid flow
Seminar: Calculating pressure force on a curved surfaces
6. Lectures: Application of the Bernoulli equation; Velocity and flow metering
Seminar: Calculating pressure force on a curved surfaces
7. Lectures: Cavitation; A loss of influence in the tank; Leakage from a large tank and the flow correction
Seminar: Examples with buoyancy force
8. Lectures: Time of discharge containers; illustration of the Bernoulli equation content
Seminar: Examples of application of the Bernoulli equation
9. Lectures: Modified Bernoulli equation; Modeling friction and minor losses in the pipeline;
Seminar: Examples of application of the Bernoulli equation
10. Lectures: Energy characteristics of pumps, pump duty point; similarity and connection of pumps, Hydraulic design of pipelines
Seminar: Examples of application of the Bernoulli equation
11. Lectures: Hydraulic design of pipelines non-circular cross section
Seminar: Application of modified Bernoulli equation to pipe flow
12. Lectures: Momentum equation, force on the blade
Seminar: Application of modified Bernoulli equation to pipe flow
13. Lectures: Bernoulli equation in rotating frame of reference, Centrifugal turbomachinery
Seminar: Application of modified Bernoulli equation to pipe flow
14. Lectures: Axial turbomachinery
Seminar: Examples of calculating forces and energy relations in turbomachinery
15. Lectures: Propeller and wind turbine
Seminar: Examples of calculating forces and energy relations in turbomachinery

Literature



*Nastavni materijali za
predavanja i vježbe*

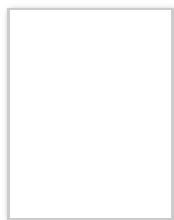


*Zdravko Virag: Mehanika
fluida, odabrana poglavlja,
primjeri i zadaci*

Fortifying and Camouflage

130147

Associate Lecturers



Zvonko Sigmund

Marko Šimić,
pred.

Teaching Assistants

Mladen Fusić,
pred.Vladimir Horvat,
pred.

Course Description

Students should note that each complex organizational (or object) system has its own information (sub)system that allows its efficient operation, system management, and growth and development in changing conditions. The requirements for the new IS must be made based on the analysis of organization's business processes. During the course student should acquire knowledge about structural and objective methods for planning, analysis, design and implementation of IS and methodologies for IT engineering. Based on the acquired theoretical knowledge, students must be able to realize, by applying new information technologies, all phases of the life cycle of each IS using CASE tools. For the designed IS, students should be able to evaluate the quality and the expected effects of the proposed IS, as well as to plan the maintenance and further development of the new IS.

Study Programmes

- » Engineers -> Group of Courses Armour, Field Artillery, Engineers, Technical Support and Infantry (Course) (*required course, 7th semester, 4th year*)

Learning Outcomes

On successful completion of the course, students will be able to:

1. Explain the concept, types and characteristics of fortifying and camouflage
2. Apply the means, methods and ways of fortifying and camouflage
3. Identify and analyze factors which have influence on the development of fortification projects
4. Calculate the necessary elements for the execution of fortifying and camouflage
5. Plan and design fortifying and camouflage project
6. Apply team work during the project
7. Explain project plan and design

ECTS Credits 5.0

English Level L1

E-learning Level L2

Study Hours

Lectures 45

Laboratory exercises 15

Teaching Assistants

Mladen Fusić, pred.

Vladimir Horvat, pred.

Grading

Grading: During the course spend 2 colloquiums and a final oral exam. Obligations: Regular admission to lectures and seminars. Project development and positive marks on colloquiums.

Prerequisites for

Practical Military Training - Engineers



Study Programme Learning Outcomes

Military Engineering

- 1 Basic competences of the military profession
 - 1.1 To communicate, organize and plan effectively the activities of a basic tactical unit
 - 1.2 To assess the situation and implement appropriate tactics for a basic tactical unit
 - 1.6 To nourish, channel and use creativity in accomplishing missions of a basic tactical unit
- 2 Special military competences
 - 2.2 To manage maintenance of combat and non-combat assets, ammunitions and mines of the branch/service
 - 2.3 To use combat and non-combat assets of the branch/service in a professional way
- 3 Basic technical knowledge
 - 3.1. To identify, analyse, model and resolve military engineering problems by integrating basic knowledge of natural and technical sciences
 - 3.2. To apply complex methodology by integrating engineering knowledge and skills in military engineering practice
 - 3.3. To integrate and apply engineering principles and techniques in the operation of military system in unpredictable conditions
4. Personal and professional skills and characteristics
 - 4.1 To identify and analyze a problem in the military environment
 - 4.2 To model and resolve a problem and to interpret problem solution by using appropriate knowledge and methods
5. Social skills (team work and communication)
 - 5.2 Organize and plan individual and team work in international and interdisciplinary work groups
 - 5.3 To effectively present work results both orally and in writing to stakeholders in the military environment
- 6 Development, implementation and operation of technical systems in economic and social environment
 - 6.1. To analyse and evaluate the effect of engineering solutions on society and environment
 - 6.2. To apply and create engineering approaches in analysing and assessing products and processes in security environment

Screening of student's work

- 1.5 ECTS Lectures attendance
- 1 ECTS Midterm exam
- 0.5 ECTS Oral exam
- 1.5 ECTS Project
- 0.5 ECTS Practical work
- 5 ECTS

Forms of Teaching

- » Lectures
 - » Lectures
- » Seminars and workshops
 - » Plan and design of fortification construction
- » Exercises
 - » Marking the excavation and building up of fortifying constructions

- » Partial e-learning
- » e-learning system

Week by Week Schedule

1. Lectures: Engineering and construction technology, providing modern features of construction machinery, construction logistics
Exercises: Plan and design fortifying constructions project.
2. Lectures: Machines for earthmoving, calculations effects, construction costs
Exercises: Plan and design fortifying constructions project.
3. Lectures: Technique and technology of surface earthworks in soil and rock
Exercises: Plan and design fortifying constructions project.
4. Lectures: Scaffolding and formwork in construction, formwork, formwork systems, scaffolding, formwork and scaffolding in bridge construction
Exercises: Plan and design fortifying constructions project.
5. Lectures: Basics of fortifying (classification, systems, levels of protection)
Exercises: Plan and design fortifying constructions project.
6. Lectures: Influences on fortifying (landed, weather, battle-resources, scale of working urgency)
Exercises: Plan and design fortifying constructions project.
7. Lectures: Materijal and tehcnical resources for fortifying (tool, mechanization, materijals, resources)
Exercises: Plan and design fortifying constructions project.
8. Lectures: Fortifying constructions for firing off (infantry, armor, artillery, adjusting of fortifying constructions)
Exercises: Marking the excavation and building up of fortifying constructions (cover, bunker, shelter, trench, communication) .
9. Lectures: Fortifying constructions for protection, traffic and movement (shelters, trenches, communications, adjusting of fortifying constructions)
Exercises: Marking the excavation and building up of fortifying constructions (cover, bunker, shelter, trench, communication) .
10. Lectures: Calculation of time and makeing of fortifying constructions project (cover, bunker, shelter, trench, communication)
Exercises: Marking the excavation and building up of fortifying constructions (cover, bunker, shelter, trench, communication) .
11. Lectures: Fortifying in specific locations (karst, mountain, winter, urban areas)
Exercises: Marking the excavation and building up of fortifying constructions (cover, bunker, shelter, trench, communication) .
12. Lectures: Camouflage in general (concept, goal, tasks, classification)
Exercises: Marking the excavation and building up of fortifying constructions (cover, bunker, shelter, trench, communication) .
13. Lectures: Ways of raeconnaissance, resources for raeconnaissance and their influence on camouflage (visually aerofoto, electronically, satellite)
Exercises: Marking the excavation and building up of fortifying constructions (cover, bunker, shelter, trench, communication) .
14. Lectures: Fundamentaling camouflage (principles, resources)
Exercises: Marking the excavation and building up of fortifying constructions (cover, bunker, shelter, trench, communication) .
15. Lectures: Execution of camouflage (metods, quality, experience, camouflage porject)
Exercises: Marking the excavation and building up of fortifying constructions (cover, bunker, shelter, trench, communication) .

Literature



Linarić, Z. (2007). *Leksikon strojeva i opreme za proizvodnju građevinskih materijala. Učinci za strojeve i vozila pri zemljanim radovima*, biblioteka Mineral, Bussines Media Croatia, Zagreb,



Linarić, Z. *Tehnologija građenja I. - elektronska skripta*, Građevinski fakultet Sveučilišta u Zagrebu



Šimić M.: *Hesco sustav utvrđivanja, priručnik*, HVU, Zagreb, 2013.



Fusić M.: *Utvrdivanje, Skripta*, HVU, Zagreb, 2002.



Fusić M.: *Skripta, Maskiranje*, HVU, Zagreb 2002.

Similar Courses

» Tehnologija građenja niskogradnja, Stanford University

Fundamentals of Croatian National Security

129939

Lecturer



doc. dr. sc.
Robert Mikac

ECTS Credits 4.0

English Level Lo

E-learning Level L1

Study Hours

Lectures 30

Seminar 30

Teaching Assistant

Božo Vukasović, pred.

Grading

Grading: Attendance of lectures (10 percent), two written colloquium (60 percent), one paper (15 percent) and one seminar work (15 percent). Obligations: Attending lectures and seminars, and independent preparation of presentation and essay.

Course Description

The aim of this course is the study of Croatian national security in the context of international and regional security. Special attention will be focused on the study of security at the national level (National Security Concept) and security at the regional level (Regional Security Concept). The national security of Croatia will also be discussed.

Study Programmes

» Military Leadership and Management (Study) (*required course, 3rd semester, 2nd year*)

Learning Outcomes

On successful completion of the course, students will be able to:

1. Define fundamental concepts of national security
2. Describe the activities of the Croatian security system
3. Identify the organisation and decision making process within the Croatian national security system
4. Analyze activities of the actors within the Croatian national security system
5. Analyze and evaluate security policies of different actors within the Croatian national security system
6. Reproduce outcomes of actions of actors in the Croatian national security system

Study Programme Learning Outcomes

Military Leadership and Management

- 1 Basic competences of the military profession
 - 1.7 To be acquainted with and to respect historical, social and cultural diversities in the context of military activities
- 2 Special military competences
 - 2.1 To analyse the environment and to develop and apply tactics of the branch/service
- 3 Basic competences in social and humanistic sciences
 - 3.1 To analyze and interpret processes in international environment, and to act within international alliances and organizations in which the Republic of Croatia participates
 - 3.2 To comprehend civil-military relations and to act in accordance with democratic standards
 - 3.4 To manage processes in the military environment using modern

technologies

3.5 To apply knowledge of the structure and functioning of the political system, state and public administration in resolving unstructured problems

4. Personal and professional skills and characteristics

4.1 To identify and analyze a problem in the military environment

4.2 To model and resolve a problem and to interpret problem solution by using appropriate knowledge and methods

4.4 To develop self-study abilities and the need for and methods of life-long learning in traditional and virtual environment

Screening of student's work

0.5 ECTS Lectures attendance

2.5 ECTS Midterm exam

0.5 ECTS Report

0.5 ECTS Seminar report

4 ECTS

Forms of Teaching

» Lectures

» Teacher's presentation with the active participation of students

» Seminars and workshops

» Independent student's work under the mentorship of teacher

Week by Week Schedule

1. Lectures: The Concept and content of national security of the Republic of Croatia
Exercises: Organisation of security on the territory of the Republic of Croatia in the past
2. Lectures: Approaches to the study of Croatian national security
Exercises: Process of forming and content of security policy during the Homeland War
3. Lectures: National security and national interests of the Republic of Croatia
Exercises: Transformation of defence system and Croatian Armed Forces after the Homeland War
4. Lectures: Security policy of the Republic of Croatia
Exercises: Types and content of the national interests of the Republic of Croatia
5. Lectures: National security system of the republic of Croatia
Exercises: Development of Croatian security policy from membership in the Partnership for Peace program to EU membership
6. Lectures: Defence system of the Republic of Croatia
Exercises: Transformation of Croatian national security system from the end of the Homeland War to NATO membership
7. First colloquium
8. Lectures: National security of the Republic of Croatia and the fight against organized crime
Exercises: Croatian participation in the fight against global terrorism
9. Lectures: Illegal migrations and national security of the republic of Croatia
Exercises: Croatian accession to the EU and the fight against organized crime and corruption
10. Lectures: The Republic of Croatia in the European security architecture
Exercises: Illegal migrations as a source of threat to the national security of the Republic of Croatia after the EU accession

11. Lectures: National security of the Republic of Croatia and security in Southeast Europe
Exercises: Croatian participation in the implementation of the European Security and Defence Policy
12. Lectures: National security of the Republic of Croatia and NATO
Exercises: Influence of security process in South East Europe on the security of the Republic of Croatia after membership in NATO and the EU
13. Lectures: National security of the Republic of Croatia and EU
Exercises: Advantages and disadvantages of Croatian membership in NATO
14. Lectures: National security of the Republic of Croatia and peacekeeping operations
Exercises: Security dimension of the Croatian membership in the EU
15. Second colloquium

Literature



Tatalović, S., Grizold, A.,
Cvrtila, V. (2008).
*Suvremene sigurnosne
politike*, Golden Marketing



Tatalović, S. (2006).
*Nacionalna i međunarodna
sigurnost*, Politička kultura



Vukadinović, R. (2004).
Međunarodni politički odnosi,
Politička kultura



Vukasović, B. (2009).
*Nacionalna sigurnost i
terorizam*, Ministarstvo
obrane Republike Hrvatske,
Oružane snage RH, Hrvatsko
vojno učilište "Petar Zrinski"



Akrap, Ž. (2008). *Upravljanje
nacionalnom sigurnošću*,
Ministarstvo obrane
Republike Hrvatske,
Oružane snage RH, Hrvatsko
vojno učilište "Petar Zrinski"

Similar Courses

- » Intelligence and National Security, Stanford University

General Tactics

129342

Lecturer



Mladen Pahernik,
izv. prof. dr. sc.

Course Description

Prepare and enable students to apply the theory of the war tactical doctrine. To define human capabilities during the combat concerning the task, time and location. To understand military aspects of the branches tactics and service support branches through the technique capabilities and procedure that could be measured and codified. To identify the usage and development of modern armament.

Study Programmes

- » Group of Courses Armour, Field Artillery, Engineers, Technical Support and Infantry -> Military Engineering (Course) (*required course, 4th semester, 2nd year*)
- » Group of Courses Signals, Monitoring and Guidance and Air Defence -> Military Engineering (Course) (*required course, 4th semester, 2nd year*)
- » Chemical, Biological, Radiological and Nuclear Defence -> Military Engineering (Course) (*required course, 4th semester, 2nd year*) (**Note: course not offered in this academic year.**)
- » Military Leadership and Management (Study) (*required course, 4th semester, 2nd year*)

Learning Outcomes

On successful completion of the course, students will be able to:

1. Define main facts and terms of the general military tactics.
2. Analyze facts regarding tasks, enemy, location and time
3. Apply of techniques and procedures in solving combat tasks within a specific environment.
4. Differentiate the forms of joint activities in the battlefield and in international environment.
5. Estimate the complex problems of keeping troops in unpredictable situations
6. Classify and use purposefully organizational system of military units

Study Programme Learning Outcomes

Military Engineering

- 1 Basic competences of the military profession
 - 1.1 To communicate, organize and plan effectively the activities of a basic tactical unit
 - 1.2 To assess the situation and implement appropriate tactics for a basic tactical unit
 - 1.3 To make decisions independently and command a basic tactical unit
 - 1.4 To train, develop and assess the abilities of soldiers and a basic tactical unit

ECTS Credits	8.0
English Level	Lo
E-learning Level	L2
Study Hours	
Lectures	60
Seminar	15
Exercises	30

Associate Lecturers

Darko Puklavac, pred.
dr. sc. Marko Zečević

Teaching Assistants

mr. sc. Darko Duhović
Mladen Janić, pred.

Grading

Grading: During their classes, students will receive mark from the written test, practical work and the seminar paper. A student who fails at the written test repeats the exam. The mark from the practical work contains: diligence, initiative, creativity and organizational skills. Total sum of all subjects makes arithmetic mean from the written exam, seminar and practical work. Obligations: Students are obligated to attend classes, exercises and shooting. Overall education and training from the subject General Tactics is conducted in protective equipment of the CAF. During the education and training, students have to respect military relations and a hierarchy for the purpose of the security during the execution of the activity. During the conduct of the curriculum of the subject General Tactics, each student should make a paper from the filed of tactics. Students have to respect the organization of life and work within the training range, shooting ground and exercise area within the CAF.

- 1.6 To nourish, channel and use creativity in accomplishing missions of a basic tactical unit
- 1.8 To make geographic and topographic analysis of the area and to decide upon the tactics of a basic tactical unit
- 2 Special military competences
 - 2.1 To analyse the environment and to develop and apply tactics of the branch/service
 - 2.2 To manage maintenance of combat and non-combat assets, ammunitions and mines of the branch/service
- 3 Basic technical knowledge
 - 3.1. To identify, analyse, model and resolve military engineering problems by integrating basic knowledge of natural and technical sciences
 - 3.3. To integrate and apply engineering principles and techniques in the operation of military system in unpredictable conditions
- 4. Personal and professional skills and characteristics
 - 4.2 To model and resolve a problem and to interpret problem solution by using appropriate knowledge and methods
 - 4.3 To assume military, professional and ethical responsibility
- 5. Social skills (team work and communication)
 - 5.2 Organize and plan individual and team work in international and interdisciplinary work groups
- 6 Development, implementation and operation of technical systems in economic and social environment
 - 6.3. To apply and select knowledge and relevant facts from different areas, and to assume responsibility for assessing the impact of military technology in social environment

Military Leadership and Management

- 1 Basic competences of the military profession
 - 1.2 To assess the situation and implement appropriate tactics for a basic tactical unit
 - 1.3 To make decisions independently and command a basic tactical unit
 - 1.4 To train, develop and assess the abilities of soldiers and a basic tactical unit
- 2 Special military competences
 - 2.1 To analyse the environment and to develop and apply tactics of the branch/service
 - 2.2 To manage maintenance of combat and non-combat assets, ammunitions and mines of the branch/service
 - 2.3 To use combat and non-combat assets of the branch/service in a professional way
- 4. Personal and professional skills and characteristics
 - 4.2 To model and resolve a problem and to interpret problem solution by using appropriate knowledge and methods
- 5. Social skills (team work and communication)
 - 5.2 Organize and plan individual and team work in international and interdisciplinary work groups

Screening of student's work

- 0 ECTS Lectures attendance
- 2 ECTS Midterm exam
- 4 ECTS Written exam
- 2 ECTS Practical work
- 8 ECTS

Forms of Teaching

- » Lectures
 - » Classes are held in classrooms for all students direction
- » Seminars and workshops
 - » Seminars are conducted in specialized classrooms in the two groups every two weeks
- » Exercises
 - » Exercises are conducted in specialized classrooms in two groups every two weeks

Week by Week Schedule

1. Lectures: Introduction; Introduction to tactics
Seminar: -

Exercises: -
2. Lectures: Purpose, organization structure, role and tasks of the CAF and NATO services;
Seminar: Introduction to tactics

Exercises: Introduction to tactics
3. Lectures: Command and control
Seminar: -

Exercises: -
4. Lectures: Troop movement
Seminar: OAKOC/MTET TC

Exercises: OAKOC/MTET TC
5. Lectures: Patrols
Seminar: -

Exercises: -
6. Lectures: Fires
Seminar: Troop movement

Exercises: Troop movement
7. Lectures: -
Seminar: -

Exercises: -
8. Lectures: Defence
Seminar: -

Exercises: -
9. Lectures: -
Seminar: -

Exercises: -
10. Lectures: Elements of combat power (manoeuvre, information and intelligence, force protection)
Seminar: -

Exercises: -
11. Lectures: Elements of combat power (support, command and control, fire; security support.
Seminar: -

Exercises: Seminar 3

12. Lectures: -
Seminar: Infantry platoon during the attack/defence (MTETTC, OAKOC, elaboration of the task on a model - sand-pit and draft elaboration)
- Exercises: -
13. Lectures: -
Seminar: Infantry platoon during the attack/defence (MTETTC, OAKOC, elaboration of the task on a model - sand-pit and draft elaboration)
- Exercises: -
14. Lectures: -
Seminar: Infantry platoon during the attack/defence (MTETTC, OAKOC, elaboration of the task on a model - sand-pit and draft elaboration)
- Exercises: -
15. Lectures: -
Seminar: Infantry platoon during the attack/defence (MTETTC, OAKOC, elaboration of the task on a model - sand-pit and draft elaboration)
- Exercises: -

Literature



Mladen Pahernik (2017). *Opća taktika, lekcije*, Hrvatsko vojno učilište

Additional Literature



(2009). *Allied Tactical Publications ATP 3.2.1 Land Tactics*, NATO standardisation agency



FM 3-90 Taktika, prijevod, GS OS RH, Zagreb



ZDP-1: Doktrina Oružanih snaga RH, GS OS RH, Zagreb

Similar Courses

» Tactics, West Point

Geoengineering

130144



Lecturer



prof. dr. sc.
Biljana Kovačević
Zelić

Course Description

To teach students how to apply the principles of surveying and geotechnical engineering and how to integrate theoretical and practical knowledge of geotechnical engineering and surveying in different types of engineering constructions and works i.e. construction of roads and geotechnical structures in soils.

Study Programmes

» Engineers -> Group of Courses Armour, Field Artillery, Engineers, Technical Support and Infantry (Course) (*required course, 7th semester, 4th year*)

Learning Outcomes

On successful completion of the course, students will be able to:

1. Describe the origin of soils. Explain laboratory testing procedures for the determination of physical and index properties. Classify soil materials.
2. Name and describe in-situ testing methods for geological materials and to be able to use the results presented in geotechnical report.
3. Describe testing methods for the determination of hydraulic and mechanical properties of soil. Perform stress-strain analyses, calculate settlement, water flow and slope stability.
4. Apply the principles of geotechnical engineering for the construction of geotechnical structures.
5. Organize and supervise the construction of simple geotechnical and hydrotechnical structures in soil materials.
6. Explain the role of geodesy in engineering activities.
7. Comprehend the theory of geodesy, automatic measuring systems.
8. Apply classic and modern geodetic measurement systems for road construction.
9. Apply different staking out methods for road construction.
10. Specify and describe hydrometric measurements.

Study Programme Learning Outcomes

Military Engineering

Screening of student's work

2 ECTS Midterm exam

4 ECTS Oral exam

6 ECTS

ECTS Credits 6.0

English Level Lo

E-learning Level L1

Study Hours

Lectures 45

Laboratory exercises 30

Associate Lecturer

doc. dr. sc. Rinaldo Paar

Teaching Assistant

dr. sc. Igor Grgac

Grading

Grading: During the course spend 2 tests and a final oral exam. Obligations: Regular attendance at lectures, exercises and positive marks on exams.

Prerequisites for

Practical Military Training - Engineers

Forms of Teaching

- » Lectures
- » Exercises
- » Field work
- » Laboratory

Week by Week Schedule

1. Lectures: The origin of soil materials. Index and classification properties. Soil classification.
Seminar: Physical properties. Index properties. Soil identification and classification.
2. Lectures: Ground investigations and in-situ testing. Geotechnical report. Water in soils. Seepage.
Seminar: Hydraulic heads. Flow nets.
3. Lectures: Effective stress principle. Geological stress state. Contact pressure.
Seminar: Primary and secondary stress state calculations.
4. Lectures: Oedometer test. Soil settlement.
Seminar: Settlement calculations.
5. Lectures: Strength of soils. Direct shear. Triaxial test. Unconfined compression test. Soil compaction.
Seminar: Strength of soils. Proctor test.
6. Lectures: Slope stability analyses. Landslides.
Seminar: Slope stability calculation.
7. Lectures: Rankine's theory of lateral earth pressures: active and passive case. Bearing capacity of soils.
Seminar: Active and passive earth pressure. Bearing capacity.
8. Lectures: General characteristics, the role and importance of geodesy in engineering activities
Seminar: Application of geology in the implementation of engineering works (road building, fortification, camouflage, demolition)
9. Lectures: Plans and maps (measures, content)
Seminar: Calculation of distances, angles and coordinates from analog plans and maps
10. Lectures: Geodetic measurements and instruments (TC, GPS, GNSS, georobots) and accuracy estimation
Seminar: Staking elements - ways of calculating
11. Lectures: Geodetic works on road construction - operating range, staking route
Seminar: Staking of points and lines with automatic (and non-automatic) instruments
12. Lectures: Basic geodetic works on the construction of bridges and tunnels
Seminar: Measuring cross sections of elongated objects and calculate the volume (cubature)
13. Lectures: Orientation with magnetic and gyroscopic instruments
Seminar: Calculation of field works (cubature) in the construction of surface facilities (airports, playgrounds ..
14. Lectures: Hydrometric measuring - measuring cross sections of watercourses
Vježbe: Technical report and works accuracy-rating
15. Lectures: Geodetic and geotechnical works for transmission lines, pipelines and hydroelectric power plants.
Seminar: Visit to a larger construction site

Literature



Zlatović, Sonja (2006). *Uvod u mehaniku tla*, TVZ, Zagreb.



Kapović, Z. (2010). *Geodezija u niskogradnji*, Sveučilište u Zagrebu

Additional Literature



Cernica, John N. (1995). *Geotechnical Engineering: Soil Mechanics*, John Wiley & Sons.



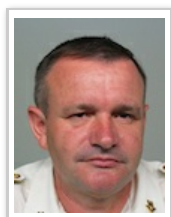
Pavelić, Davor (2014). *Opća geologija*, Sveučilište u Zagrebu

Infantry Tactics

130120



Lecturers



izv. prof. dr. sc.
Mirko Jakopčić



doc. dr. sc.
Matija Hoić

Course Description

Understand, connect, and apply the acquired knowledge and known tools of command and tactical use of infantry platoon in overall spectrum of the tactical level operations. To clarify and determine human abilities during the battle in relation to tasks, time and location. To recognize and analyze the use and development of contemporary armament.

Study Programmes

» Infantry -> Group of Courses Armour, Field Artillery, Engineers, Technical Support and Infantry (Course) (required course, 7th semester, 4th year) (Note: course not offered in this academic year.)

Learning Outcomes

On successful completion of the course, students will be able to:

1. Adopt, summarize, enumerate, clarify, differentiate and state the purpose and characteristics of infantry formation weapons and equipment of the platoon and company support platoon.
2. Adopt, summarize, explain and state the essence of the theory and rules of infantry weapons shooting
3. Prepare, organize and conduct all types of shooting from the organizational shooting, mortar and anti-tank infantry platoon weapons and company support platoon.
4. Handle and operate fire from platoon organizational infantry weapons and support platoon.
5. Use of tactical movement of infantry platoon and support platoon applying the appropriate formations and movement techniques.
6. Adopt, differentiate, choose, connect and apply known tools of the branches doctrine, techniques and procedures / proceedings for autonomous conduct, command and use of infantry platoon and support platoon in the overall spectrum of tactical level operations.
7. Assess and solve tactical problem of infantry platoon and support platoon using known tools (TLP, DMP (decision making process), OAKOC, TTP, terms and symbols, documents, graphs, drafts, schemes, matrices, land models, various available media...)
8. Integrate, distribute, and use tactically all specialties of the infantry branch and pertaining formation unit weapons.
9. .
10. .

Study Programme Learning Outcomes

ECTS Credits	8.0
English Level	Lo
E-learning Level	L1
Study Hours	
Lectures	60
Seminar	15
Laboratory exercises	30

Associate Lecturers

Krešimir Kosanović, bacc. crim.
Davor Popović, univ. spec. pol.

Grading

Grading: During their classes, the students will receive the mark from the preliminary exam, oral exam, practical and seminar work. A Student who fails the written test will repeat the exam. A student who is not satisfied with the mark from the written test or overall mark, takes an oral exam. The mark from the practical work is made of: diligence, initiatives, creativity and organizational skills. Positive final mark will be given under the condition that marks are positive within all elements of evaluation. Obligations: Students are obligated to attend classes, training exercises and shooting. Overall education and training from the subject Infantry Tactics I is conducted by means of the protection equipment of the CAF. During the education process, the students should obey military relationships and hierarchy with the purpose of safe conduct of activities. Each student should make a seminar paper from the field of infantry tactics exclusively. Students agree on the organization of life and work within the CAF training range, shooting and exercise areas.

Prerequisites for

Practical Military Training - Infantry



Military Engineering**1 Basic competences of the military profession**

- 1.1 To communicate, organize and plan effectively the activities of a basic tactical unit
- 1.2 To assess the situation and implement appropriate tactics for a basic tactical unit
- 1.3 To make decisions independently and command a basic tactical unit

2 Special military competences

- 2.1 To analyse the environment and to develop and apply tactics of the branch/service
- 2.2 To manage maintenance of combat and non-combat assets, ammunitions and mines of the branch/service
- 2.3 To use combat and non-combat assets of the branch/service in a professional way
- 2.4. To apply International War and Humanitarian Law

3 Basic technical knowledge

- 3.2. To apply complex methodology by integrating engineering knowledge and skills in military engineering practice

4. Personal and professional skills and characteristics

- 4.2 To model and resolve a problem and to interpret problem solution by using appropriate knowledge and methods

5. Social skills (team work and communication)

- 5.2 Organize and plan individual and team work in international and interdisciplinary work groups

Screening of student's work

0.5 ECTS Lectures attendance

2.5 ECTS Written exam

1 ECTS Seminar report

2 ECTS Oral exam

2 ECTS Practical work

8 ECTS

Forms of Teaching

» Lectures

» Lectures on individual subjects from the infantry tactics field

» Seminars and workshops

» Detailed independent coverage of one of the subjects from the lectures

» Exercises

» Tactical excersises using maps and sandbox

» Field work

» Application of tactical conduct in field conditions

Week by Week Schedule

- 1. Lectures: Basics of branch tactics (introduction of the subject, contents, use of branch tactics, organization, combat power, combat functions)
Seminar: MTETTC i OAKOC analysis (Tactical task - OPORD, MTETTC elements analysis, assessment of the ground according to OAKOC elements)

Exercises: .

2. Lectures: Command, control and procedures of unit management (command and control, unit management procedures, decision making process, MTECC and OAKOC, combat commands, key personnel responsibilities, graphics, symbols)
Seminar: Elaboration of the draft and sand model (elaboration of the draft and sand model with basic graphic control measures)

Exercises: .

3. Lectures: Use of fire (term, principles, elements - measures of fire control, use of direct and indirect fires, fire commands, range charts, planning and drafts in the platoon, fire coordination measures)
Seminar: Infantry platoon in movement (formations and techniques of movement, assessment, activities in dangerous areas, execution)

Exercises: .

4. Lectures: Tactical movement (formations and movement techniques, dangerous areas and defeating them, security)
Seminar: Defence of infantry platoon (receipt of the task, elaboration of the plan according to MTETTC, giving commands)

Exercises: .

5. Lectures: Attack on the infantry platoon 8characteristics, structure and attack phases, types of attack manoeuvres, other attack operations and special types of attack)
Seminar: Attack of of infantry platoon (receipt of the task, elaboration of the plan according to MTETTC, giving commands, urban areas)

Exercises: .

6. Lectures: Infantry platoon defence (defence characteristics, types of defence operations, defence structure, organization, taking and preparation of positions, defence tactics, obstacles, retrograde operations)
Seminar: Platoon in patrol and patrolling (receipt of the task, elaboration of the plan according to MTETTC, giving commands, execution)

Exercises: .

7. Lectures: Patrol and patrolling (planning, organization and composition, types/forms of patrols, combat and recce patrols)
Seminar: MTETTC i OAKOC analysis (Tactical task - OPORD, MTETTC elements analysis, assessment of the ground according to OAKOC elements)

Exercises: .

8. Lectures: Urban operations (combat specific qualities of the battle, key tasks of the platoon attack on buildings, set up positions)
Seminar: Elaboration of the draft and sand model (elaboration of the draft and sand model with basic graphic control measures)

Exercises: .

9. Lectures: Security and observation points (basics of security, security measures, observation points and surveillance)
Seminar: MTETTC i OAKOC analysis (Tactical task - OPORD, MTETTC elements analysis, assessment of the ground according to OAKOC elements)

Exercises: .

10. Lectures: Check poin and convoy (purpose, types, location and KT planning, purpose, tasks, organization and convoy escort)
Seminar: Elaboration of the draft and sand model (elaboration of the draft and sand model with basic graphic control measures)

Exercises: .

11. Lectures: Tactical anti-tank guided missiles (anti-tank combat, essentials of use of anti-tank units doctrine, tactical tasks, positions and fire system)
Seminar: MTETTC i OAKOC analysis (Tactical task - OPORD, MTETTC elements analysis, assessment of the ground according to OAKOC elements)

Exercises: .

12. Lectures: Tactical use of mortar (essentials and doctrine of mortar squad/platoon use, fire support, forward observers, fire conduct team)
Seminar: Elaboration of the draft and sand model (elaboration of the draft and sand model with basic graphic control measures)

Exercises: .

13. Lectures: Tactical use of mechanized infantry (basics and doctrine of infantry AFV, joint movement with infantry AFV, use of infantry AFV in attack and defence actions)
Seminar: Elaboration of the draft and sand model (elaboration of the draft and sand model with basic graphic control measures)

Exercises: .

14. Lectures: Command, control and procedures of unit management (command and control, unit management procedures, decision making process, MTECC and OAKOC, combat commands, key personnel responsibilities, graphics, symbols)
Seminar: Defence of infantry platoon (receipt of the task, elaboration of the plan according to MTETTC, giving commands)

Exercises: .

15. Lectures: Command, control and procedures of unit management (command and control, unit management procedures, decision making process, MTECC and OAKOC, combat commands, key personnel responsibilities, graphics, symbols)
Seminar: Attack of infantry platoon (receipt of the task, elaboration of the plan according to MTETTC, giving commands, urban areas)

Exercises: .

Literature



US Army, ATP 3-21.8 Infantry Platoon and Squad 2016; FM 3-21.8 The Infantry Rifle Platoon and Squad, 2007.



GS OSRH, Doktrina OSRH, Zagreb, 2010.



US Army, FM 3-90 Taktika, prijevod GSOSRH, Zagreb

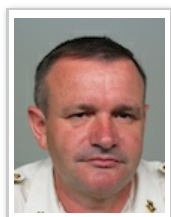
Similar Courses

» Platoon operations (MS300), West Point

Infantry Tactics (Social)

129986

Lecturers



izv. prof. dr. sc.
Mirko Jakopčić



doc. dr. sc.
Matija Hoić

Course Description

Understand, connect, and apply the acquired knowledge and known tools of command and tactical use of infantry platoon in overall spectrum of the tactical level operations. To clarify and determine human abilities during the battle in relation to tasks, time and location. To recognize and analyze the use and development of contemporary armament.

Study Programmes

» Infantry -> Military Leadership and Management (Course) (*required course, 7th semester, 4th year*)

Learning Outcomes

On successful completion of the course, students will be able to:

1. Adopt, summarize, enumerate, clarify, differentiate and state the purpose and characteristics of infantry formation weapons and equipment of the platoon and company support platoon.
2. Adopt, summarize, explain and state the essence of the theory and rules of infantry weapons shooting
3. Prepare, organize and conduct all types of shooting from the organizational shooting, mortar and anti-tank infantry platoon weapons and company support platoon.
4. Handle and operate fire from platoon organizational infantry weapons and support platoon.
5. Use of tactical movement of infantry platoon and support platoon applying the appropriate formations and movement techniques.
6. Adopt, differentiate, choose, connect and apply known tools of the branches doctrine, techniques and procedures / proceedings for autonomous conduct, command and use of infantry platoon and support platoon in the overall spectrum of tactical level operations.
7. Assess and solve tactical problem of infantry platoon and support platoon using known tools (TLP, DMP (decision making process), OAKOC, TTP, terms and symbols, documents, graphs, drafts, schemes, matrices, land models, various available media...)
8. Integrate, distribute, and use tactically all specialties of the infantry branch and pertaining formation unit weapons
9. .
10. .

Study Programme Learning Outcomes

ECTS Credits	5.0
English Level	Lo
E-learning Level	L1
Study Hours	
Lectures	30
Seminar	15
Field exercises	30

Associate Lecturer

Davor Popović, univ. spec. pol.

Grading

Grading: During their classes, the students will receive one mark from written tests (colloquium I and II), practical and seminar work and oral exam. A Student who fails the written test will repeat the exam. A student who is not satisfied with the mark from the written test or overall mark, takes an oral exam. The mark from the practical work is made of: diligence, initiatives, creativity and organizational skills. Total mark from the subject is made of arithmetic mean from the written exam, seminar and practical work. Obligations: Students are obligated to attend classes, training exercises and shooting. Overall education and training from the subject Infantry Tactics I is conducted by means of the protection equipment of the CAF. During the education process, students are entitled to obey military relationships and hierarchy with the purpose of safe conduct of activities. Each student should make a seminar paper from the field of infantry tactics exclusively. Students agree on the organization of life and work within the CAF training range, shooting and exercise areas.

Prerequisites for

Practical military training - Infantry

Military Leadership and Management

- 1 Basic competences of the military profession
 - 1.2 To assess the situation and implement appropriate tactics for a basic tactical unit
- 2 Special military competences
 - 2.3 To use combat and non-combat assets of the branch/service in a professional way
- 3 Basic competences in social and humanistic sciences
 - 3.9 To make geographic and topographic analysis of the area and decide upon tactics of a basic tactical unit
- 4. Personal and professional skills and characteristics
 - 4.1 To identify and analyze a problem in the military environment
 - 4.3 To assume military, professional and ethical responsibility
- 5. Social skills (team work and communication)
 - 5.2 Organize and plan individual and team work in international and interdisciplinary work groups
 - 5.3 To effectively present work results both orally and in writing to stakeholders in the military environment

Screening of student's work

- 0.5 ECTS Lectures attendance
- 2 ECTS Written exam
- 0.5 ECTS Seminar report
- 1 ECTS Oral exam
- 1 ECTS Practical work

- 5 ECTS

Forms of Teaching

- » Lectures
 - » Once per week
- » Seminars and workshops
 - » Infantry tactics
- » Exercises
 - » Auditory, Laboratory, Structural, Workshop and Work in Practicum
- » Other
 - » Introduction to Exercise and discussions, Tactical task

Week by Week Schedule

1. Lectures: Basics of branch tactics (introduction of the subject, contents, use of branch tactics, organization, combat power, combat functions)
Seminar: Infantry doctrine

Exercises: Tactical Task - Tactical use and integration of all infantry specialties branches and their weapons and equipment, (mission, use of branch tactics, organization and combined forces)
2. Lectures: Planning and TLP, (command and control, Planning, TLP, decision making process, MTETTC, OAKOC and ASCOPE))
Lectures: Planning and TLP, (combat commands - OPORD, key personnel responsibilities, graphics-skeches, TT, symbols)

Exercises: Planning and TLP, (command and control, Planning, TLP, decision making process, MTETTC, OAKOC and ASCOPE)

3. Lectures: Use of fire (term, principles, elements - measures of fire control, use of direct and indirect fires, fire commands, range charts, planning and drafts in the platoon, fire coordination measures
Seminar: Planning and Troop Leading Procedures

Exercises: Plann/Sketches of fire

4. Lectures: Tactical movement (formations and movement techniques, dangerous areas and defeating them, security)
Seminar: Defence of infantry platoon (receipt of the task, elaboration of the plan according to MTETTC, giving commands)

Exercises: Tactical movement

5. Lectures: Attack on the infantry platoon (characteristics, structure and attack phases, types of attack manouevres, other attack operations and special types of attack)
Seminar: Attack of of infantry platoon (receipt of the task, elaboration of the plan according to MTETTC, giving commands, urban areas)

Exercises: Attack on the infantry platoon

6. Lectures: Infantry platoon defence (defence characteristics, types of defence operations, defence structure, organization, taking and preparation of positions, defence tactics, obstacles, retrograde operations)
Seminar: Use of fire

Exercises: Infantry platoon defence

7. Kolokvij I

8. Lectures: Patrol and patrolling (planning, organization and composition, types/forms of patrols, combat and recce patrols)
Seminar: Infantry platoon in movement (formations and techniques of movement, assessment, activities in dangerous areas, execution)

Lectures: Introduction in urban operations (combat specific qualities of the battle, key tasks of the platoon attack on buildings, set up positions)

9. Lectures: Security and observation points (basics of security, security measures, observation points and surveillance
Seminar: Security and observation points

Exercises: Security and observation points

10. Lectures: Stability operations, Check poin and convoy (Stability operations small units, purpose, types, location and KT planning, purpose, tasks, organization and convoy escort)
Seminar: Stability operations, CP, Convoy

Exercises: Check poin and convoy

11. Lectures: Tactical anti-tank guided missiles (anti-tank combat, essentials of use of anti-tank units doctrine, tactical tasks, positions and fire system
Seminar: Modern ATGM

Exercises: ATGM

12. Lectures: Tactical use of mortar (essentials and doctrine of mortar squad/platoon use, fire support, forward observers, fire conduct team)
Seminar: Modern mortar system

Exercises: Tactical use of mortar

13. Lectures: Tactical use of mechanized infantry (basics and doctrine of infantry AFV, joint movement with infantry AFV, use of infantry AFV in attack and defence actions
Seminar: Modern BOV infantry

Exercises: Tactical use of mechanized infantry

14. Tactical Task - Tactical use and integration of all infantry specialties branches (small arms, light infantry weapons, mortars, ATGM, infantry fighting vehicle,...)
Seminar: Platoon in patrol and patrolling (receipt of the task, elaboration of the plan according to MTETTC, giving commands, execution)

Workshop/Practicum: Tactical task - OPORD platoon/platoon team/company team in attack/defence (TLP, MTETTC I OAKOC, sketches of operations, sand box).

15. Kolokvij II

Literature



(2016). *US Army, ATP 3-21.8 The Infantry Rifle Platoon and Squad*, 2016



(2016). *GS OSRH, ZDP-1A Doktrina OS RH*, Zagreb, 2014 i 2016.



(2013). *US Army, FM 3-90 Taktika, prijevod GSOSRH, Zagreb US Army FM 3-90-1 Offense and Defense; FM 3-90-2 Reconnaissance, Security and Tactical enabling tasks*



(2016). *ATP 3-21.11 SBCT Infantry Rifle Company*, 2016

Similar Courses

- » Maneuver Captain's Career Course (MCCC)- Infantry and armor school - Ford Benning, Oxford

Infantry Weapons With Fire Conduct

130006



Lecturer



izv. prof. dr. sc.
Krešimir Vučković

Course Description

Summarize, enumerate, explain, differentiate and state description, purpose and TT characteristics of infantry formation weapons up to 20mm calibre, and anti-tank infantry weapons. Handle and use correctly all types of infantry formation small arms and anti-tank weapons.

Study Programmes

- » Infantry -> Group of Courses Armour, Field Artillery, Engineers, Technical Support and Infantry (Course) (*required course, 7th semester, 4th year*) (Note: course not offered in this academic year.)
- » Infantry -> Military Leadership and Management (Course) (*elective course for the 7th semester mlm-infantry study, 7th semester, 4th year*)

Learning Outcomes

On successful completion of the course, students will be able to:

1. Describe basic facts and terms of infantry weapons.
2. Summarize purpose and TT characteristics of infantry weapons.
3. Apply simple actions in familiar conditions.
4. Operate all types of contemporary infantry weapons.
5. Apply training methods and infantry weapons shooting.
6. Distinguish contemporary tools and instruments for successful infantry weapon shooting.
7. Classify contemporary unconventional lethal means.
8. Assess responsibility for executing simple fire tasks in familiar conditions and environment.

Study Programme Learning Outcomes

Military Engineering

1 Basic competences of the military profession

- 1.2 To assess the situation and implement appropriate tactics for a basic tactical unit
- 1.4 To train, develop and assess the abilities of soldiers and a basic tactical unit
- 1.8 To make geographic and topographic analysis of the area and to decide upon the tactics of a basic tactical unit

2 Special military competences

- 2.1 To analyse the environment and to develop and apply tactics of the branch/service

ECTS Credits 6.0

English Level Lo

E-learning Level L1

Study Hours

Lectures 45

Seminar 15

Field exercises 30

Associate Lecturers

doc. dr. sc. Zoran Domitran

Davor Popović, univ. spec. pol.

Teaching Assistant

Ivan Damiani, dipl. ing.

Grading

Grading: During their classes, the student will be given a mark from each preliminary exam, exercise and seminar paper. A mark from the practical work is made of: diligence, initiatives, creativity and organizational skills. A positive final mark from the subject is given on the condition that all the elements evaluation are positive. Obligations: Students are obligated to attend classes, training exercises and shooting. Overall education and training from the subject Infantry Weapons with Fire Conduct is conducted by means of the protection equipment of the CAF. During the education process, the students are obligated to obey military relationships and hierarchy with the purpose of safe conduct of activities. Each student should make 2 seminar papers from the given topics. exclusively.

Prerequisites for

Practical military training - Infantry

- 2.2 To manage maintenance of combat and non-combat assets, ammunitions and mines of the branch/service
- 2.3 To use combat and non-combat assets of the branch/service in a professional way
- 3 Basic technical knowledge
 - 3.2. To apply complex methodology by integrating engineering knowledge and skills in military engineering practice
 - 3.3. To integrate and apply engineering principles and techniques in the operation of military system in unpredictable conditions
- 4. Personal and professional skills and characteristics
 - 4.1 To identify and analyze a problem in the military environment
 - 4.2 To model and resolve a problem and to interpret problem solution by using appropriate knowledge and methods
- 5. Social skills (team work and communication)
 - 5.3 To effectively present work results both orally and in writing to stakeholders in the military environment
- 6 Development, implementation and operation of technical systems in economic and social environment
 - 6.1. To analyse and evaluate the effect of engineering solutions on society and environment

Military Leadership and Management

- 1 Basic competences of the military profession
 - 1.2 To assess the situation and implement appropriate tactics for a basic tactical unit
 - 1.4 To train, develop and assess the abilities of soldiers and a basic tactical unit
- 2 Special military competences
 - 2.1 To analyse the environment and to develop and apply tactics of the branch/service
 - 2.2 To manage maintenance of combat and non-combat assets, ammunitions and mines of the branch/service
 - 2.3 To use combat and non-combat assets of the branch/service in a professional way
- 4. Personal and professional skills and characteristics
 - 4.1 To identify and analyze a problem in the military environment
- 5. Social skills (team work and communication)
 - 5.3 To effectively present work results both orally and in writing to stakeholders in the military environment

Screening of student's work

- 0.75 ECTS Lectures attendance
- 3 ECTS Midterm exam
- 1.5 ECTS Seminar report
- 0.75 ECTS Oral exam
- 6 ECTS

Forms of Teaching

- » Lectures
 - » Lectures will be held once a week for 3 hours.
- » Seminars and workshops
 - » One seminar paper is intended.
- » Exercises
 - » Exercises will be held once a week for 2 hours.

Week by Week Schedule

1. Lectures: Introduction to the subject (contents, concept and history of Small Arms and Light infantry weapons). Basics of theory of shooting (cartridge ignition, the initial speed of bullet, motion of the bullet through the air, bullet trajectory, aiming and bullet trajectory).

Exercises: Small arms by subject: handling, disassembly, shooting positions, handling malfunctions, safety measures, and maintenance.

2. Lectures: Basics of theory of shooting (cartridge ignition, the initial speed, bullet trajectory, aiming and bullet trajectory). Fundamental characteristics and working principles of small arms (definition, division, attributes, working principles, cycle, types with respect to working principles, malfunctions).

Exercises: Small arms by subject: handling, disassembly, shooting positions, handling malfunctions, safety measures, and maintenance.

3. Lectures: Fundamental characteristics and working principles of small arms (definition, division, attributes, working principles, cycle, types with respect to working principles, malfunctions). Shooting rules (shooting preparation and conduct, choosing and setting firing position, shooting positions, distance to target estimation, picking target and targeting point, shooting conduct).

Exercises: Small arms by subject: handling, disassembly, shooting positions, handling malfunctions, safety measures, and maintenance.

4. Lectures: Shooting rules (shooting preparation and conduct, choosing and setting firing position, shooting positions, distance to target estimation, picking target and targeting point, shooting conduct). Personal Shooting Weapons (rifles, small machineguns, handguns, machineguns).

Exercises: Small arms by subject: handling, disassembly, shooting positions, handling malfunctions, safety measures, and maintenance.

5. Lectures: Personal Shooting Weapons (rifles, small machineguns, handguns, machineguns). Collective Small Arms (light, middle weight and heavy machineguns).

Exercises: Small arms by subject: handling, disassembly, shooting positions, handling malfunctions, safety measures, and maintenance.

6. Lectures: Personal Shooting Weapons (rifles, small machineguns, handguns, machineguns). Collective Small Arms (light, middle weight and heavy machineguns).

Exercises: Small arms by subject: handling, disassembly, shooting positions, handling malfunctions, safety measures, and maintenance.

7. 1st preliminary exam (colloquium).
8. Lectures: Collective Small Arms (light and heavy machineguns). Small Arms sights (concept, aiming, mechanical and optical sights, keeping and maintenance).

Exercises: Preparations for shooting from automatic rifle. (Planning, organization, preparation and implementation of the shooting).

9. Lectures: Collective Small Arms (light and heavy machineguns). Small Arms sights (concept, aiming, mechanical and optical sights, keeping and maintenance).

Exercises: Conduct preparation shooting from AP-JPVHS.

10. Lectures: Snipers (concept, purpose, types, handling). Small arms ammunition (division, description, basic characteristics).

Exercises: Preparation and conduct of shooting from light machine gun.

11. Lectures: Basic maintenance and safety measures. Hand grenades (concept, division, purpose, main parts). Grenade launchers and Man portable anti-tank systems (MPATS), Hand grenades (concept, division, purpose, description, handling).

Exercises: MPATS and Grenade launchers (handling, disassembly/assembly, malfunction, safety measures).

12. Lectures: Grenade launchers and Man portable anti-tank systems (MPATS), (concept, division, purpose, description, handling). Basic terms of anti-tank weapons (TT characteristics, division, working principles). Development and TT characteristics of anti-tank guided missiles (ATGM).

Exercises: Preparation of shooting from grenade and rocket launcher. (Planning, organization, preparation and implementation of the shooting).

13. Lectures: Development and TT characteristics of anti-tank guided missiles (ATGM), (purpose, division by guidance type, characteristics of 1st, 2nd and 3rd weapon generation).

Exercises: ATGM 9K115 Metis, ATGM 9K111 Fagot and ATGM 9K113 Konkurs (handling, disassembly/assembly, malfunction, safety measures).

14. Lectures: ATGM 9K115 Metis, ATGM 9K111 Fagot and ATGM 9K113 Konkurs, (purpose, working principle, system description).

Exercises: ATGM 9K115 Metis, ATGM 9K111 Fagot and ATGM 9K113 Konkurs (handling, disassembly/assembly, malfunction, safety measures).

15. 2nd preliminary exam (colloquium).

Literature



Miroslav Fabijanić, Marko Parizoski, Vjekoslav Lupinski (204). *Pješačko oružje s nastavom gađanja*, Narodne novine, Zagreb



Obrad Dinić, Obrad Vučinić, Tomislav Ristić, Vojko Subotić (420). *Pešadijsko naoružanje s nastavom gađanja*, Vojno izdavački zavod, Beograd



Sredstva za protuoklopnu borbu, Gama Grafit, Krapina, Zagreb



Dimić O., Vučinić O. O., *Pešadijsko naoružanje sa nastavom gađanja PRAKTIKUM*, Vojno izdavački zavod, Beograd

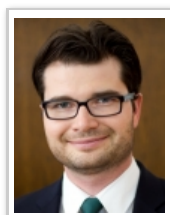
Similar Courses

- » MLTY 102-Foundations in Leadership, The Citadel

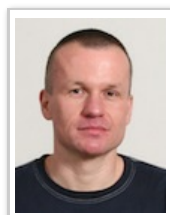
Informatics

129776

Lecturers



izv. prof. dr. sc.
Vedran Podobnik



izv. prof. dr. sc.
Tomislav Pribanić

Course Description

The objective is to introduce students to basic principles of computer architecture and software. Students will gather basic knowledge about computer networks, Internet architecture and protocols as well. Finally, students will understand the basics of programming languages, documentation and program development.

Study Programmes

» Military Leadership and Management (Study) (*required course, 1st semester, 1st year*)

Learning Outcomes

On successful completion of the course, students will be able to:

1. List basics computer parts
2. Classify types of software
3. Explain how computer networks and Internet protocols work
4. Describe basic elements of database management system
5. Describe World Wide Web
6. List basic principles of programming

Study Programme Learning Outcomes

Military Leadership and Management

- 3 Basic competences in social and humanistic sciences
 - 3.4 To manage processes in the military environment using modern technologies
4. Personal and professional skills and characteristics
 - 4.1 To identify and analyze a problem in the military environment
 - 4.2 To model and resolve a problem and to interpret problem solution by using appropriate knowledge and methods
 - 4.4 To develop self-study abilities and the need for and methods of life-long learning in traditional and virtual environment

Screening of student's work

- 2 ECTS Lectures attendance
- 0.3 ECTS Midterm exam
- 0.2 ECTS Written exam
- 2.5 ECTS Practical work
- 5 ECTS

ECTS Credits 5.0

English Level L1

E-learning Level L1

Study Hours

Lectures 45

Laboratory exercises 15

Associate Lecturers

doc. dr. sc. Jurica Babić

doc. dr. sc. Marija Seder

Teaching Assistants

Dario Pevec, mag. ing. inf. et comm. techn.

Hrvoje Vdović, mag.ing.el.

Grading

Grading: Class attendance is valued. On mid-term exams and finals students undergo a written and practical exam. Obligations: Attending classes and active participation in lectures. Forms of student assessment: continuous assesment and examinations. Continuous assesment: • Laboratory excersis (30%) • Mid-term exam 1 (20%) • Mid-term exam 2 (20%) • Final exam (30%) A minimum of 50% of the total points is needed for passing the course, under the condition that each component of the assessment is positively assessed. Exam dates • Laboratory exercises (30%) • Exam (50%) • Oral exam (20%) A minimum of 50% of the total points is needed for passing the course, under the condition that each component of the assessment is positively assessed.

Forms of Teaching

- » Lectures
 - » Lectures, with course material and presentation uploaded in advance on the web.
- » Independent assignments
 - » Preparatory work for the laboratory exercises.
- » Laboratory
 - » Laboratory exercises organized in three cycles lasting 5 hours within which students will participate in the practical implementation and application of methods, concepts and technologies described in the lectures.

Week by Week Schedule

1. Lectures: Computer architecture. Operating systems. Software.
2. Lectures: Open computing. Introduction to programming: algorithm, variables, constants. Programming languages.
3. Lectures: Programming process. Pseudocode.
4. Laboratory exercises: Practical aspects of programming fundamentals.
5. Lectures: Introduction to programming in C#. Basic elements of the C# programming language.
6. Lectures: Developing applications with the C# programming language.
7. Mid-term exam
8. Lectures: Basic concepts of databases.
9. Lectures: Connecting C# applications with databases.
10. Laboratory exercises: Practical implementation of connection to databases based on C# programming language.
11. Lectures: Computer networks. Internet.
12. Lectures: Internet protocol stack.
13. Lectures: Internet services: World Wide Web (WWW), electronic mail (e-mail), file transfer. Security and privacy challenges on Internet.
14. Laboratory exercises: Internet protocols in action.
15. Final exam

Literature



Podobnik, Vedran;
Dobrijević, Ognjen; Grgić,
Tomislav; Ivešić, Krunoslav
(2014). *Internetski protokoli u
primjeni*, Sveučilište u
Zagrebu Fakultet
elektrotehnike i računarstva



Lovrek, Ignac; Matijašević,
Maja; Ježić, Gordan; Jevtić,
Dragan (2014). *Komunikacijske mreže*,
Sveučilište u Zagrebu
Fakultet elektrotehnike i
računarstva

Similar Courses

- » Introduction to Computer Science, Stanford University
- » Programming Methodologies, Stanford University
- » Introduction to Computer Networking, Stanford University

Informatics and Programming

129330

Lecturers



doc. dr. sc.
Marija Seder



doc. dr. sc.
Ana Sović Kržić

Course Description

The objective is to introduce students to basic principles of computer architecture and software. Students will gather basic knowledge about programming, development and structuring of computer programs. They will be able to write a simple algorithm, describe it in a procedural programming language, document and test it and find logical errors.

Study Programmes

- » Group of Courses Armour, Field Artillery, Engineers, Technical Support and Infantry -> Military Engineering (Course) (*required course, 3rd semester, 2nd year*)
- » Group of Courses Signals, Monitoring and Guidance and Air Defence -> Military Engineering (Course) (*required course, 3rd semester, 2nd year*)
- » Chemical, Biological, Radiological and Nuclear Defence -> Military Engineering (Course) (*required course, 3rd semester, 2nd year*) (**Note: course not offered in this academic year.**)

Learning Outcomes

On successful completion of the course, students will be able to:

1. List basics computer parts
2. Classify types of software
3. Classify basic data types
4. Describe problem solution using algorithm
5. Design, implement and test simple programs and identify errors
6. Apply knowledge about programming to structure larger programs

Study Programme Learning Outcomes

Military Engineering

3 Basic technical knowledge

- 3.1. To identify, analyse, model and resolve military engineering problems by integrating basic knowledge of natural and technical sciences
- 3.2. To apply complex methodology by integrating engineering knowledge and skills in military engineering practice

4. Personal and professional skills and characteristics

- 4.1 To identify and analyze a problem in the military environment
- 4.2 To model and resolve a problem and to interpret problem solution by using appropriate knowledge and methods
- 4.4 To develop self-study abilities and the need for and methods of life-long

ECTS Credits 6.0

English Level Lo

E-learning Level L1

Study Hours

Lectures 45

Laboratory exercises 30

Associate Lecturer

doc. dr. sc. Krešimir Križanović

Teaching Assistants

dr. sc. Željko Heimer

Dario Pevec, mag. ing. inf. et
comm. techn.

Grading

Grading: Class attendance is valued. On finals students undergo an oral exam.

Obligations: Attending classes and active participation in lectures, as well as solving problems and exercises. Forms of student assessment:

Continuous assesment and examinations. Continuous assesment: • Laboratory excersis (30%) • Mid-term exam (25%) • F inal exam (25%) • Oral exam (20%) A minimum of 50% of the total points is needed for passing the course. Exam dates • Laboratory exercises (30%) • Exam (50%) • Oral exam (20%) A minimum of 50% of the total points is needed for passing the course.

learning in traditional and virtual environment

5. Social skills (team work and communication)

5.3 To effectively present work results both orally and in writing to stakeholders in the military environment

Screening of student's work

1.5 ECTS Lectures attendance

1.5 ECTS Midterm exam

1.5 ECTS Written exam

0.5 ECTS Oral exam

1 ECTS Practical work

6 ECTS

Forms of Teaching

» Lectures

» Lectures are held for three hours a week.

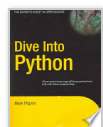
» Laboratory

» Laboratory works are held for two hours a week.

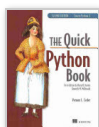
Week by Week Schedule

1. Computer architecture. Operating systems. Introduction to programming.
2. Introduction to Python programming language. Program environment installation.
3. Data types and variables. Arithmetic and logical operators. Program control flow. Rules for writing programs.
4. Function call. Debugging programs.
5. Python collections (tuples, lists, dictionaries etc.). String processing.
6. Object oriented programming.
7. Lectures: Mid-term exam
8. Working with files.
9. Graphical user interface development.
10. Network programming basics. Web page analysis.
11. Network programming basics. Client - server communication.
12. Algorithms and complexity. Searching and sorting.
13. Complex programs structuring.
14. Using Python libraries. Complex examples.
15. Lectures: Final exam.

Literature



Mark Pilgrim (2004). *Dive Into Python*, Apress



Naomi R. Ceder (2010). *The Quick Python Book*, Manning Publications; 2nd edition (January 15, 2010)

Similar Courses

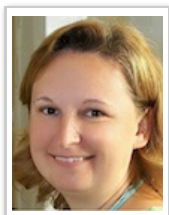
» IT300 Programming Fundamentals (Python), West Point

Instrumental Analytical Chemistry

129975



Lecturer



red. prof. art. dr. sc.
Danijela Ašperger

ECTS Credits 3.0

English Level Lo

E-learning Level L1

Study Hours

Lectures 30

Laboratory exercises 15

Associate Lecturer

prof. dr. sc. Dragana Mutavdžić
Pavlović

Teaching Assistants

Ivana Cetina, pred.
dr. sc. Dragutin Tušek, pred.

Grading

It is necessary to achieve at least total of 50% points to complete the course. In addition, it is necessary to achieve at least 40% of exam maximum points on each exam, exercise or individual assignment. 5% attend a lecture 60% colloquia 15% seminar 20% experimental work

Course Description

The aim of this course is to introduce the theoretical principles, practical work and the use of instrumental equipment and procedures for instrumental methods of chemical analysis. The choice of method will depend on the knowledge of the basic principles of each method or group of methods and the understanding of their benefits and limitations.

Study Programmes

- » Chemical, Biological, Radiological and Nuclear Defence -> Military Engineering (Course) (required course, 5th semester, 3rd year) (Note: course not offered in this academic year.)

Learning Outcomes

On successful completion of the course, students will be able to:

1. Describe, select and recognize which analytical method could be use for a specific analyte and a specific sample in a defined military environment.
2. Compare, interpret and explain the results obtained from the analytical process.
3. Apply, adapt, solve and use their knowledge to unforeseen military requirements to solve, by then, an unknown problem.
4. Identify and analyze the problem, and show the end-user information obtained by analytical process.
5. Compare and connect existing ideas, provide a new solution, and propose a plan to solve military problems.
6. Evaluate, compare, select, recommend and conclude what is the best analytical method for a given real problem.

Study Programme Learning Outcomes

Military Engineering

- 1 Basic competences of the military profession
 - 1.6 To nourish, channel and use creativity in accomplishing missions of a basic tactical unit
- 3 Basic technical knowledge
 - 3.1. To identify, analyse, model and resolve military engineering problems by integrating basic knowledge of natural and technical sciences
4. Personal and professional skills and characteristics
 - 4.1 To identify and analyze a problem in the military environment
 - 4.2 To model and resolve a problem and to interpret problem solution by using

- appropriate knowledge and methods
- 4.4 To develop self-study abilities and the need for and methods of life-long learning in traditional and virtual environment
- 5. Social skills (team work and communication)
 - 5.1 To communicate effectively in the Croatian and English language applying modern presentation skills and techniques
 - 5.2 Organize and plan individual and team work in international and interdisciplinary work groups
- 6 Development, implementation and operation of technical systems in economic and social environment
 - 6.1. To analyse and evaluate the effect of engineering solutions on society and environment

Screening of student's work

- 1 ECTS Lectures attendance
- 0.5 ECTS Experimental work
- 0.5 ECTS Midterm exam
- 0.5 ECTS Written exam
- 0.5 ECTS Seminar report
- 3 ECTS

Forms of Teaching

- » Lectures
 - » Ex chatedra, Power Point presentation.
- » Laboratory
 - » Laboratory exercise in Instrumental laboratory.

Week by Week Schedule

1. Lectures: Familiarization with the program, laboratory exercises instructions. Analytical methods introduction.
Exercises: UV-VIS spectrometry and turbidimetry - method of external standards (calibration chart).
2. Lectures: Types of analytical signal, the basic components of instruments, instrumentation development, classification of instrumental methods.
Exercises: UV-VIS spectrometry and turbidimetry - method of external standards (calibration chart).
3. Lectures: Spectrometry, history of spectroscopic techniques, fundamentals of spectrometry, classification of spectrometry - molecular spectroscopy and atomic spectrometry.
Exercises: UV-VIS spectrometry and turbidimetry - method of external standards (calibration chart).
4. Lectures: Classification of spectrometry due to the interaction of the sample with the energy absorption, induced absorption, emission, polarization EMR, scattering, the ratio of the mass and charge.
Exercises: AA spectrometry - a method of standard addition.
5. Lectures: Spectrometry methods of electron and ion radiation, mass spectrometry.
Exercises: AA spectrometry - a method of standard addition.
6. Lectures: Electroanalytical methods, history of electroanalytical methods, basics of electroanalytical methods.
Exercises: Potentiometry: potentiometric titration. Data processing of potentiometric titration.
7. Lectures: Classification of electroanalytical methods, electrochemical cell.
Exercises: Potentiometry: potentiometric titration. Data processing of potentiometric titration.

8. Lectures: Potentiometric and conductometric techniques.
Exercises: Direct potentiometry.
9. Lectures: Electrogravimetry and coulometry techniques
Exercises: Direct potentiometry.
10. Lectures: Voltammetric and amperometric techniques.
Exercises: Conductometry: conductometric titration.
11. Lectures: Thermal analysis techniques
Exercises: Conductometry: conductometric titration.
12. Lectures: Instrumental separation methods, chromatography - introduction to chromatography, gas chromatography.
Exercises: Chromatography: liquid chromatography (HPLC-DAD) - a method of internal standards.
13. Lectures: Supercritical fluid chromatography, liquid chromatography, planar chromatography, ion chromatography, size-exclusion chromatography.
Exercises: Chromatography: liquid chromatography (HPLC-DAD) - a method of internal standards.
14. Lectures: Electrophoresis, capillary electrophoresis.
Exercises: Compensation exercises.
15. Lectures: Students' essays presentation.
Exercises: Compensation exercises.

Literature



Douglas A. Skoog, Donald M. West, F. James Holler (1999). *Osnove analitičke kemije*, Školska knjiga



Marija Kaštelan-Macan (2003). *Kemijska analiza u sustavu kvalitete*, Školska knjiga



Ivan Piljac (1995). *Elektroanalitičke metode*, RMC, Zagreb

Additional Literature



M. Kaštelan-Macan, M. Petrović (2013). *Analitika okoliša*, HINUS i Fakultet kemijskog inženjerstva i tehnologije



Douglas A. Skoog, F. James Holler, Stanley R. Crouch (2007). *Principles of Instrumental Analysis*, Brooks/Cole Publishing Company

Similar Courses

- » Instrumental Methods of Analysis, West Point

Intelligence Tactics and Techniques

130001

Lecturer



prof. dr. sc.
Mirko Bilandžić

Course Description

Adopt intelligence, counterintelligence and security tactics and techniques. Applying these tactics and techniques to traditional and non-traditional threats and the realization of national interests. Acquire knowledge about the role of intelligence sources in support of military operations and integrated systems for collecting information based on the requests for information. Intelligence collection management (SIGINT, HUMINT, IMINT, RADINT, TELINT, OSINT, etc.); use of intelligence products in the management of the military organization.

Study Programmes

» Infantry -> Military Leadership and Management (Course) (*elective course for the 7th semester mlm-infantry study, 7th semester, 4th year*)

Learning Outcomes

On successful completion of the course, students will be able to:

1. Use functional intelligence terminology in the the exchange of intelligence products
2. Apply intelligence tactics and techniques
3. Evaluate intelligence disciplines; to come up with new ideas and solutions; provide answers to specific situations
4. Apply counterintelligence tactics and techniques
5. Use the results of (counter) intelligence activities in the management of military organization
6. Evaluate cultural and societal aspects of intelligence support to military operations
7. Develop critical thinking through examples of plans and operations
8. Apply the tactics and procedures defined by the doctrinal documents

Study Programme Learning Outcomes

Military Leadership and Management

- 1 Basic competences of the military profession
 - 1.1 To communicate, organize and plan effectively the activities of a basic tactical unit
 - 1.2 To assess the situation and implement appropriate tactics for a basic tactical unit
 - 1.3 To make decisions independently and command a basic tactical unit
 - 1.4 To train, develop and assess the abilities of soldiers and a basic tactical unit
 - 1.5 To develop personal and collective determination, courage, enthusiasm and

ECTS Credits	7.0
English Level	Lo
E-learning Level	L1
Study Hours	
Lectures	60
Seminar	30
Field exercises	15

Teaching Assistants

Damir Stručić, dipl.krim.
Željko Živanović, dipl.ing.k.teh.

Grading

Grading: The success of the course is the sum of points and ratings success will be carried out according to the following table: A - 90-100 points B - 80-89 points C - 61-79 points D - 51-60 points F - 50 points
Obligations: Class attendance and active participation in class (questions, comments, analysis); attending seminars, consulting seminar's literatures and active participation in the seminar classes; project proposal; final oral exam

initiative of subordinates

1.6 To nourish, channel and use creativity in accomplishing missions of a basic tactical unit

1.7 To be acquainted with and to respect historical, social and cultural diversities in the context of military activities

2 Special military competences

2.1 To analyse the environment and to develop and apply tactics of the branch/service

2.2 To manage maintenance of combat and non-combat assets, ammunitions and mines of the branch/service

2.3 To use combat and non-combat assets of the branch/service in a professional way

3 Basic competences in social and humanistic sciences

3.1 To analyze and interpret processes in international environment, and to act within international alliances and organizations in which the Republic of Croatia participates

3.2 To comprehend civil-military relations and to act in accordance with democratic standards

3.3 To apply International War and Humanitarian Law

3.4 To manage processes in the military environment using modern technologies

3.5 To apply knowledge of the structure and functioning of the political system, state and public administration in resolving unstructured problems

3.6 To apply knowledge of the military history in resolving tactical and operational problems

3.7 To apply knowledge of military psychology and sociology in leadership and command in predictable and unpredictable situations

3.8 To apply results of intelligence and counter-intelligence activities in leadership and management of military units

3.9 To make geographic and topographic analysis of the area and decide upon tactics of a basic tactical unit

4. Personal and professional skills and characteristics

4.1 To identify and analyze a problem in the military environment

4.2 To model and resolve a problem and to interpret problem solution by using appropriate knowledge and methods

4.3 To assume military, professional and ethical responsibility

4.4 To develop self-study abilities and the need for and methods of life-long learning in traditional and virtual environment

5. Social skills (team work and communication)

5.1 To communicate effectively in the Croatian and English language applying modern presentation skills and techniques

5.2 Organize and plan individual and team work in international and interdisciplinary work groups

5.3 To effectively present work results both orally and in writing to stakeholders in the military environment

Forms of Teaching

» Lectures

» Seminars and workshops

» Exercises

» Field work

» Independent assignments

» Other

» diskusije, studije slučaja

Week by Week Schedule

1. Lectures: Introduction to the course, a description of the content and objectives of the course, the structure of the course, an introduction to the seminar, review of the literature
Seminar: No

Exercises: Introduction to the seminar

2. Lectures: Intelligence tactics and techniques ; intelligence support to military operations
Seminar: No

Exercises: An analysis of national and international doctrinal documents of military intelligence operations

3. Lectures: Intelligence disciplines: principles and procedures
Seminar: Implementation of the intelligence cycle

Exercises: An analysis of national and international doctrinal documents of military intelligence operations

4. Lectures: Intelligence disciplines: data collection - HUMINT
Seminar: No

Exercises: An analysis of national and international doctrinal documents of military intelligence operations

5. Lectures: Intelligence disciplines: data collection - SIGINT: COMINT; MASINT; RADINT; TELINT
Seminar: No

Exercises: An analysis of national and international doctrinal documents of military intelligence operations

6. Lectures: Intelligence disciplines: data collection - IMINT; GEOINT
Seminar: The use system for electronic surveillance radio signals

Exercises: HUMINT intelligence operations: a case study

7. Lectures: Intelligence disciplines: data collection - OSINT
Seminar: The use system for electronic surveillance not communication signals

Exercises: HUMINT intelligence operations: a case study

8. Lectures: Security of intelligence operations and protective security
Seminar: The use the system to jamming

Exercises: HUMINT intelligence operations: a case study/project proposal

9. Lectures: Intelligence disciplines: counterintelligence
Seminar: Technical signals analysis

Exercises: SIGINT intelligence operations: a case study

10. Lectures: Intelligence disciplines: counterintelligence
Seminar: Techniques taking a picture and recording

Exercises: SIGINT intelligence operations: a case study

11. Lectures: Intelligence support counterterrorism
Seminar: Interview with a human source (HUMINT)

Exercises: IMINT intelligence operations: a case study

12. Lectures: Intelligence support counterterrorism
Seminar: No

Exercises: OSINT intelligence operations: a case study

13. Lectures: Intelligence tactics and techniques: covert actions
Seminar: No

Exercises: ISTAR concept: international experiences

14. Lectures: Intelligence preparation of the battlefield
Seminar: Intelligence preparation of the battlefield

Exercises: Unmanned Aerial Vehicle (UAV): operational intelligence support

15. Lectures: Review of the overall teaching and preparing students (through discussion) for final oral exam
Seminar: No

Exercises: Critical evaluation of seminars

Literature



Lowenthal, M.M. (2012.)
Intelligence: From Secrets to Policy, 5th Edition, Thousand Oak/London: SAGE.



Johnson, R.W. (2009.)
Thwarting Enemies at Home and Abroad: How to Be a Counterintelligence Officer, Washington: Georgetown University Press.



FM 34-8-2 Intelligence officer's handbook (Department of the Army Washington, DC, 1998)

International Law – Selected Chapters

129236

Lecturer



doc. dr. sc.
Trpimir Mihael
Šošić

Course Description

The aim is to build understanding of substance and nature of international law in comparison with internal legal system, as well as to ensure knowledge of all provisions of international law relevant from the military service standpoint. Also, to develop potentials for accurate application of international law and to convey the relevant knowledge.

Study Programmes

- » Military Engineering (Study) (*required course, 1st semester, 1st year*)
- » Military Leadership and Management (Study) (*required course, 1st semester, 1st year*)

Learning Outcomes

On successful completion of the course, students will be able to:

1. To develop ability for transfer of knowledge to the other personnel in the defence system
2. To distinguish the difference between the substance and nature of international law and internal law
3. To produce short briefings related to the application of international humanitarian law
4. To organize training of subordinates with the aim of application of international humanitarian law
5. To develop the need for a life-long education
6. To analyze application of international law in past military operations
7. To synthesize theoretical knowledge and application of international law within the defence system

Study Programme Learning Outcomes

Military Engineering

- 1 Basic competences of the military profession
 - 1.1 To communicate, organize and plan effectively the activities of a basic tactical unit
 - 1.2 To assess the situation and implement appropriate tactics for a basic tactical unit
 - 1.3 To make decisions independently and command a basic tactical unit
 - 1.4 To train, develop and assess the abilities of soldiers and a basic tactical unit
 - 1.5 To develop personal and collective determination, courage, enthusiasm and initiative of subordinates
 - 1.6 To nourish, channel and use creativity in accomplishing missions of a basic

ECTS Credits	5.0
English Level	Lo
E-learning Level	L1
Study Hours	
Lectures	30
Seminar	30

Associate Lecturers

dr. sc. Ivica Kinder
prof. dr. sc. Davorin Lapaš

Teaching Assistant

dr. sc. Rutvica Rusan Novokmet

Grading

Grading: Final evaluation shall be based on regular attendance of lectures, evaluation of a written seminar essay, student's work in classes during the whole semester, as well as on written and oral final examination. In order to achieve positive final evaluation, a student must earn positive evaluation in all above-listed elements of evaluation. Obligations: Regular attendance of lectures and seminar meetings, submitted and orally presented seminar paper, passed final examination.



tactical unit

1.7 To be acquainted with and to respect historical, social and cultural diversities in the context of military activities

2 Special military competences

2.4. To apply International War and Humanitarian Law

4. Personal and professional skills and characteristics

4.1 To identify and analyze a problem in the military environment

4.2 To model and resolve a problem and to interpret problem solution by using appropriate knowledge and methods

4.3 To assume military, professional and ethical responsibility

5. Social skills (team work and communication)

5.1 To communicate effectively in the Croatian and English language applying modern presentation skills and techniques

5.2 Organize and plan individual and team work in international and interdisciplinary work groups

5.3 To effectively present work results both orally and in writing to stakeholders in the military environment

Military Leadership and Management

1 Basic competences of the military profession

1.1 To communicate, organize and plan effectively the activities of a basic tactical unit

1.2 To assess the situation and implement appropriate tactics for a basic tactical unit

1.3 To make decisions independently and command a basic tactical unit

1.4 To train, develop and assess the abilities of soldiers and a basic tactical unit

1.5 To develop personal and collective determination, courage, enthusiasm and initiative of subordinates

1.6 To nourish, channel and use creativity in accomplishing missions of a basic tactical unit

1.7 To be acquainted with and to respect historical, social and cultural diversities in the context of military activities

3 Basic competences in social and humanistic sciences

3.1 To analyze and interpret processes in international environment, and to act within international alliances and organizations in which the Republic of Croatia participates

3.3 To apply International War and Humanitarian Law

3.4 To manage processes in the military environment using modern technologies

4. Personal and professional skills and characteristics

4.1 To identify and analyze a problem in the military environment

4.2 To model and resolve a problem and to interpret problem solution by using appropriate knowledge and methods

4.3 To assume military, professional and ethical responsibility

4.4 To develop self-study abilities and the need for and methods of life-long learning in traditional and virtual environment

5. Social skills (team work and communication)

5.1 To communicate effectively in the Croatian and English language applying modern presentation skills and techniques

5.2 Organize and plan individual and team work in international and interdisciplinary work groups

5.3 To effectively present work results both orally and in writing to stakeholders in the military environment

Screening of student's work

- 1 ECTS Lectures attendance
- 1 ECTS Essay
- 1 ECTS Midterm exam
- 1 ECTS Written exam
- 1 ECTS Oral exam
- 5 ECTS

Forms of Teaching

- » Lectures
 - » The lecturer transfers knowledge through oral presentation followed by slides. Creates a foundation for work in seminar group.
- » Seminars and workshops
 - » Students' 10-minutes oral presentations, followed by discussion. The lecturer monitors accuracy and moderates the discussion.
- » Independent assignments
 - » Seminar oral presentation and essay.

Week by Week Schedule

1. Lectures:
 1. Introduction; Substance, nature and sources of international public law
 2. International treaties
2. Lectures:
 3. Subjects of International Law
 4. The Individual and International Public Law
3. Lectures:
 5. Objects of International Law
 6. Objects of International Law; Organs of international relations
4. Seminars:
 1. Substance, nature and sources of international public law; International treaties
 2. Subjects of International Law; The Individual and International Public Law
5. Seminars:
 3. Subjects of International Law; Objects of International Law
 4. Objects of International Law
6. Seminars:
 5. Objects of International Law
 6. Objects of International Law; Organs of international relations
7. The first preliminary exam
8. Lectures:
 7. United Nations; Regional Organizations
 8. Peaceful Settlement of Disputes
9. Lecture:
 9. Peaceful Settlement of Disputes and Maintenance of Peace
- Seminar:
 7. United Nations
10. Seminars:
 8. Regional Organizations; Peaceful Settlement of Disputes
 9. Peaceful Settlement of Disputes and Maintenance of Peace
11. Lectures:
 10. The Law of the Armed Conflict
 11. The Law of the Armed Conflict

12. Lectures:
 12. The Law of the Armed Conflict
 13. The Law of the Armed Conflict
13. Seminars:
 10. The Law of the Armed Conflict
 11. The Law of the Armed Conflict
14. Seminars:
 12. The Law of the Armed Conflict
 13. The Law of the Armed Conflict
15. The second preliminary exam

Literature



Andrassy, J., Bakotić, B., Seršić, M., Vukas, B., Međunarodno pravo 1, Zagreb, Školska knjiga, 2010. (2. izmijenjeno izdanje) § 1., 3.-4., 9.-12., 15.-16., 21.-22., 25.-31., 33., 35.-38. (krupni slog)



Andrassy, J., Bakotić, B., Lapaš, D., Seršić, M., Vukas, B., Međunarodno pravo 2, Zagreb, Školska knjiga, 2012. § 40.-42., 44., 48.-52., 54.-63., 67.-68., 79. (II., IV.-V., VII.-VIII., XII.) (krupni slog)



Andrassy, J., Bakotić, B., Seršić, M., Vukas, B., Međunarodno pravo 3, Zagreb, Školska knjiga, 2010. § 80.-96. (krupni slog); § 97.-115. (krupni i sitni slog)

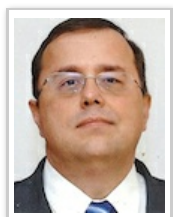
Similar Courses

- » Legal Studies, West Point

International Security and Security of EU

129985

Lecturer



doc. dr. sc.
Robert Barić

Course Description

The aim of this course is the study of international and European security in the contemporary world. New actors on the global and regional levels do not perceive force as the determining factor in their mutual communication, which poses new challenges to international and European security, and sets new missions for international organizations.

Study Programmes

» Infantry -> Military Leadership and Management (Course) (*required course, 7th semester, 4th year*)

Learning Outcomes

On successful completion of the course, students will be able to:

1. To understand basic concepts of international security and security of EU
2. To understand activities and decision-making process in international institutions and organizations
3. To understand and analyze the key issues of international and European security
4. To understand contemporary challenges and threats and ways of combating them
5. To analyze various manifestations of contemporary threats, challenges, dangers and risks
6. To analyze security policies of modern states in the world and Europe and their impact on the Croatian security policy

Study Programme Learning Outcomes

Military Leadership and Management

- 1 Basic competences of the military profession
 - 1.7 To be acquainted with and to respect historical, social and cultural diversities in the context of military activities
- 3 Basic competences in social and humanistic sciences
 - 3.1 To analyze and interpret processes in international environment, and to act within international alliances and organizations in which the Republic of Croatia participates
 - 3.4 To manage processes in the military environment using modern technologies
- 4 Personal and professional skills and characteristics
 - 4.1 To identify and analyze a problem in the military environment

ECTS Credits 5.0

English Level Lo

E-learning Level L1

Study Hours

Lectures 30

Seminar 30

Associate Lecturers

dr. sc. Irena Petrijevčanin
Vuksanović, doc.

doc. dr. sc. Boško Picula

Teaching Assistant

dr. sc. Marinko Lozančić, pred.

Grading

Grading: Attendance of lectures (10 percent), one bound essay from 2 to 2.500 words (25 percent), one required written colloquium (30 percent), one paper (15 percent) and an oral exam at the end (20 percent). Obligations: Attending lectures and seminars, and independent preparation of presentation and essay.



- 4.2 To model and resolve a problem and to interpret problem solution by using appropriate knowledge and methods

Forms of Teaching

- » Lectures
- » Seminars and workshops
- » Independent assignments
- » Work with mentor

Week by Week Schedule

1. Lectures: Introduction into international and European security
Exercises: Approaches to understanding and defining international and European security
2. Lectures: The concept and content of international and European security
Exercises: International relations and international security
3. Lectures: The institutionalization of international and European Security
Exercises: Development of international security from Westfall peace until World War I
4. Lectures: Post-Cold War Euro-atlantic security framework
Exercises: Institutionalization of international security after I and II World War
5. Lectures: Security theories and international security
Exercises: The transformation of NATO after the Cold War
6. Lectures: Evaluation of security theories
Exercises: Realist and liberal explanation of the termination of the Cold War
7. Lectures: Problems of international and European security-terrorism
Exercises: Behavioral approach: The scientific study of war and peace
8. Lectures: Problems of international and European security - ethnic conflicts: causes, consequences and management policies
Exercises: The terrorist attacks on the United States in 2001 and changes of the security paradigm
9. Lectures: Problems of international and European security - energy security and the protection of critical infrastructure
Exercises: The role of the army in the regulation of ethnic conflicts
10. Lectures: Problems of international and European security - defence trade
Exercises: The impact of energy security on the security of the European Union
11. Lectures: Problems of international and European security - asymmetric wars
Exercises: Defence trade as a source of national power: Comparison between the USA and EU
12. Lectures: Non-military sources of threats to international and European security - organized crime, illegal migration
Exercises: Asymmetric wars of the 21st century
13. Lectures: Institutions of international and European security - UN, OESS, NATO, EU
Exercises: Illegal migrations and security of the European Union
14. Lectures: Security of European small states
Exercises: The impact of international organizations - UN, NATO, EU and OSCE on European security
15. Lectures: The Republic of Croatia in international and European security
Exercises: The security of the Republic of Croatia and neighbouring countries in comparative perspective

Literature



Kolodziej, A. E., Sigurnost i međunarodni odnosi, Politička kultura i Centar za međunarodne i sigurnosne studije Fakulteta političkih znanosti Sveučilišta u Zagrebu, Zagreb, 2011.

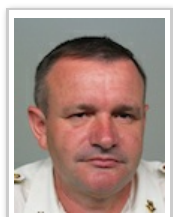


Tatalović, S., (ur.) Energetska sigurnost i kritična infrastruktura, Politička kultura, Zagreb, 2008

Introduction to Infantry Tactics and Weapon

129390

Lecturer



izv. prof. dr. sc.
Mirko Jakopčić

Course Description

Understand, relate and apply knowledge and familiar tools of command and control at the tactical level. Identify the use and development of modern weaponry. Summarized, enumerate, explain, distinguish and pronounce description, purpose and TT characteristics and handle with formations firearms.

Study Programmes

» Infantry -> Group of Courses Armour, Field Artillery, Engineers, Technical Support and Infantry (Course) (*required course, 6th semester, 3rd year*) (Note: course not offered in this academic year.)

Learning Outcomes

On successful completion of the course, students will be able to:

1. Explain, enumerate, identify and express the purpose and TT characteristics of formation infantry weapons.
2. Understand the basic features and concepts of infantry weapons.
3. Apply and demonstrate simple actions in familiar conditions.
4. Adopt, distinguish, select, connect and apply the branch doctrine known tools and tactics, techniques and procedures /steps for command, control and use of infantry platoon.
5. Deploy and tactical use of all infantry branch specialty.
6. Anticipate and identify any threats on the battlefield and plan for protection and survival.
7. .
8. .
9. .
10. .

Study Programme Learning Outcomes

Military Engineering

1 Basic competences of the military profession

- 1.1 To communicate, organize and plan effectively the activities of a basic tactical unit
- 1.2 To assess the situation and implement appropriate tactics for a basic tactical unit
- 1.5 To develop personal and collective determination, courage, enthusiasm and initiative of subordinates

2 Special military competences

ECTS Credits 2.0

English Level Lo

E-learning Level L1

Study Hours

Lectures 30

Exercises 15

Associate Lecturers

doc. dr. sc. Matija Hoić

Krešimir Kosanović, bacc. crim.

Davor Popović, univ. spec. pol.

Grading

Grading: During the lecture, the student will receive a mark for the written exam, oral exam and an exercise. A mark for the exercise is based on diligence, initiative, creativity and organizational skills. A positive final mark is given on the condition that all the elements of the evaluation are positive. Obligations: Students are required to attend lectures and exercises. Overall training in Introduction to infantry tactics and weapons training is carried out in CAF protective equipment. During the training, the students are obligated to obey and respect military relations and hierarchies in order to assure safety of the activities.

Prerequisites for

Practical Military Training - Infantry

- 2.3 To use combat and non-combat assets of the branch/service in a professional way
- 2.4. To apply International War and Humanitarian Law
- 3 Basic technical knowledge
 - 3.1. To identify, analyse, model and resolve military engineering problems by integrating basic knowledge of natural and technical sciences
- 4. Personal and professional skills and characteristics
 - 4.1 To identify and analyze a problem in the military environment
 - 4.3 To assume military, professional and ethical responsibility
- 6 Development, implementation and operation of technical systems in economic and social environment
 - 6.3. To apply and select knowledge and relevant facts from different areas, and to assume responsibility for assessing the impact of military technology in social environment

Screening of student's work

- 1 ECTS Written exam
- 0.5 ECTS Oral exam
- 0.5 ECTS Practical work
- 2 ECTS

Forms of Teaching

- » Lectures
 - » Lecture in the classroom
- » Exercises
 - » Exercises in the cabinet

Week by Week Schedule

1. Lectures: Basics of branch tactics, (introduction to the subject, content of subject, use the branch doctrine, organization, warfighting functions and combat power)
Seminar: Small arms.
2. Lectures: Basics of branch tactics, (introduction to the subject, content of subject, use the branch doctrine, organization, warfighting functions and combat power)
Seminar: Small arms.
3. Lectures: Basics of branch tactics, (introduction to the subject, content of subject, use the branch doctrine, organization, warfighting functions and combat power)
Seminar: MTETTC and OAKOC analysis (tactical task - OPORD, MTETTC element analysis, evaluation of terrain by elements OAKOC)
4. Lectures: Command, control and troop leading procedures (command and control, operations management unit, the decision making process and MTETTC and OAKOC, combat orders, responsibilities of key personnel, symbols)
Seminar: Creating sketches and sandstone (making sketches and sandstone terrain with basic graphic control measures)
5. Lectures: Basics of infantry weapons with fire training.
Seminar: Small arms.
6. Lectures: Small arms.
Seminar: Small arms.
7. Lectures: TT features and principles of small arms.
Seminar: MTETTC and OAKOC analysis (tactical task - OPORD, MTETTC element analysis, evaluation of terrain by elements OAKOC)

8. Lectures: TT features and principles of small arms.
Seminar: Small arms.
9. Lectures: Small arms.
Seminar: Small arms.
10. Lectures: Command, control and troop leading procedures (command and control, operations management unit, the decision making process and MTETTC and OAKOC, combat orders, responsibilities of key personnel, symbols)
Seminar: MTETTC and OAKOC analysis (tactical task - OPORD, MTETTC element analysis, evaluation of terrain by elements OAKOC)
11. Lectures: Command, control and troop leading procedures (command and control, operations management unit, the decision making process and MTETTC and OAKOC, combat orders, responsibilities of key personnel, symbols)
Seminar: MTETTC and OAKOC analysis (tactical task - OPORD, MTETTC element analysis, evaluation of terrain by elements OAKOC)
12. Lectures: Small arms.
Seminar: Creating sketches and sandstone (making sketches and sandstone terrain with basic graphic control measures)
13. Lectures: Small arms.
Seminar: Creating sketches and sandstone (making sketches and sandstone terrain with basic graphic control measures)
14. Lectures: Command, control and troop leading procedures (command and control, operations management unit, the decision making process and MTETTC and OAKOC, combat orders, responsibilities of key personnel, symbols)
Seminar: MTETTC and OAKOC analysis (tactical task - OPORD, MTETTC element analysis, evaluation of terrain by elements OAKOC)
15. Lectures: Command, control and troop leading procedures (command and control, operations management unit, the decision making process and MTETTC and OAKOC, combat orders, responsibilities of key personnel, symbols)
Seminar: MTETTC and OAKOC analysis (tactical task - OPORD, MTETTC element analysis, evaluation of terrain by elements OAKOC)

Literature



US Army, ATP 3-21.8 Infantry Platoon and Squad 2016; FM 3-21.8 The Infantry Rifle Platoon and Squad, 2007.



GS OSRH, Doktrina OS RH, ZDP-1A, Zagreb, 2014; APP 6A i C; STANAG 2014, ADRP 1-02 Terms and Military Symbols 2015



US Army, FM 3-90 Taktika, prijevod GSOSRH, Zagreb; FM 3-90-1 Offence and Defence; FM 3-90-2 Reconnaissance, Security and Tactical enabling Taska



Fabijanić M., Parizoski M., Šimurina J., Pješačko oružje s nastavom gađanja, Zagreb, 1995; Ninić O, Teorija gađanja pješačkim naoružanjem, Beograd 1984



Dimić O., Vučinić O., Pešadijsko naoružanje sa nastavom gađanja PRAKTIKUM, Vojno izdavački zavod, Beograd 1981.

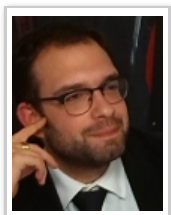
Similar Courses

» Infantry Tactic, West Point

Introduction to International Politics

129899

Lecturer



doc. dr. sc.
Petar Popović

ECTS Credits 5.0

English Level Lo

E-learning Level L1

Study Hours

Lectures 30

Seminar 30

Grading

5% activity 25 % mid-term 10 %
presentation 20 % seminar
(2,000 - 2,500 p.) 50% the final
exam

Course Description

Acquisition of fundamental concepts and terms, analytical and critical thinking in the field of international politics. The course covers three areas 1) the main theoretical concepts of international relations, 2) the international organizations and institutions of international society 3) contemporary international issues: climate change, cyberspace, terrorism, the challenges of international law

Study Programmes

» Military Leadership and Management (Study) (*required course, 2nd semester, 1st year*)

Learning Outcomes

On successful completion of the course, students will be able to:

1. Introduction to main concepts in international relations
2. Introduction to main issues in international politics
3. To develop knowledge and abilities to understand international politics
4. Ability to formulate and present expert opinion in area of international politics
5. Ability to link theory and case-studies
6. Ability to compare political events worldwide

Study Programme Learning Outcomes

Military Leadership and Management

1 Basic competences of the military profession

1.6 To nourish, channel and use creativity in accomplishing missions of a basic tactical unit

1.7 To be acquainted with and to respect historical, social and cultural diversities in the context of military activities

3 Basic competences in social and humanistic sciences

3.1 To analyze and interpret processes in international environment, and to act within international alliances and organizations in which the Republic of Croatia participates

3.2 To comprehend civil-military relations and to act in accordance with democratic standards

3.3 To apply International War and Humanitarian Law

3.4 To manage processes in the military environment using modern technologies

4. Personal and professional skills and characteristics

- 4.1 To identify and analyze a problem in the military environment
- 4.2 To model and resolve a problem and to interpret problem solution by using appropriate knowledge and methods
- 4.4 To develop self-study abilities and the need for and methods of life-long learning in traditional and virtual environment
- 5. Social skills (team work and communication)
 - 5.1 To communicate effectively in the Croatian and English language applying modern presentation skills and techniques
 - 5.3 To effectively present work results both orally and in writing to stakeholders in the military environment

Screening of student's work

- 2 ECTS Lectures attendance
- 2.5 ECTS Written exam
- 0.5 ECTS Seminar report
- 5 ECTS

Forms of Teaching

- » Lectures
 - » interactive lecture
- » Seminars and workshops
 - » analyzing texts, discussions, debates, presentations, multimedia

Week by Week Schedule

1. Lectures: Introduction to International Relations; the levels of analyses - individual, state, and international system
Seminars: exercises in analyzing international politics
2. Lectures: History of IR, from Peace of Westphalia 1648 to the Cold War (1945-89)
Seminars: Discussion and presentations
3. Lectures: Realism and Neorealism
Seminars: analyzing foreign policy from realist perspective
4. Lectures: Liberal Idealism
Seminars: analyzing foreign policy from liberal perspective
5. Lectures: Institutions of international society; war, balance of power, international law, diplomacy, international organizations
Seminars: Discussion and presentations
6. Lectures: Diplomacy and realpolitik of Henry Kissinger
Seminars: documentary on Kissinger and discussion
7. Lectures: Shaping foreign policy
Seminars: Discussion and presentations
8. Lectures: International organizations: UN, NATO, WTO, IMF, WB
Seminars: Discussion and presentations
9. Lectures: International organizations and trade, from Cold War to Globalization
Seminars: Discussion and presentations
10. Lectures: Cyber-space and climate change, challenges to international law
Seminars: Discussion and presentations
11. Lectures: European Union and controversies of common foreign policy
Seminars: Discussion and presentations
12. Lectures: Sovereignty and security
Seminars: Discussion and presentations
13. Lectures: Basics of geopolitics and geoeconomy
Seminars: Discussion and presentations
14. Lectures: International hot-spots, Middle East and North Africa
Seminars: Discussion and presentations

15. Lectures: Constructivism in IR
Seminars: Discussion and presentations

Literature



Aron, Raymond (2001). *Mir i rat među narodima*, Golden marketing, Zagreb



Popović, Petar (2014). *Kriza međunarodnog poretka 21. stoljeća*, Luča, Zagreb



Vukadinović, Radovan (2004). *Međunarodni politički odnosi*, Politička kultura, Zagreb

Similar Courses

- » Introduction to International Relations, Oxford

Introduction to Security and Defence Studies

129891

Lecturer



prof. dr. sc.
Siniša Tatalović

ECTS Credits 5.0

English Level Lo

E-learning Level L1

Study Hours

Lectures 30

Seminar 30

Associate Lecturer

doc. dr. sc. Ružica Jakešević

Grading

Grading: Attendance of lectures and writing a submissions (15 percent), one bound essay from 2 to 2,500 words or presentation (25 percent), one required written colloquium (30 percent), one oral exam at the end (30 percent). Obligations: Attending lectures and seminars, and independent preparation of presentation and essay.

Course Description

The aim of this course is to study security and defence as fundamental phenomena of human society in all stages of its development. Introduction into security and defence studies will include research of the concept of security, methods and instruments of national and international security and sources of threats in the 21st century.

Study Programmes

» Military Leadership and Management (Study) (*required course, 1st semester, 1st year*)

Learning Outcomes

On successful completion of the course, students will be able to:

1. Explain the subject matter and methods of security studies
2. Analyze contemporary security processes and actors
3. Review the development and design of security institutions, policies and strategies
4. Prepare qualitative and quantitative research on various aspects of security and defence phenomena
5. Explain activities of national and international security institutions
6. Compare different policies and security strategies, and evaluate their outcomes at the level of international organizations or national institutions

Study Programme Learning Outcomes

Military Leadership and Management

1 Basic competences of the military profession

- 1.7 To be acquainted with and to respect historical, social and cultural diversities in the context of military activities

2 Special military competences

- 2.1 To analyse the environment and to develop and apply tactics of the branch/service

3 Basic competences in social and humanistic sciences

- 3.1 To analyze and interpret processes in international environment, and to act within international alliances and organizations in which the Republic of Croatia participates
- 3.2 To comprehend civil-military relations and to act in accordance with democratic standards
- 3.4 To manage processes in the military environment using modern technologies

- 4. Personal and professional skills and characteristics
 - 4.1 To identify and analyze a problem in the military environment
 - 4.3 To assume military, professional and ethical responsibility
- 5. Social skills (team work and communication)
 - 5.1 To communicate effectively in the Croatian and English language applying modern presentation skills and techniques

Screening of student's work

- 0.5 ECTS Lectures attendance
- 0.5 ECTS Essay
- 3 ECTS Midterm exam
- 1 ECTS Presentation

- 5 ECTS

Forms of Teaching

- » Lectures
 - » Two hours of lectures weekly
- » Seminars and workshops
 - » Two hours of seminars weekly
- » Independent assignments
 - » Preparation of the presentation and short weekly essays
- » Work with mentor
 - » Mentoring the preparation of the presentation

Week by Week Schedule

1. Lectures: Introduction into course, the concept, content and types of security
Exercises: Development of security and defence functions through history
2. Lectures: Definition of Security and Defence Studies - Past, Present and Future
Exercises: Security and defence dilemma
3. Lectures: Security in international politics - traditional approaches
Exercises: Copenhagen and Wales school of security studies
4. Lectures: Peace studies
Exercises: Gender and security - women in the military
5. Lectures: Critical Security Studies
Exercises: Human security and state-centric security
6. Lectures: Securitization
Exercises: Limitations of the model and examples of securitization: military interventions, crime, migrations...
7. Lectures: Defence Studies and Development of Defence Function
Exercises: Military strategy and military security: traditional security studies
8. Lectures: Regime security
Exercises: The dilemma of insecurity for weak states
9. Lectures: Military security
Exercises: Duality of state and societal security
10. Lectures: Environmental security
Exercises: Threats to social identity
11. Lectures: Human security - Children and War
Exercises: Environmental changes and violent conflict
12. Lectures: The role of intelligence in national security
Exercises: Diplomacy of coercion - Western use of coercive diplomacy from 1990 up to 2005
13. Lectures: Weapons of mass destruction
Exercises: The future of weapons of mass destruction

14. Lectures: Terrorism
Exercises: Defence trade
15. Lectures: Transnational crime and illegal migrations
Exercises: Ethnic Conflicts and Security

Literature



Collins, A. (ur.), *Suvremene sigurnosne studije, Politička kultura i Centar za međunarodne i sigurnosne studije, Zagreb, 2010.*



Tatalović, S., *Nacionalna i međunarodna sigurnost, Politička kultura, Zagreb, 2006.*



Tatatalović, S., Jakešević, R.; *Terrorism in the Western Balkans - the Croatian Experience and Position, u: Prezelj, Iztok (ur.) The Fight Against Terrorism and Crisis Management in the Western Balkans, IOS Press, Amsterdam, 2008.. str. 132-143*

Similar Courses

- » Introduction to International Security Studies, Oxford

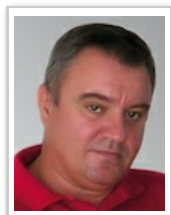
Introduction to Strategic Management

129983

Lecturers



prof. dr. sc.
Neven Vrčec



prof. dr. sc.
Željko Dobrović

Course Description

- to introduce students with the basic concepts of strategic management, thinking and decision making - to introduce students with the methods used in strategic management and make them capable of using them - to introduce students with the application of information technology in strategic management

Study Programmes

» Military Leadership and Management (Study) (*required course, 6th semester, 3rd year*)

Learning Outcomes

On successful completion of the course, students will be able to:

1. To define organizational mission, vision and basic values
2. To analyse the vision and to determine strategic goals out of vision
3. To determine the strategies for reaching the goals
4. To define strategic plan activities
5. To develop performance measurement plan for managing the organization
6. Develop the performance measurement system

Study Programme Learning Outcomes

Military Leadership and Management

1 Basic competences of the military profession

1.1 To communicate, organize and plan effectively the activities of a basic tactical unit

1.3 To make decisions independently and command a basic tactical unit

1.6 To nourish, channel and use creativity in accomplishing missions of a basic tactical unit

4. Personal and professional skills and characteristics

4.1 To identify and analyze a problem in the military environment

Forms of Teaching

- » Lectures
- » Exercises

ECTS Credits 4.0

English Level Lo

E-learning Level L1

Study Hours

Lectures 30

Exercises 30

Associate Lecturer

doc. dr. sc. Katarina Tomičić-Pupek

Teaching Assistant

mr. sc. Dražen Smiljanić

Grading

Grading: - passing the mid-term exams - passing the final exam Obligations: - attendance to lectures and exercises - passing the mid-term exams



ME

ME-M

ARM

ART

ENG

TS

IN-E

ME-E

SIG

MG

AD

CBR

MLM

IN-L

Week by Week Schedule

1. Lectures: Introduction to organization and strategic planning
Seminar: exercise from topic 1
2. Lectures: Basics of strategic planning
Seminar: exercise from topic 2
3. Lectures: Methodology and workflow diagram of strategic planning
Seminar: exercise from topic 3
4. Lectures: Basic methods in strategic planning
Seminar: exercise from topic 4
5. Lectures: Simple development of the organizational strategic plan
Seminar: exercise from topic 5
6. Lectures: Strategic planning and basic concepts of uncertainty
Seminar: exercise from topic 6
7. Lectures: Introduction to analytic methods in supporting strategic planning and management
Seminar: exercise from topic 7
8. Lectures: Planning of organizational information system
Seminar: exercise from topic 8
9. Lectures: Development of optimal organization according to organizational mission
Seminar: exercise from topic 9
10. Lectures: Business processes and organizational units
Seminar: exercise from topic 10
11. Lectures: Introduction to contemporary methods of organizational management
Seminar: exercise from topic 11
12. Lectures: Basics of organizational performance measurement
Seminar: exercise from topic 12
13. Lectures: Management by the use of performance measurement
Seminar: exercise from topic 13
14. Lectures: Role of management in strategic planning
Seminar: exercise from topic 14
15. Lectures: Strategic management workflow diagram
Seminar: exercise from topic 15

Literature



R.S.Kaplan, D.P.Norton: THE BALANCED SCORECARD – TRANSLATING STRATEGY INTO ACTION, 1996.



J.Bryson, F.K.Alston: CREATING AND IMPLEMENTING YOUR STRATEGIC PLAN, 1996.



Ž. Dobrović: STRATEGIJSKO PLANIRANJE, POSLOVNA I INFORMACIJSKA ARHITEKTURA, CASE12, 2000.

Introduction to Systems and Automatic Control

129898

Lecturers



prof. dr. sc.
Dario Matika



doc. dr. sc.
Marija Seder



doc. dr. sc.
Tomislav Petković

Course Description

The aim of the course is to introduce students to system and control theory, and to their military applications. Covered topics of system theory are: signal, system, transfer function, time and frequency domain, frequency response, feedback and stability. We introduce the basic elements of automatic control system (sensors, regulators and actuators) and the fundamental properties of stability, controllability and observability. A standard example is azimuth and elevation control of a gun turret.

Study Programmes

- » Signals -> Group of Courses Signals, Monitoring and Guidance and Air Defence (Course) (*required course, 5th semester, 3rd year*)
- » Monitoring and Guidance -> Group of Courses Signals, Monitoring and Guidance and Air Defence (Course) (*required course, 5th semester, 3rd year*) (Note: course not offered in this academic year.)
- » Air Defence -> Group of Courses Signals, Monitoring and Guidance and Air Defence (Course) (*required course, 5th semester, 3rd year*) (Note: course not offered in this academic year.)

Learning Outcomes

On successful completion of the course, students will be able to:

1. Define the basic signals
2. Classify systems using their basic properties
3. Compute and analyse a transfer function of a LTI system
4. Compute and analyse a frequency response of a LTI system
5. Use a computer to simulate a LTI system
6. Identify components of an automatic control system
7. Conclude if a control system is stable
8. Apply a PID controller

Study Programme Learning Outcomes

Military Engineering

3 Basic technical knowledge

- 3.1. To identify, analyse, model and resolve military engineering problems by integrating basic knowledge of natural and technical sciences
- 3.2. To apply complex methodology by integrating engineering knowledge and skills in military engineering practice

4. Personal and professional skills and characteristics

- 4.1 To identify and analyze a problem in the military environment

ECTS Credits 3.0

English Level L1

E-learning Level L1

Study Hours

Lectures 30

Laboratory exercises 15

Associate Lecturer

dr. sc. Davor Petrinović, prof.

Teaching Assistant

Luka Petrović, mag. ing. inf. et comm. techn.

Grading

Grading: The final grade is formed from a total of points of all activities using a grading table which is announced at the beginning of the semester (starting table is 100% - 87.5% = 5, 87.5% - 75% = 4, 75% - 62.5% = 3, 62.5% - 50% = 2). Laboratory exercises, written and oral examinations are scored. To obtain a passing grade at least half points overall and on each activity must be obtained. Obligations: Lectures and laboratory exercises are mandatory.

- 4.2 To model and resolve a problem and to interpret problem solution by using appropriate knowledge and methods
- 5. Social skills (team work and communication)
 - 5.3 To effectively present work results both orally and in writing to stakeholders in the military environment
- 6 Development, implementation and operation of technical systems in economic and social environment
 - 6.1. To analyse and evaluate the effect of engineering solutions on society and environment
 - 6.2. To apply and create engineering approaches in analysing and assessing products and processes in security environment

Screening of student's work

- 1 ECTS Lectures attendance
- 0.5 ECTS Experimental work
- 0.5 ECTS Midterm exam
- 0.5 ECTS Written exam
- 0.5 ECTS Oral exam
- 3 ECTS

Forms of Teaching

- » Lectures
 - » Lectures are held for 2 hours each week in accordance with the weekly lesson plan.
- » Exercises
 - » Laboratory excersises are held for 1 hour each week in accordance with the weekly lesson plan.

Week by Week Schedule

1. Lectures: Course organization. Introduction and motivation; control example for 9K111 Fagot missile. Historical overview of control theory with a review of military applications.
Exercises: Introduction to Scilab.
2. Lectures: Basic signals. Complex exponential; growing and dampening. Signal energy and power. Introduction to systems.
Exercises: Basic signals. Energy and power.
3. Lectures: Input/output system model. Linear differential equation and its solution. Integrator and drawing of block diagrams.
Exercises: Connection between block diagram and linear differential equation.
4. Lectures: First and second order systems. Initial condition, transient response, and stationary state. System properties: linearity and time invariance.
Exercises: Simulation of first and second order system.
5. Lectures: Exponential and sinusoid as eignefunctions. Frequency response. Second-order differential equation for rotating turret.
Exercises: Frequency response. Resonance.
6. Lectures: Transfer function. Poles, zeros and time responses. System inner stability.
Seminar: Transfer function. Poles, zeros and time responses. System inner stability.
7. Lectures: Laplace transform. Transfer function, its poles and stability. Connecting systems: parallel, cascade and feedback connection.
Exercises: Poles of a transfer function and stability.
8. Midterm.
9. Lectures: Review. Introduction to control theory. Open and closed loop control.
Exercises: Control loop.

10. Lectures: Modelling of dynamic systems. A simple model of a rotating turret.
Exercises: Dynamical model of a rotating turret.
11. Lectures: Observability, controllability and stability. Stability analysis.
Exercises: Stability analysis.
12. Lectures: Quality indicator of control systems in steady state.
Exercises: Determining quality indicators from a simulated system response.
13. Lectures: PID controller. Tuning PID controller.
Exercises: PID controller.
14. Lectures: Military applications of control theory.
Exercises: Example simulations in Scilab: gun turret, torpedo, airplane.
15. Final exam.

Literature



Zoran Vukić, Ljubomir Kuljača (2005). *Automatsko upravljanje - analiza linearnih sustava*, Kigen



Hrvoje Babić (1996). *Signali i sustavi*, FER



Nikola Mišković et al. (2012). *Automatsko upravljanje - zbirka zadataka*, FER



FER (2006). *Zbirka riješenih zadataka iz Signala i sustava*, Tomislav Petković, Branko Jeren et al.

Similar Courses

- » Signal Processing and Linear Systems, Stanford University
- » Signals and Systems (EE381), West Point

Introduction to Technical Science – Special Topics

129948

Lecturers



doc. dr. sc.
Mario Matijević



doc. dr. sc.
Ivan Rajšl

Course Description

Understanding energy types, energy sources and the processes of energy conversion.
Understanding the basic parts, purpose and basic principles of the power system.
Understanding of the principles of engineering sciences through the basis of electricity, electromagnetism and electronics, and associated applications in modern military techniques and technologies.

Understanding the basic types, working principles and purpose of the mechanically driven machines. Understanding the basic principles for analyzing and solving the problems in technical analyses as the part of engineering mechanics by using basis of statics, kinematics and dynamics with the application in military techniques and technologies. Understanding the methods applied in technical analyses of the strength, stiffness and elastic stability of the basic engineering structures. Understanding the relationship between the structure of engineering materials and their mechanical properties.

Study Programmes

» Military Leadership and Management (Study) (*required course, 3rd semester, 2nd year*)

Learning Outcomes

On successful completion of the course, students will be able to:

1. Distinguish types of energy and its conversion
2. Explain the purpose and basic operation of power system
3. Explain the basic terms in electrotechnics.
4. Explain practical application of electronic devices.
5. Explain the work of electronic circuits in Boolean algebra.
6. Distinguish types of mechanically driven machines and its application.
7. Explain the basic terms in statics as the part of engineering mechanics.
8. Explain the basic terms in kinematics and dynamics of machinery, vehicles, robots and manipulators.
9. Define types of mechanical loading and explain the methods to analyze the strength, stiffness and elastic stability of the engineering structures.
10. Distinguish types of engineering materials and its application.

Study Programme Learning Outcomes

Military Leadership and Management

1 Basic competences of the military profession

1.1 To communicate, organize and plan effectively the activities of a basic

ECTS Credits	5.0
English Level	L3
E-learning Level	L1
Study Hours	
Lectures	45
Seminar	15

Associate Lecturers

prof. dr. sc. Janoš Kodvanj
doc. dr. sc. Zvonimir Tomičević

Teaching Assistants

Miro Čolić, mag. phys.
mr. sc. Zvonko Trzun, pred.

Grading

Grading and evaluation of students through written exams - mid-term exam and the final exam on a continuous part or only a written exam on the examination periods. Continuous examination: Mid-term covers the first 6 weeks of the course and has 35 points with a minimum requirement of 30% (10,5 points). The final exam covers the remaining seven weeks of course and has 40 points with a minimum requirement of 30% (12 points). Seminar task has maximum of 25 points. Therefore, the total number of points the 100. Prerequisites through examination periods: The examination period consists only of written exam that covers all lectures of the course and carries 75 points with a minimum requirement of 50% (37,5 points). Points from seminar task are taken from continuous examination. Regardless of the manner of passing the course (continuous or examination periods), a necessary precondition is to achieve a minimum of 50% of total points (50 points), and grades are formed in the following manner: Grade: 5 from 85 to 100 points, Grade: 4 from 70 to 84.99 points Grade: 3

tactical unit	from 60 to 69.99 points Grade: 2
2 Special military competences	from 50 to 59.99 points
2.1 To analyse the environment and to develop and apply tactics of the branch/service	
2.2 To manage maintenance of combat and non-combat assets, ammunitions and mines of the branch/service	
3 Basic competences in social and humanistic sciences	
3.1 To analyze and interpret processes in international environment, and to act within international alliances and organizations in which the Republic of Croatia participates	
3.2 To comprehend civil-military relations and to act in accordance with democratic standards	
3.4 To manage processes in the military environment using modern technologies	
4. Personal and professional skills and characteristics	
4.1 To identify and analyze a problem in the military environment	
4.4 To develop self-study abilities and the need for and methods of life-long learning in traditional and virtual environment	

Screening of student's work

1.25 ECTS Lectures attendance
2.5 ECTS Written exam
1.25 ECTS Seminar report
<u>5 ECTS</u>

Forms of Teaching

- » Lectures
 - » Lectures will be given in three hours blocks.
- » Seminars and workshops
 - » Specific topics, numerical examples and hints for problem solving, with demonstration experiments if necessary.

Week by Week Schedule

1. Lectures: Energy: the history of energy usage, types of energy, energy carriers, energy conversion. Modern trends in the energy sector and renewable energy sources.

Seminar: Networked energy and examples.

2. Lectures: Power system: What is this power system and why it is needed, the basic parts of the power system, the types of power plants, the electricity market. Liberalization and deregulation of the electricity sector.

Seminar: Challenges of the ongoing transformation of the electricity system.

3. Lectures: Electrical charge and electrical current, electric field, voltage, the basic elements of the electric circuit, the DC and AC circuits.

Seminar: The numerical and / or experimental examples of electricity and electric circuits.

4. Lectures: Electromagnetic phenomena. Electromagnetic induction. Magnetic circuits. Alternating current. Electromagnetic waves - basic concepts, generation, spreading. Spectrum and transmission of electromagnetic waves.

Seminar: Numerical examples of electromagnetic phenomena, alternating current and electromagnetic waves. Overview of application in industry.

5. Lectures: Insulators, semiconductors and conductors. Semiconductor components - diode and bipolar transistor. FET and MOSFET field effect transistors. Switch mode. Electric power converters.

Seminar: Numerical examples of diodes and transistors. Overview of application in industry.

6. Lectures: Basic logic circuits - inverter, NAND, NOR, latch. Boolean algebra for describing digital circuits. Computer application in digital circuit analysis using VHDL language.

Seminar: Numerical examples from Boolean algebra, digital logic circuits and VHDL programs.

7. Midterm exam.

8. Lectures: Driving and operating machines. Electric drive machines. Engines with internal combustion, turbines.

Seminar: Characteristics of driving and operating machines.

9. Lectures: Force, moment of force. Conditions and equations of equilibrium. Friction force. Simple beams.

Seminar: Examples of analytical conditions of equilibrium. Diagrams of internal forces of simple beams.

10. Lectures: Moments of inertia. Straight line and curvilinear motion. Translation of a rigid body. Rotation about fixed axis. Planar motion of a rigid body.

Seminar: Examples for straight line and curvilinear motion.

11. Lectures: Kinematics of a relative motion. Work and power. Kinetic energy and kinetic energy law. Potential energy. Energy conservation principle. Linear impulse and momentum principle.

Seminar: Examples for kinetic energy laws and momentum principle.

12. Lectures: Stress, strain, Hooke's law. Working and allowable stress, factor of safety. Axially loaded bars.

Seminar: Problems of axially loaded members.

13. Lectures: Torsion of circular bars. Bending of prismatic bars.

Seminar: Stress determination in circular bars subjected to torsion. Stress analysis in beams.

14. Lectures: Materials systematisation. Mechanical properties and application of materials.

Seminar: Determination of mechanical properties of materials.

15. Final exam.

Literature



P. Kulišić, V. Lopac (1991). *Elektromagnetske pojave i struktura tvari*, Školska knjiga, Zagreb



Branislav Kuzmanović (2001). *Osnove elektrotehnike 1*, Element, Zagreb



Uroš Peruško, Vlado Glavinić *Digitalni sustavi*, Školska knjiga, Zagreb



I. Alfrević, J. Saucha, Z. Tonković, J. Kodvanj (2010). *Uvod u mehaniku I: Statika krutih tijela*, Golden marketing - Tehnička knjiga, Zagreb



Stjepan Jecić (1995).
Mehanika II, Tehnička
knjiga, Zagreb



Ivo Alfrević (1989). *Nauka o
čvrstoći I*, Tehnička knjiga,
Zagreb



T. Filetin, F. Kovačiček, J.
Indof (2002). *Svojstva i
primjena materijala*, Fakultet
strojarstva i brodogradnje

Additional Literature



Dubravko Horvat (2011).
*Fizika 2 - Titranje, valovi,
elektromagnetizam,
optika i uvod u modernu
fiziku*, Neodidakta,
Zagreb



(<http://ocw.mit.edu/index.html>)
MIT OpenCourseWare (2005).
*Introduction to Electric Power
Systems*, MIT



Otto Limann (1981).
Elektronika na lak način,
Tehnička knjiga



Hubert Meluzin (1989).
*Elektrotehnika na lak način: u
1050 pitanja i odgovora i 1006
slika*, Tehnička knjiga

Similar Courses

- » Foundations in STEM 1, The Citadel
- » Foundations in STEM 2, The Citadel
- » Engineering Management Major, West Point
- » ENGR 10: Introduction to Engineering Analysis, Stanford University

Knowledge and Maintenance Technology of Army Vehicles

130163



Lecturer



dr. sc.
Rudolf Tomic

Course Description

Educate students for the preparation, organization and implementation of maintenance in the CAF. Educate students to solve problems in the field of maintenance.

Study Programmes

» Technical Support -> Group of Courses Armour, Field Artillery, Engineers, Technical Support and Infantry (Course) (*required course, 7th semester, 4th year*)

Learning Outcomes

On successful completion of the course, students will be able to:

1. Explain the basic concepts of maintenance and reliability
2. Apply the standard of maintenance of technical material resources in the CAF
3. Prepare a system of maintenance in the CAF units
4. Prepare maintenance time plans in CAF units
5. Distinguish the specific maintenance of combat and non-combat vehicles
6. Prepare a support plan of maintenance of combat and non-combat vehicles

Study Programme Learning Outcomes

Military Engineering

- 1 Basic competences of the military profession
 - 1.1 To communicate, organize and plan effectively the activities of a basic tactical unit
- 2 Special military competences
 - 2.1 To analyse the environment and to develop and apply tactics of the branch/service
 - 2.2 To manage maintenance of combat and non-combat assets, ammunitions and mines of the branch/service
 - 2.3 To use combat and non-combat assets of the branch/service in a professional way
- 3 Basic technical knowledge
 - 3.2. To apply complex methodology by integrating engineering knowledge and skills in military engineering practice
 - 3.3. To integrate and apply engineering principles and techniques in the operation of military system in unpredictable conditions

ECTS Credits 7.0

English Level Lo

E-learning Level L1

Study Hours

Lectures 60

Laboratory exercises 30

Associate Lecturers

dr. sc. Petar Ilinčić

prof. dr. sc. Zoran Lulić

doc. dr. sc. Goran Šagi

Teaching Assistant

Miroslav Kuhar, pred.

Grading

Grading: Monitoring of students' activities, a written exam at the end of the theoretical part and after the exercises, oral and practical exam. Obligations: Regular attendance and enter the final exam.

4. Personal and professional skills and characteristics
 - 4.1 To identify and analyze a problem in the military environment
5. Social skills (team work and communication)
 - 5.3 To effectively present work results both orally and in writing to stakeholders in the military environment
- 6 Development, implementation and operation of technical systems in economic and social environment
 - 6.2. To apply and create engineering approaches in analysing and assessing products and processes in security environment

Screening of student's work

- 1.5 ECTS Lectures attendance
 4 ECTS Midterm exam
 1.5 ECTS Seminar report

 7 ECTS

Forms of Teaching

- » Lectures
 - » Part of the classes will be held at the FSB in the Laboratory for IC Engines and Motor Vehicles
- » Exercises
 - » Part of the classes will be held at the FSB in the Laboratory for IC Engines and Motor Vehicles
- » Laboratory

Week by Week Schedule

1. Lectures: Introduction, historical review of maintenance technologies, basic concepts from the field of maintenance of vehicles and combat equipment
 Seminar: Introduction to the basic concepts of vehicles and combat equipment maintenance
2. Lectures: Terms of exploitation, basic terms for performance of internal combustion engines
 Seminar: Determining the characteristic cycle of exploitation vehicles
3. Lectures: Internal combustion engine components - function and mode of operation
 Seminar: Planning and development of maintenance systems of vehicles
4. Lectures: Internal combustion engine systems - lubrication
 Seminar: Monitoring the status of motor vehicles and combat techniques
5. Lectures: Internal combustion engine systems - cooling system, mixture preparation, exhaust system
 Seminar: Diagnostics and maintenance of motor vehicles
6. Lectures: Monitoring of the motor vehicles and combat techniques status; Processes in a motor vehicle during exploitation
 Seminar: Basic tasks in the field of diagnostics of internal combustion engines
7. Lectures: Mid exam
 Seminar: Mid exam
8. Lectures: Electrical systems of motor vehicles and combat techniques
 Seminar: Electrical starters, Electrical power supply (dynamo, alternators, starter batteries)
9. Lectures: Power transmission systems for motor vehicles and combat systems
 Seminar: Fuel injection systems, conventional ignition systems, electronic ignition systems
10. Lectures: Power transmission system elements: clutches and gearboxes
 Seminar: Diesel fuel injection systems Electronically regulated high pressure pumps, Common Rail

11. Lectures: Power distribution components
Seminar: Sensors (temperature sensors, inductive sensors, Hall sensors, mass and volumetric gas flowmeters)
12. Lectures: Chassis of motor vehicles and combat equipment: wheels; suspension; control system; brakes
Seminar: Lighting systems of motor vehicles
13. Lectures: Computer support to maintenance systems, determination of technical condition of motor vehicles
Seminar: Safety systems - ABS, TCS, ESP (Antilock Braking Systems, Traction Control, Electronic Stability Program)
14. Lectures: Testing of engine performance and motor vehicle testing grounds; Regulations on motor vehicles, Croatian regulations, international homologation regulations
Seminar: Testing of vehicles performance - the vehicle; Testing of internal combustion engines on the brake (laboratory)
15. Lectures: Final exam
Seminar: Final exam

Literature



(2015). *Tehnika motornih vozila (Fachkunde Kraftfahrzeugtechnik, 30. Auflage)*, Pučko otvoreno učilište Zagreb; Centar za vozila Hrvatske; Hrvatska obrtnička komora



Zdenko Matijašić (1997). *Održavanje motornih vozila - lekcije*

Additional Literature



Mladen Begović (2003). *Održavanje tehničkih sustava*

Similar Courses

» Motorna vozila, Oxford

Knowledge and Maintenance Technology of Classical and Missile Weapons

129419



Lecturers



izv. prof. dr. sc.
Mirko Jakopčić



prof. dr. sc.
Ivica Smojver

Course Description

Introduction to basic concepts, organization and tasks in the field of knowledge and maintenance of classic and rocket weapons. Gaining knowledge about the role and tasks of technical services in the process of furnishing, purchasing, storage, operation and maintenance of conventional and missile weaponry in the Croatian Armed Forces and NATO.

Study Programmes

- » Technical Support -> Group of Courses Armour, Field Artillery, Engineers, Technical Support and Infantry (Course) (*required course, 6th semester, 3rd year*)

Learning Outcomes

On successful completion of the course, students will be able to:

1. Recognize the role and importance of the knowledge and maintenance of classic and missile weapons
2. Identify organizational and work processes in maintaining the classic and missile weapons in the whole lifetime
3. Use modern methods for management resources of classic and missile weapons
4. Recognize and comment on the impact of individual factors on the cost of operation and maintenance
5. Apply the duties, authorities and responsibilities in maintaining conventional and missile weapons
6. Apply their knowledge in the planning and budgeting needs outfitting classic and missile weapons

Study Programme Learning Outcomes

Military Engineering

1 Basic competences of the military profession

- 1.1 To communicate, organize and plan effectively the activities of a basic tactical unit
- 1.4 To train, develop and assess the abilities of soldiers and a basic tactical unit
- 1.6 To nourish, channel and use creativity in accomplishing missions of a basic tactical unit

2 Special military competences

- 2.3 To use combat and non-combat assets of the branch/service in a

ECTS Credits 6.0

English Level Lo

E-learning Level L1 (5%)

Study Hours

Lectures 75

Laboratory exercises 15

Associate Lecturers

Damir Đuretek, dipl. ing.
doc. dr. sc. Darko Ivančević
Ivan Leutar, pred.

Teaching Assistant

Ivan Damiani, dipl. ing.

Grading

Grading: Activities during the exercises, participate in discussions and practical work. Taking two colloquiums and final exam. Obligations: To attend lectures and the exercises and write and deliver a seminar. Passed two colloquiums as a prerequisite for the final written exam. Passed the final written exam.

- professional way
- 3 Basic technical knowledge
 - 3.2. To apply complex methodology by integrating engineering knowledge and skills in military engineering practice
- 4. Personal and professional skills and characteristics
 - 4.4 To develop self-study abilities and the need for and methods of life-long learning in traditional and virtual environment
- 6 Development, implementation and operation of technical systems in economic and social environment
 - 6.1. To analyse and evaluate the effect of engineering solutions on society and environment

Screening of student's work

- 0.5 ECTS Lectures attendance
- 3 ECTS Midterm exam
- 1 ECTS Seminar report
- 1.5 ECTS Oral exam
- 6 ECTS

Forms of Teaching

- » Lectures
 - » lectures in the classroom
- » Exercises
 - » exercises in the cabinet
- » Field work
 - » exercises in the overhaul workshop

Week by Week Schedule

1. Lectures: Introduction to the course 1, Historical development, allocation and distribution of classical weapons 2, Basic tactical-technical requirements of infantry arms 3
Exercises: 0
2. Lectures: Operating principles of infantry arms 2, Basic parts, assemblies and mechanisms of infantry arms 3
Exercises: Standard and special instrumentation and diagnostic tools and equipment to maintain the classic and missile weapons 1
3. Lectures: Maintenance and diagnostic of infantry arms 5,
Exercises: Determining the technical condition of artillery arms 1
4. Lectures: Historical development, allocation and distribution of artillery weapons 1, Basic characteristics and tactical-technical requirements of artillery weapons 2, Basic parts, assemblies and mechanisms of artillery weapons 3
Exercises: 0
5. Lectures: Basic parts, assemblies and mechanisms of artillery weapons 3, Aiming devices of artillery weapons 3
Exercises: 0
6. Lectures: Effect of firing on the artillery weapons 2, Maintenance and diagnostic of infantry arms 3
Exercises: Determining the technical condition of artillery weapons 1
7. Lectures: 0
Exercises: 0
1st kolokvium: 6
8. Lectures: 5
Exercises: 0

9. Lectures: Basic characteristics of missile weapons and tactical-technical requirements 1
Seminar: Determining the technical condition of missile arms 1
10. Lectures: Purpose and division of missile weapons 12
Seminar: Determining the technical condition of missile arms 1
11. Lectures: Basic parts, assemblies and mechanisms of missile weapons 12
Seminar: Determining the technical condition of missile arms 1
12. Lectures: Dynamic stability of launchers and fire control during shooting 1
Seminar: Determining the technical condition of Missile Arms 1
13. Lectures: Determining the technical condition of missile weapons 6
Seminar: Determining the technical condition of Missile Arms 1
14. Lectures: Maintenance and testing of missile weapons 1
Seminar: Determining the technical condition of Missile Arms 1
15. Lectures: o
Exercises: Overhaul maintenance of infantry arms 2,
Overhaul maintenance of artillery weapons 2,
Overhaul maintenance of missile weapons 2

Literature



*Skripta s lekcijama:
Poznavanje i tehnologija
održavanja klasičnog i
raketnog naoružanja, U izradi*



*Saveznička združena
logistička doktrina*



Ivica Smojver (2018). *Nastavni
materijal iz područja Raketna
tehnika*

Additional Literature



Travis S. Taylor (2017).
*Introduction to Rocket Science
and Engineering*, CRC Press



Donald E. Carlucci, Sidney S.
Jacobson (2013). *Ballistics -
Theory and Design of Guns
and Ammunition*., CRC Press



Joseph Corleone (1993).
Tactical Missile Warheads,
AIAA



George P. Sutton, Oscar
Biblarz (2017). *Rocket
Propulsion Elements*, Wiley

Similar Courses

» Weapon construction, West Point

Linear algebra

141683



Lecturer



doc. dr. sc.
Anamari Nakić

ECTS Credits	4.0
English Level	Lo
E-learning Level	L1
Study Hours	
Lectures	45
Exercises	15

Associate Lecturers

doc. dr. sc. Domagoj Kovačević
izv. prof. dr. sc. Tomislav Šikić

Grading

The threshold for a passing grade is a 50% of the total score.

Course Description

We introduce basics of matrix theory and linear algebra. Emphasis is given to topics that will be useful in other technical disciplines. More specifically, we address systems of equations, vector spaces, determinants, eigenvalues and linear transformations.

Study Programmes

» Military Engineering (Study) (*required course, 1st semester, 1st year*)

Learning Outcomes

On successful completion of the course, students will be able to:

1. Demonstrate fundamental skills contained in the course, such as matrix computation, solving linear systems of equations
2. Learn basic terminology introduced in this course (vector, matrix, vector space, linear operator)
3. Outline basic definitions and theorems
4. Explain, connect and interpret basic concepts and theories from the course.
5. Describe and use methods presented in the course.
6. Illustrate problem by mathematical model and apply appropriate mathematical method
7. Make conclusions by using logical reasoning (implication, contradiction, analogy)
8. Apply mathematical reasoning adequately
9. To think critically in solving problems
10. Demonstrate an ability to communicate mathematics by team work, discussion and written material

Study Programme Learning Outcomes

Military Engineering

- 1 Basic competences of the military profession
 - 1.6 To nourish, channel and use creativity in accomplishing missions of a basic tactical unit
- 2 Special military competences
 - 2.1 To analyse the environment and to develop and apply tactics of the branch/service
- 3 Basic technical knowledge
 - 3.1. To identify, analyse, model and resolve military engineering problems by integrating basic knowledge of natural and technical sciences

- 4. Personal and professional skills and characteristics
 - 4.2 To model and resolve a problem and to interpret problem solution by using appropriate knowledge and methods
 - 4.4 To develop self-study abilities and the need for and methods of life-long learning in traditional and virtual environment
- 6 Development, implementation and operation of technical systems in economic and social environment
 - 6.4. To plan, organise, create and implement engineering testing, and to analyse and interpret the results

Screening of student's work

- 0.2 ECTS Lectures attendance
- 1.6 ECTS Midterm exam
- 1.2 ECTS Written exam
- 0.2 ECTS Seminar report
- 0.8 ECTS Oral exam
- 4 ECTS

Forms of Teaching

- » Lectures
 - » The course is divided in two cycles, 3 hours of lessons per week.
- » Exercises
 - » The course is divided in two cycles, 1 hour of exercises per week.
- » Independent assignments
 - » Regular homeworks.

Week by Week Schedule

1. Vectors. Inner and vector product.
2. Matrices. Computations with matrices.
3. Rank and inverse of a matrix.
4. Systems of linear equations. Gaussian elimination method.
5. Systems of linear equations.
6. Determinants. Cramer rule.
7. Lines and planes.
8. Examination.
9. Vector spaces.
10. Vector spaces.
11. Linear transformations.
12. Applied linear algebra.
13. Applied linear algebra.
14. Linear algebra on a computer.
15. Examination.

Literature



N. Elezović (1995). *Linearna algebra*, Element, Zagreb

Additional Literature



N.Elezović, A.Aglić (2003). *Linearna algebra, Zbirka zadataka*, Element, Zagreb



G. Strang (2009). *Introduction to linear algebra*, Wellesley - Cambridge Press, Wellesley



S. Lang (1986). *Introduction to linear algebra*, Springer-Verlag, New York



K. Horvatić (1995). *Linearna algebra I, II i III*, Sveučilište u Zagrebu, PMF, Matematički odjel, Zagreb

Similar Courses

- » Linear Algebra, West Point
- » Linear Algebra, The Citadel

Maintenance and Storage of Ordnance

130158



Lecturer



doc. dr. sc.
Vječislav Bohanek

Course Description

The aim of the course is to enable the students to acquire theoretical and practical knowledge of logistics systems, understand the needs of management, its planning and coordination, and to acquire analytical and managerial skills in order to apply the acquired knowledge.

Study Programmes

- » Technical Support -> Group of Courses Armour, Field Artillery, Engineers, Technical Support and Infantry (Course) (*required course, 7th semester, 4th year*)

Learning Outcomes

On successful completion of the course, students will be able to:

1. Acquire the knowledge in the description, labeling, packaging and storage of ordnance
2. Acquire the knowledge in organizing and carrying out maintenance of ordnance
3. Acquire the knowledge in the organization, management and warehouse management of ordnance
4. Acquire, explain and apply the technical and physical safety measures during work and storage of ordnance
5. Acquire the knowledge in implementing and creating documents for pyrotechnic safety measures in the storage facilities of ordnance
6. Analyze records of ordnance to the current regulations

Study Programme Learning Outcomes

Military Engineering

- 1 Basic competences of the military profession
 - 1.1 To communicate, organize and plan effectively the activities of a basic tactical unit
 - 1.3 To make decisions independently and command a basic tactical unit
 - 1.4 To train, develop and assess the abilities of soldiers and a basic tactical unit
- 2 Special military competences
 - 2.2 To manage maintenance of combat and non-combat assets, ammunitions and mines of the branch/service
 - 2.3 To use combat and non-combat assets of the branch/service in a professional way
- 3 Basic technical knowledge
 - 3.1. To identify, analyse, model and resolve military engineering problems by

ECTS Credits	4.0
English Level	Lo
E-learning Level	L1
Study Hours	
Lectures	45
Seminar	5
Laboratory exercises	10

Associate Lecturers

izv. prof. dr. sc. Mario Dobrilović
Mladen Fusić, pred.
Tihomir Tandarić, dipl. inž. sig.
mr. sc. Zvonko Trzun, pred.

Grading

Grading: Positive grades from term papers and tests are a requirement for an oral exam, written exams are conducted for students who have not passed the mid-term exam and seminar work. Obligations: Regular presence during lectures, mandatory presence during exercises, mandatory completion of seminar papers, and exam from the exercises as a condition for taking the oral and written exam.



- integrating basic knowledge of natural and technical sciences
- 3.3. To integrate and apply engineering principles and techniques in the operation of military system in unpredictable conditions
- 4. Personal and professional skills and characteristics
 - 4.1 To identify and analyze a problem in the military environment
 - 4.3 To assume military, professional and ethical responsibility
- 5. Social skills (team work and communication)
 - 5.2 Organize and plan individual and team work in international and interdisciplinary work groups
 - 5.3 To effectively present work results both orally and in writing to stakeholders in the military environment
- 6 Development, implementation and operation of technical systems in economic and social environment
 - 6.1. To analyse and evaluate the effect of engineering solutions on society and environment
 - 6.4. To plan, organise, create and implement engineering testing, and to analyse and interpret the results

Forms of Teaching

- » Lectures
- » Seminars and workshops
- » Exercises
- » Field work
- » Laboratory
- » Work with mentor

Week by Week Schedule

1. Lectures: 1. Functioning of the logistics system in the Croatian Armed Forces and NATO for ordnance.4, 2. Concept of ordnance 2
Seminar: 1. Determining the sensitivity of explosives 1

Exercises: knowledge and laboratory testing of ordnance
2. Lectures: 3. Explosive substances 2, 4. The physics of explosive substances 2
Seminar: 1. Determining the sensitivity of explosives 1

Exercises: knowledge and laboratory testing of ordnance
3. Lectures: 5. Initial and detonating explosives1, 6. Gunpowder and pyrotechnic mixtures1, 7. Laboratory testing of the chemical stability of gunpowder
Seminar: 2. Laboratory testing and evaluation of chemical stability 1

Exercises: knowledge and laboratory testing of ordnance
4. Lectures: 8. Concept, division and allocation of classic and rocket ordnance 4
Seminar: 2. Laboratory testing and evaluation of chemical stability 1

Exercises: knowledge and laboratory testing of ordnance
5. Lectures: 9. Knowledge of Air Force ordnance 1, 10 Knowledge of Navy ordnance 1, 11. Regulations which govern work
Seminar: 2. Laboratory testing and evaluation of chemical stability 1

Exercises: knowledge and laboratory testing of ordnance
6. Lectures: 12. Records and material, financial management in working with ordnance 2
Seminar: 2. Laboratory testing and evaluation of chemical stability 1

Exercises: knowledge and laboratory testing of ordnance

7. Lectures: 13. Health protection while working with ordnance 1
Seminar: Seminar 1

Exercises: knowledge and laboratory testing of ordnance

8. Lectures: 14. Basic maintenance of ordnance 2
Seminar: Seminar 1

Exercises: knowledge and laboratory testing of ordnance

9. Lectures: 15. Transportation of ordnance in Croatia and outside Croatia 2
Seminar: Seminar 1

Exercises: knowledge and laboratory testing of ordnance

10. Lectures: 16. Technical and physical safety measure when disposing of ordnance 1
Seminar: 3. Storage documents and storage of ordnance 1

Exercises: storage documents for storage of ordnance

11. Lectures: 17. Concept and types of storage facilities for ordnance 4
Seminar: 3. Storage documents and storage of ordnance 1

Exercises: storage documents for storage of ordnance

12. Lectures: 18. Types and characteristics of typical storage facilities for ordnance 4
Seminar: 3. Storage documents and storage of ordnance 1

Exercises: storage documents for storage of ordnance

13. Lectures: 19. Safe keeping of ordnance 2, 20. Manipulation of ordnance 2
Seminar: 3. Storage documents and storage of ordnance 1

Exercises: storage documents for storage of ordnance

14. Lectures: 21. Storing documents 2
Seminar: Seminar 1

Exercises: storage documents for storage of ordnance

15. Lectures: 22. Pyrotechnics safety measures 2
Seminar: Seminar 1

Exercises: storage documents for storage of ordnance

Literature



1. Pleše, M.: *Fizika i kemija eksplozivnih tvari – I. dio, II. dio, III. Dio,*



2. Todorovski, Đ.: *Skladištenje, čuvanje i održavanje ubojnih sredstava,*



Todorovski, Đ.: *Elaborat za specijalistički NTP topničkog streljiva,*

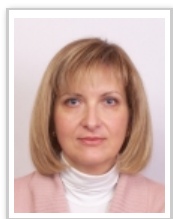


Todorovski, Đ.: *Elaborat za delaboraciju pješačkog streljiva,*

Management for Engineers

130105

Lecturer



prof. dr. sc.
Željka Car

Course Description

The aim of the course is to provide students with a theoretical and practical knowledge about projects in military engineering. The focus is on issues and challenges arising at the most project in civil and military domain. Also the focus is on the understanding of planning, organization, management, coordination, monitoring and teamwork.

Study Programmes

- » Armour -> Group of Courses Armour, Field Artillery, Engineers, Technical Support and Infantry (Course) (*required course, 7th semester, 4th year*)
- » Field Artillery -> Group of Courses Armour, Field Artillery, Engineers, Technical Support and Infantry (Course) (*required course, 7th semester, 4th year*)
- » Engineers -> Group of Courses Armour, Field Artillery, Engineers, Technical Support and Infantry (Course) (*required course, 7th semester, 4th year*)
- » Technical Support -> Group of Courses Armour, Field Artillery, Engineers, Technical Support and Infantry (Course) (*required course, 7th semester, 4th year*)
- » Infantry -> Group of Courses Armour, Field Artillery, Engineers, Technical Support and Infantry (Course) (*required course, 7th semester, 4th year*) (**Note: course not offered in this academic year.**)
- » Signals -> Group of Courses Signals, Monitoring and Guidance and Air Defence (Course) (*required course, 7th semester, 4th year*) (**Note: course not offered in this academic year.**)
- » Monitoring and Guidance -> Group of Courses Signals, Monitoring and Guidance and Air Defence (Course) (*required course, 7th semester, 4th year*) (**Note: course not offered in this academic year.**)
- » Air Defence -> Group of Courses Signals, Monitoring and Guidance and Air Defence (Course) (*required course, 7th semester, 4th year*) (**Note: course not offered in this academic year.**)
- » Chemical, Biological, Radiological and Nuclear Defence -> Military Engineering (Course) (*required course, 7th semester, 4th year*)

Learning Outcomes

On successful completion of the course, students will be able to:

1. Interpret the concept and basic principles of management
2. Understand management functioning in a military system
3. Understand planning and implementation processes of engineering projects
4. Understand the methods for decision making
5. Explain the basic characteristics of the intellectual property
6. Participate in a team to make military engineering project

ECTS Credits 4.0

English Level Lo

E-learning Level L1
(10%)

Study Hours

Lectures 30

Exercises 15

Teaching Assistants

Ivica Kodžoman, dipl. ing.
mr. sc. Ante Kožul, pred.
Mirko Ljevar, pred.
Jadranko Tuta, pred.

Grading

Grading: The required minimum for a passing grade is a 50% score. Obligations: Students must be present in 75% of the lectures and participate in exercises and e-learning, participate in practical teamwork and pass written exam.

Study Programme Learning Outcomes

Military Engineering

- 1 Basic competences of the military profession
 - 1.1 To communicate, organize and plan effectively the activities of a basic tactical unit
 - 1.6 To nourish, channel and use creativity in accomplishing missions of a basic tactical unit
- 2 Special military competences
 - 2.1 To analyse the environment and to develop and apply tactics of the branch/service
- 3 Basic technical knowledge
 - 3.1. To identify, analyse, model and resolve military engineering problems by integrating basic knowledge of natural and technical sciences
4. Personal and professional skills and characteristics
 - 4.2 To model and resolve a problem and to interpret problem solution by using appropriate knowledge and methods
 - 4.4 To develop self-study abilities and the need for and methods of life-long learning in traditional and virtual environment
5. Social skills (team work and communication)
 - 5.3 To effectively present work results both orally and in writing to stakeholders in the military environment
 - 5.4 To apply knowledge of the structure and functioning of the political system, state and public administration in resolving unstructured problems
- 6 Development, implementation and operation of technical systems in economic and social environment
 - 6.3. To apply and select knowledge and relevant facts from different areas, and to assume responsibility for assessing the impact of military technology in social environment
 - 6.4. To plan, organise, create and implement engineering testing, and to analyse and interpret the results

Screening of student's work

- 1 ECTS Lectures attendance
- 0.5 ECTS Midterm exam
- 0.5 ECTS Written exam
- 1 ECTS Project
- 1 ECTS Practical work

- 4 ECTS

Forms of Teaching

- » Lectures
 - » Teaching is organized in two cycles. The first cycle includes of 6 weeks of teaching and mid-term exam, and the second cycle includes of 7 weeks of teaching and final exam. Teaching is executed in 15 weeks with two hours of teaching per week.
- » Exercises
 - » Within the course the exercise will be organized with total of 15 hours during semester.
- » Independent assignments
 - » During the exercises, students will independently and in a team solve practical tasks related to the course content.
- » Other
 - » Writing project documentation

Week by Week Schedule

1. Lectures: Introduction to management
2. Lectures: Management and managers
3. Lectures: Engineering profession
4. Lectures: Engineering and managerial ethics
5. Lectures: Engineering approach to problem solving
6. Lectures: Intellectual property and protection

7. Midterm exam
8. Lectures: Teamwork
9. Lectures: Project and project management - definitions and features
10. Lectures: Project initiating and planning
11. Lectures: Project executing, monitoring and controlling, closing
12. Lectures: Risk management in projects
Seminar: Teamwork on the project - a case study

13. Lectures: Conflict management and decision making
14. Lectures: Agile trends in project management
15. Final exam

Literature



Fertalj, K.; Car, Ž.; Nižetić
Kosović, I. (2016).
*Upravljanje projektima -
skripta*, Sveučilište u
Zagrebu FER



PMI (2009). *Project
Management Body of
Knowledge 4th Edition*, PMI

Additional Literature



Temelji menadžmenta (2005).
*Sikavica, P.; Bahtijarević-Šiber,
F.; Pološki-Vokić, N.*, Školska
knjiga

Similar Courses

- » MG381 INTRODUCTION TO MANAGEMENT, Oxford
- » Engineering Management, West Point

Management of Military Logistics Systems

129639

Lecturer



prof. dr. sc.
Goran Đukić

Course Description

The aim of the course is to enable students to acquire theoretical and practical knowledge of logistics systems, understanding the needs of management, its planning and coordination, and acquiring analytical and managerial skills necessary to apply this knowledge in the management of military logistics systems.

Study Programmes

- » Armour -> Group of Courses Armour, Field Artillery, Engineers, Technical Support and Infantry (Course) (*required course, 5th semester, 3rd year*) (Note: course not offered in this academic year.)
- » Field Artillery -> Group of Courses Armour, Field Artillery, Engineers, Technical Support and Infantry (Course) (*required course, 5th semester, 3rd year*)
- » Engineers -> Group of Courses Armour, Field Artillery, Engineers, Technical Support and Infantry (Course) (*required course, 5th semester, 3rd year*) (Note: course not offered in this academic year.)
- » Technical Support -> Group of Courses Armour, Field Artillery, Engineers, Technical Support and Infantry (Course) (*required course, 5th semester, 3rd year*)
- » Infantry -> Group of Courses Armour, Field Artillery, Engineers, Technical Support and Infantry (Course) (*required course, 5th semester, 3rd year*) (Note: course not offered in this academic year.)
- » Signals -> Group of Courses Signals, Monitoring and Guidance and Air Defence (Course) (*required course, 5th semester, 3rd year*)
- » Monitoring and Guidance -> Group of Courses Signals, Monitoring and Guidance and Air Defence (Course) (*required course, 5th semester, 3rd year*) (Note: course not offered in this academic year.)
- » Air Defence -> Group of Courses Signals, Monitoring and Guidance and Air Defence (Course) (*required course, 5th semester, 3rd year*) (Note: course not offered in this academic year.)
- » Chemical, Biological, Radiological and Nuclear Defence -> Military Engineering (Course) (*required course, 5th semester, 3rd year*) (Note: course not offered in this academic year.)
- » Military Leadership and Management (Study) (*required course, 5th semester, 3rd year*)

Learning Outcomes

On successful completion of the course, students will be able to:

1. Explain the concept and basic principles of logistics
2. Explain the organization of logistics
3. Describe the planning and organization of logistics processes

ECTS Credits 4.0

English Level Lo

E-learning Level L1

Study Hours

Lectures 30

Laboratory exercises 30

Associate Lecturers

Ivica Kodžoman, dipl. ing.
mr. sc. Ante Kožul, pred.
dr. sc. Davorka Perić
Jadranko Tuta, pred.

Grading

Grading: Completed exercises 20% and grades from 2 mid-term exams 2x40% (or final exam 80%). Obligations: Active participation in the classroom, completed calculations from exercises. Passed 2 mid-term exams or final exam.



4. Explain on the internal and external factors of the logistics system
5. Explain the various processes of supply logistics (procurement, warehousing, inventory management, distribution)
6. Explain the various processes of production logistics
7. Explain the organization of transport logistics
8. Assess the quantitative and qualitative execution of logistics activities
9. Outline the organizational structure of logistics units in operations
10. Calculate the number of vehicles for the transport of various amounts of material resources, taking into account the weight and dimensions of goods and vehicle characteristics

Study Programme Learning Outcomes

Military Engineering

- 1 Basic competences of the military profession
 - 1.1 To communicate, organize and plan effectively the activities of a basic tactical unit
- 2 Special military competences
 - 2.1 To analyse the environment and to develop and apply tactics of the branch/service
- 3 Basic technical knowledge
 - 3.3. To integrate and apply engineering principles and techniques in the operation of military system in unpredictable conditions
4. Personal and professional skills and characteristics
 - 4.1 To identify and analyze a problem in the military environment
5. Social skills (team work and communication)
 - 5.2 Organize and plan individual and team work in international and interdisciplinary work groups

Military Leadership and Management

- 1 Basic competences of the military profession
 - 1.1 To communicate, organize and plan effectively the activities of a basic tactical unit
- 2 Special military competences
 - 2.1 To analyse the environment and to develop and apply tactics of the branch/service
4. Personal and professional skills and characteristics
 - 4.1 To identify and analyze a problem in the military environment
5. Social skills (team work and communication)
 - 5.2 Organize and plan individual and team work in international and interdisciplinary work groups

Screening of student's work

- 2 ECTS Lectures attendance
 2 ECTS Midterm exam

 4 ECTS

Forms of Teaching

- » Lectures
 - » Formal lecturing.
- » Exercises
 - » Exercises in 4 groups.

Week by Week Schedule

1. Lectures: Introduction to logistics systems management (concept, definition, objectives and goals of logistics, etymology and historical development of logistics, logistics as a science and logistics as a business function).

Seminar: Budgeting quartermaster funds - Calculation of required water and food in different weather conditions.

2. Lectures: Logistics management and Supply Chain Management. Logistics activities.

Seminar: Budgeting quartermaster funds - Calculation of required water and food in different weather conditions. (cont.)

3. Lectures: Military logistics (concept, definition, objectives and goals, historical development, state and trends).

Seminar: Budgeting quartermaster funds - Calculation of required water and food in different weather conditions. (cont.)

4. Lectures: Internal and external factors of (military) logistics system. Strategy, planning and organisation of military logistic processes.

Seminar: Calculation of the required amount of ammunition.

5. Lectures: Activities of military logistics

Seminar: Calculation of the required amount of ammunition (cont.).

6. Lectures: Activities of military logistics (cont.)

Seminar: Calculation of the required amount of ammunition (cont.).

7. Mid term 1

8. Lectures: Organization and execution of financial planning and accounting.

Seminar: Preparation of documents for the procurement of goods or services.

9. Lectures: Activities of military logistics: transport logistics

Seminar: Movement planning - transit time, length and speed of the column.

10. Lectures: Risk management. Human resource management. Controlling, quantitative and qualitative analysis of executed logistics activities and decisions (performance measurement).

Seminar: Movement planning - transit time, length and speed of the column (cont.)

11. Lectures: Structure of UN, NATO, EU military logistics and support in operations.

Seminar: Transport asset planning - type of vehicles, necessary capacity.

12. Lectures: Position and role of logistics units in operations (areas and support elements, logistics in MDMP - military decision making process).

Seminar: Transport asset planning - type of vehicles, necessary capacity (cont.)

13. Lectures: Management of medical support (health care and medical support in operations (ROLE)).

Seminar: Preparing documentation for sending material resources.

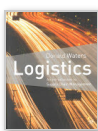
14. Lectures: Organization of logistical support in HKoV, HRM, HRZ i PZO.
Seminar: Preparing documentation for sending material resources (cont.)

15. Mid term 2

Literature



Mladen Barković, Boris Škoti, Robert Spudić (2015). *Vojna logistika*, Veleučilište Velika Gorica



Waters D. (2003). *Logistics An Introduction to Supply Chain Management*, Palgrave Macmillan



Đukić, Kožul, Kodžoman, Tuta, Perić (2016). *UVLS interna skripta*, interno



Uprava za logistiku - J4 (2012). *Združena logistika ZDP-40*, MORH, GS OSRH

Similar Courses

» -, Oxford

Materials

129336



Lecturer



prof. dr. sc.
Krešimir Grilec

Course Description

Introduction to the concept of solidification, phase diagrams and thermal treating of metals. Introduction to chemical compositions, microstructures, properties, and application of metallic and non-metallic materials (polymers, technical ceramics and composites).

Study Programmes

- » Group of Courses Armour, Field Artillery, Engineers, Technical Support and Infantry -> Military Engineering (Course) (*required course, 3rd semester, 2nd year*)
- » Group of Courses Signals, Monitoring and Guidance and Air Defence -> Military Engineering (Course) (*required course, 3rd semester, 2nd year*)
- » Chemical, Biological, Radiological and Nuclear Defence -> Military Engineering (Course) (*required course, 3rd semester, 2nd year*) (Note: course not offered in this academic year.)

Learning Outcomes

On successful completion of the course, students will be able to:

1. Explain the structure of metals, alloys, ceramics, glass and polymers.
2. Sketch a iron-carbon phase diagram and use information derived from it.
3. Describe the methods for determining the mechanical properties of materials.
4. Calculate the strength and hardness of the material according to the results of laboratory tests.
5. Explain the structural transformation during the heat treatment of steels.
6. Identify the microstructure of ferrous materials and heat-treated steels.
7. Classify the most important metals, alloys, polymers, ceramics and composites.
8. Explain the relationship between chemical composition, microstructure and properties of the most important technical materials.
9. Apply the material with the characteristic requirements of the application.

Study Programme Learning Outcomes

Military Engineering

3 Basic technical knowledge

- 3.1. To identify, analyse, model and resolve military engineering problems by integrating basic knowledge of natural and technical sciences
- 3.2. To apply complex methodology by integrating engineering knowledge and skills in military engineering practice

4. Personal and professional skills and characteristics

- 4.2 To model and resolve a problem and to interpret problem solution by using

ECTS Credits 6.0

English Level Lo

E-learning Level L1

Study Hours

Lectures 45

Laboratory exercises 30

Associate Lecturers

izv. prof. dr. sc. Željko Alar

izv. prof. dr. sc. Danko Ćorić

Teaching Assistants

Ivana Bunjan, mag. ing. met.

dr. sc. Mirko Jakopčić, izv. prof.

Grading

Grading: 2 partial preliminary written exams during lectures or written exam if a student fails preliminary exams. Oral exam. Obligations: Attending lectures and exercises. Passed of finale exam.

- appropriate knowledge and methods
- 5. Social skills (team work and communication)
 - 5.1 To communicate effectively in the Croatian and English language applying modern presentation skills and techniques
 - 5.3 To effectively present work results both orally and in writing to stakeholders in the military environment
- 6 Development, implementation and operation of technical systems in economic and social environment
 - 6.4. To plan, organise, create and implement engineering testing, and to analyse and interpret the results

Screening of student's work

- 3 ECTS Lectures attendance
- 2 ECTS Midterm exam
- 1 ECTS Oral exam
- 6 ECTS

Forms of Teaching

- » Lectures
 - » 3 hours every week
- » Exercises
 - » Exercises in laboratory.
- » Laboratory
 - » exercises in 5 laboratories on Faculty of Mechanical Engineering (Department of materials)

Week by Week Schedule

1. Lectures: Materials systematisation. The structure of the solids. Crystal structures. The imperfections of the crystal structure.
Laboratory exercises: Crystallography.
2. Lectures: Alloys. Diffusion. Types of crystal alloys. Phase diagrams.
Laboratory exercises: Phase diagrams.
3. Lectures: Iron-carbon phase diagram.
Laboratory exercises: Iron-carbon phase diagram.
4. Lectures: Mechanical properties: tensile test, hardness.
Laboratory exercises: Tensile test on the universal testing machine. Impact testing: the Charpy test.
5. Lectures: Mechanical properties: toughness, impact energy, fatigue, creep.
Laboratory exercises: Hardness.
6. Lectures: Non-equilibrium transformation of Fe-C alloys. Thermal treating of materials - annealing, hardening, tempering.
Laboratory exercises: TTT diagrams.
7. Preliminary exam.
8. Lectures: Thermo-chemical modification treatment of materials. Surface coating processes.
Laboratory exercises: Wear resistance.
9. Lectures: Cast iron.
Laboratory exercises: Hardening.
10. Lectures: Tempering and carburising steels. Steels for mechanical springs. Structural and HSLA steels. Mechanisms of strengthening metals.
Laboratory exercises: Microstructure analysis of heat treatable steels.
11. Lectures: Stainless steels. Heat resistant steels and steels for low temperatures. High strength steels. Tool steels.
Laboratory exercises: Testing the steel hardenability.

12. Lectures: Non ferrous alloys.
Laboratory exercises: Microstructure analysis of non-ferrous alloys.
13. Lectures: Technical ceramics. Polymers.
Laboratory exercises: Properties and applications of polymer materials.
14. Lectures: Composites.
Laboratory exercises: Properties and applications of composite materials.
15. Preliminary exam.

Literature



V. Ivušić, M. Franz, Đ. Španiček, L. Čurković (2011). *Materiali I*, Fakultet strojarstva i brodogradnje, Zagreb



T. Filetin, F. Kovačiček, J. Indof (2013). *Svojstva i primjena materijala*, Fakultet strojarstva i brodogradnje, Zagreb

Additional Literature



M. Stupnišek, F. Cajner (1996). *Osnove toplinske obradbe metala*, Fakultet strojarstva i brodogradnje, Zagreb

Similar Courses

» Microstructure and Mechanical Properties, Stanford University

Mathematics I D

129803

Lecturer



dr. sc.
Lenka Mihoković

Course Description

To acquire basic knowledge, concepts and applications of calculus.

Study Programmes

» Military Leadership and Management (Study) (*required course, 1st semester, 1st year*)

Learning Outcomes

On successful completion of the course, students will be able to:

1. Demonstrate basic knowledge of calculus
2. Outline basic definitions and describe basic methods of calculus
3. Explain, connect and interpret basic concepts of calculus
4. Make conclusions by using logical reasoning (analogy, contradiction, implication)
5. Demonstrate mathematical reasoning and problem solvers skills
6. Demonstrate an ability to communicate mathematics by team work, discussion and written material

Study Programme Learning Outcomes

Military Leadership and Management

- 1 Basic competences of the military profession
 - 1.6 To nourish, channel and use creativity in accomplishing missions of a basic tactical unit
4. Personal and professional skills and characteristics
 - 4.2 To model and resolve a problem and to interpret problem solution by using appropriate knowledge and methods
 - 4.4 To develop self-study abilities and the need for and methods of life-long learning in traditional and virtual environment
5. Social skills (team work and communication)
 - 5.3 To effectively present work results both orally and in writing to stakeholders in the military environment

ECTS Credits 5.0

English Level Lo

E-learning Level L1

Study Hours

Lectures 30

Exercises 30

Associate Lecturer

doc. dr. sc. Domagoj Kovačević

Grading

Obligations: The student is required to attend lectures and actively participate in class. The student is also required to take exams. Examinations and Assessments: There are two ways of passing the exam: by taking the mid-term and final exam during the semester when the course is taught or by taking the exam (in full) during the examination period in January, February and September. In the first case it is possible to achieve: 50 points for the mid-term exam, 50 points for the final exam. The mid-term and the final exam (lasting 60 minutes) will be held on the seventh week and fifteenth week of the semester respectively. In order to pass the exams a student has to achieve at least 50 points out of possible 100 points. Thresholds for grades are as follows: 50 points, sufficient (2) 60 points, good (3) 75 points, very good (4) 90 points, excellent (5) A student that fails the mid-term and final exam has the opportunity to take the additional exam (lasting 90 minutes) during the examination period. The maximum score of the exam is 100 points. Thresholds for grades are the same as before. Examination periods: Besides the two winter examination periods in January and February and one fall examination period in September, if necessary, additional examination period

will be organized in April.

Screening of student's work

2 ECTS Lectures attendance
0.1 ECTS Midterm exam
0.1 ECTS Written exam
2.8 ECTS Learning and preparing for exam
<u>5 ECTS</u>

Forms of Teaching

» Lectures

» Lectures are organized through two cycles. The first cycle consists of 6 weeks of classes and mid-term exam, a second cycle of 7 weeks of classes and final exam. Classes are conducted with a weekly load of 2 hours at Croatian Defence Academy "Dr. Franjo Tuđman".

» Exercises

» Auditory exercises are organized through two cycles. Exercises are conducted with a weekly load of 2 hours at Croatian Defence Academy "Dr. Franjo Tuđman".

Week by Week Schedule

1. Lectures: The set of natural numbers, integers, rational and real numbers. Absolute value. Real number line and coordinate system in the plane.
Exercises: The set of natural numbers, integers, rational and real numbers. Absolute value. Real number line and coordinate system in the plane.
2. Lectures: Polynomial of first degree: zeros and graph. Polynomial of second degree: zeros and graph. Polynomial of n-th degree.
Exercises: Polynomial of first degree: zeros and graph. Polynomial of second degree: zeros and graph. Polynomial of n-th degree.
3. Lectures: Equations and inequations: linear, quadratic, with absolute value.

Exercises: Equations and inequations: linear, quadratic, with absolute value.
4. Lectures: Exponential and logarithmic functions: properties and graphs.
Exercises: Exponential and logarithmic functions: properties and graphs.
5. Lectures: Exponential and logarithmic equations and inequations.
Exercises: Exponential and logarithmic equations and inequations.
6. Lectures: Right triangle trigonometry. Trigonometric functions: definitions, values, properties and identities.

Exercises: Right triangle trigonometry. Trigonometric functions: definitions, values, properties and identities.
7. Mid-term exam.
8. Lectures: Graphs of trigonometric functions. Trigonometric equations.
Exercises: Graphs of trigonometric functions. Trigonometric equations.
9. Lectures: Trigonometric inequations. Triangle theorems.
Exercises: Trigonometric inequations. Triangle theorems.
10. Lectures: Analytic geometry: circle, ellipse, hyperbola.
Exercises: Analytic geometry: circle, ellipse, hyperbola.
11. Lectures: Parabola. Line and second-order curves.
Exercises: Parabola. Line and second-order curves.
12. Lectures: Numeral system. Mathematical induction. Binomial theorem. Field of rational numbers. Irrational numbers. Completeness of the set of real numbers.
Exercises: Numeral system. Mathematical induction. Binomial theorem. Field of rational numbers. Irrational numbers. Completeness of the set of real numbers.
13. Lectures: Complex numbers. Basic operations. Complex plane.
Exercises: Complex numbers. Basic operations. Complex plane.

14. Lectures: Complex numbers. Trigonometric form. Exponentiation and the n -th root of complex numbers.

Exercises: Complex numbers. Trigonometric form. Exponentiation and the n -th root of complex numbers.

15. Final exam.

Literature



B. Dakić, N. Elezović (2010).
Matematika u 24 lekcije,
Element, Zagreb

Additional Literature



B. Dakić, N. Elezović (2014).
*MATEMATIKA 1 (1. i 2. dio),
udžbenik i zbirka zadataka za
1. razred gimnazije*, Element,
Zagreb



B. Dakić, N. Elezović (2014).
*MATEMATIKA 2 (1. i 2. dio),
udžbenik i zbirka zadataka za
2. razred gimnazije*, Element,
Zagreb



B. Dakić, N. Elezović (2014).
*MATEMATIKA 3 (1. i 2. dio),
udžbenik i zbirka zadataka za
3. razred gimnazije*, Element,
Zagreb



B. Dakić, N. Elezović (2014).
*MATEMATIKA 4 (1. dio),
udžbenik i zbirka zadataka za
4. razred gimnazije*, Element,
Zagreb

Similar Courses

» Precalculus (MA100), West Point

Mathematics II D

129893

Lecturer



doc. dr. sc.
Domagoj Kovačević

Course Description

To acquire basic knowledge, concepts and applications of calculus and linear algebra.

Study Programmes

- » Military Leadership and Management (Study) (*required course, 2nd semester, 1st year*)

Learning Outcomes

On successful completion of the course, students will be able to:

1. Demonstrate basic knowledge of calculus and linear algebra
2. Outline basic definitions and describe basic methods of calculus and linear algebra
3. Explain, connect and interpret basic concepts of calculus and linear algebra
4. Make conclusions by using logical reasoning (analogy, contradiction, implication)
5. Demonstrate mathematical reasoning and problem solvers skills
6. Demonstrate an ability to communicate mathematics by team work, discussion and written material

Study Programme Learning Outcomes

Military Leadership and Management

- 1 Basic competences of the military profession
 - 1.6 To nourish, channel and use creativity in accomplishing missions of a basic tactical unit
4. Personal and professional skills and characteristics
 - 4.2 To model and resolve a problem and to interpret problem solution by using appropriate knowledge and methods
 - 4.4 To develop self-study abilities and the need for and methods of life-long learning in traditional and virtual environment
5. Social skills (team work and communication)
 - 5.3 To effectively present work results both orally and in writing to stakeholders in the military environment

ECTS Credits 5.0

English Level Lo

E-learning Level L1

Study Hours

Lectures 30

Exercises 30

Associate Lecturer

izv. prof. dr. sc. Josipa Pina Milišić

Grading

Grading: The threshold for a passing grade is a 50% score.

Obligations: The student is required to attend lectures and actively participate in class. The student is also required to fulfill homework assignments and to take exams.



ME

ME-M

ARM

ART

ENG

TS

IN-E

ME-E

SIG

MG

AD

CBR

MLM

IN-L

Screening of student's work

2 ECTS Lectures attendance
0.1 ECTS Midterm exam
0.1 ECTS Written exam
2.8 ECTS Learning and preparing for exam
<u>5 ECTS</u>

Forms of Teaching

- » Lectures
 - » Lectures which contain a large number of examples and problems
- » Exercises
 - » More examples for students which need more practice.
- » Independent assignments
 - » From workbook

Week by Week Schedule

1. Lectures: Sequences. Arithmetic and geometric series. Limit. Geometric series.
Exercises: Sequences. Arithmetic and geometric series. Limit. Geometric series.
2. Lectures: Matrices and determinants. Laplace's Sarrus's rules. Cramer's rule for the inverse of a matrix.
Exercises: Matrices and determinants. Laplace's Sarrus's rules. Cramer's rule for the inverse of a matrix.
3. Lectures: Basic skills for solving systems of linear equations.
Exercises: Basic skills for solving systems of linear equations.
4. Lectures: Vectors: addition of vectors, scalar multiplication of vector
Exercises: Vectors: addition of vectors, scalar multiplication of vector
5. Lectures: Vectors: scalar, vector and mixed vector product.
Exercises: Vectors: scalar, vector and mixed vector product.
6. Lectures: Basic notion of function: domain, bijection, (odd)even functions, periodicity.
Exercises: Basic notion of function: domain, bijection, (odd)even functions, periodicity.
7. Lectures: Functions: inverse functions, limit functions, continuity of functions.
Exercises: Functions: inverse functions, limit functions, continuity of functions.
8. Lectures: Derivatives: definition, properties, table of elementary derivations.
Exercises: Derivatives: definition, properties, table of elementary derivations.
9. Lectures: Derivatives: chain rule and derivative of an inverse.
Exercises: Derivatives: chain rule and derivative of an inverse.
10. Lectures: Tangent and normal line of the graph of the function.
Exercises: Tangent and normal line of the graph of the function.
11. Lectures: Increasing and decreasing functions, extrema, sketching the graph of a function.
Exercises: Increasing and decreasing functions, extrema, sketching the graph of a function.
12. Lectures: Integrals. Area under curve and the definite integral. Antiderivative. Indefinite integral.
Exercises: Integrals. Area under curve and the definite integral. Antiderivative. Indefinite integral.
13. Lectures: Definit integral. Basic elements of numerical integration.
Exercises: Definit integral. Basic elements of numerical integration.
14. Lectures: Basic skills for solving the first-order differential equations.
Exercises: Basic skills for solving the first-order differential equations.
15. Lectures: Basic skills for solving the second-order differential equations.
Exercises: Basic skills for solving the second-order differential equations.

Literature



M. Pašić (2005). *Matematika 1. S više od 800 riješenih primjera i zadataka*, Merkur ABD, Zagreb



B. Dakić, N. Elezović (2012). *MATEMATIKA 4 (1. i 2. dio), udžbenik i zbirka zadataka za 4. razred gimnazije*, Element, Zagreb



N. Elezović, A. Aglič (2006). *Linearna algebra: zbirka zadataka*, Element, Zagreb

Similar Courses

» Matematika I, Oxford

Mechanics

129225

Lecturer



prof. dr. sc.
Janoš Kodvanj

Course Description

The course objective is to teach students the methods of solving the problems in technical analyses by using statics. Prepare students to be able to handle engineering problems dealing with kinematics and dynamics. During this course students will enhance their understanding of basic concepts and increase their ability to solve engineering problems.

Study Programmes

» Military Engineering (Study) (*required course, 2nd semester, 1st year*)

Learning Outcomes

On successful completion of the course, students will be able to:

1. Apply the equilibrium conditions and determine unknown forces and reactions from the equilibrium conditions.
2. Explain the phenomenon of friction. To be able to solve technical problems of equilibrium with the friction elements.
3. Analyze the internal forces in the cross section of the beams and frames.
4. Calculate the moments of inertia of the composite areas.
5. Use the equations for position, velocity and acceleration of a particle for rectilinear and curvilinear motion in rectangular, polar and intrinsic coordinate systems.
6. Apply the Newton's second law of motion for particles, system of particles and rigid bodies.
7. Calculate work of a force, power, kinetic energy, potential energy, linear momentum, angular momentum and linear impulse.
8. Apply the law of conservation of energy, principle of work and energy, principle of impulse and momentum for particles, system of particles and rigid bodies.
9. Solve problems with direct and oblique central impacts.

Study Programme Learning Outcomes

Military Engineering

3 Basic technical knowledge

3.1. To identify, analyse, model and resolve military engineering problems by integrating basic knowledge of natural and technical sciences

3.2. To apply complex methodology by integrating engineering knowledge and skills in military engineering practice

4. Personal and professional skills and characteristics

ECTS Credits 6.0

English Level Lo

E-learning Level L1

Study Hours

Lectures 45

Seminar 30

Teaching Assistant

dr. sc. Frane Pamuković

Grading

Grading: Student has achieved a positive score if he attended classes regularly (10%), passed the three exams that comprise parts of the subject matter and are held during the semester (35%) passed the written testing (35%) and satisfy the oral exam of knowledge (20 %) in which, taking into account the success of the tests and exams, and finally determined by the knowledge and understanding of subject matter. Obligations: Regular attendance and participation in class.



- 4.2 To model and resolve a problem and to interpret problem solution by using appropriate knowledge and methods
- 6 Development, implementation and operation of technical systems in economic and social environment
 - 6.2. To apply and create engineering approaches in analysing and assessing products and processes in security environment
 - 6.4. To plan, organise, create and implement engineering testing, and to analyse and interpret the results

Screening of student's work

- 1 ECTS Lectures attendance
- 1 ECTS Midterm exam
- 2 ECTS Written exam
- 2 ECTS Oral exam
- 6 ECTS

Forms of Teaching

- » Lectures
 - » Lectures will be held in a block of three hours with examples and instructions for solving engineering problems.
- » Exercises
 - » The examples will be solved with students' active participation.

Week by Week Schedule

1. Lectures: Force, moment of force, force couple. Three-dimensional system of forces. Reduction to a simple form.
Exercises: Determination of resultant force. Determination of moment of force. Examples of force reduction.
2. Lectures: Free body isolation principle. Body connections and contacts. Free body diagram.
Exercises: Examples of free body diagrams.
3. Lectures: Equilibrium. Conditions and equations of equilibrium.
Exercises: Examples of analytical conditions of equilibrium.
4. Lectures: Friction force. Friction on inclined plane. Belt friction.
Exercises: Examples of equilibrium conditions of force systems with friction forces. Examples of equilibrium conditions of systems with belt friction.
5. Lectures: Analysis of internal forces. Simple beams and frames.
Exercises: Diagrams of internal forces of simple beams and frames.
6. Lectures: Definition of center of gravity. Center of gravity of a composite body. Moments of inertia of areas.
Exercises: Determination of center of gravity. Determination of moments of inertia of areas.
7. Lectures: Trajectory, velocity, acceleration. Straight line motion. Curvilinear motion in several coordinate systems.
Exercises: Examples for straight line motion. Curvilinear motion examples.
8. Lectures: Intrinsic coordinate system. Translation of a rigid body. Rotation about fixed axis. Planar motion of a rigid body.
Exercises: Curvilinear motion examples. Examples of rigid body rotation about stationary axis and planar motion.
9. Lectures: Planar motion of a rigid body: velocity and acceleration diagram. Kinematics of a relative motion.
Exercises: Examples for velocity and acceleration diagram. Examples in relative motion of a point.

10. Lectures: Equation of motion of a particle. The principle of d'Alembert. Work and power. Kinetic energy and kinetic energy law.
Exercises: Examples for equation of motion of a particle and principle of d'Alembert. Examples for kinetic energy laws.
11. Lectures: Potential energy. Energy conservation principle. Linear impulse and linear momentum. Linear impulse and momentum principle.
Exercises: Examples for potential energy laws. Energy conservation principle. Linear impulse and linear momentum. Linear impulse and momentum principle.
12. Lectures: Angular momentum and principle of angular impulse and angular momentum principle. Basics laws of motion for system of particles.
Exercises: Motion under central force action. Examples illustrating system of particles dynamics.
13. Lectures: Rigid body dynamics: translation, rotation about fixed axis.
Exercises: Examples of rotation about fixed axis of rigid body.
14. Lectures: Planar motion dynamics, equation of motion.
Exercises: Examples for planar motion dynamics.
15. Lectures: Collision of particles. Collision of particles and rigid body.
Exercises: Examples for collision of particles.

Literature



I. Alfrević, J. Saucha, Z. Tonković, J. Kodvanj (2010). *Uvod u Mehaniku I: Statika krutih tijela*, Golden marketing-Tehnička knjiga, Zagreb



I. Alfrević, J. Saucha, Z. Tonković, J. Kodvanj (2010). *Uvod u Mehaniku II: Primijenjena statika*, Golden marketing-Tehnička knjiga, Zagreb



F. Matejiček, D. Semenski, Z. Vnućec (2009). *Uvod u statiku sa zbirkom zadataka*, Strojarski fakultet u Slavonskom Brodu, Slavonski Brod



Stjepan Jecić (1989). *Mehanika II, Kinematika i dinamika*, Tehnička knjiga, Zagreb

Additional Literature



Franjo Matejiček (2009). *Kinematika sa zbirkom zadataka*, Strojarski fakultet u Slavonskom Brodu, Slavonski Brod



Franjo Matejiček (2010). *Kinetika sa zbirkom zadataka*, Strojarski fakultet u Slavonskom Brodu, Slavonski Brod

Similar Courses

» Mechanics, Stanford University

Media, Propaganda and Public Relations

129956

Lecturer



izv. prof. dr. sc.
Božo Skoko

Course Description

The objective of the course is to familiarize students with the nature and how media, propaganda and public relations function, and to prepare them to understand these phenomena and to communicate with media, especially in times of crisis.

Study Programmes

» Military Leadership and Management (Study) (*required course, 4th semester, 2nd year*)

Learning Outcomes

On successful completion of the course, students will be able to:

1. To acquire basic knowledge on media, communication, public relations and propaganda
2. To learn the basic functions of media, how they function and their specific characteristics
3. To understand the relationship between media and the army in contemporary societies
4. To acquire essential knowledge on the application of public relations, their strategies, techniques and tools
5. To learn to use the basic techniques and tools of public relations in times of crisis
6. To learn the specific characteristics of Croatian and international media
7. To analytically approach the effects of propaganda and to learn how to discern useful information from manipulation
8. To gain knowledge of modern communication processes at the international level

Study Programme Learning Outcomes

Military Leadership and Management

Screening of student's work

- 1 ECTS Lectures attendance
- 1 ECTS Midterm exam
- 1 ECTS Written exam
- 1 ECTS Practical work
- 4 ECTS

ECTS Credits	4.0
English Level	Lo
E-learning Level	L2
Study Hours	
Lectures	30
Seminar	15
Exercises	15

Associate Lecturer

doc. dr. sc. Igor Kanižaj

Teaching Assistants

dr. sc. Iva Nenadić
Marina Svrze, pred.

Grading

Grading: Attendance of lectures (20 percent), practical exercises (20 percent), one required written colloquium (30 percent) and an oral exam at the end (30 percent). Obligations: attending class and seminars, participating in exercises and workshops



Forms of Teaching

- » Lectures
- » Seminars and workshops
- » Exercises

Week by Week Schedule

1. Lectures: Social role of media
Seminar: Press clipping

Exercises: Media types and specific characteristics
2. Lectures: Public opinion
Seminar: Press release

Exercises: Role of media in war
3. Lectures: Structural and manipulative aspects of media
Seminar: Press kit

Exercises: Media manipulations
4. Lectures: Public relations basics
Seminar: Press conference

Exercises: Manipulative aspects of public relations and differences from propaganda
5. Lectures: Historical development of propaganda
Seminar: Interview for newspapers

Exercises: Propaganda in World War II
6. Lectures: Media types / Specific characteristics of media types
Seminar: Marketing and promotion channels

Exercises: Contemporary forms of propaganda
7. Lectures: Specific characteristics of Croatian media
Seminar: Writing for public relations

Exercises: Croatian media market
8. Lectures: Public relations techniques and tools
Seminar: Writing for public relations 2

Exercises: Analysis and specific characteristics of Croatian media
9. Lectures: Public relations strategies
Seminar: Briefing

Exercises: Research for public relations
10. Lectures: Propaganda techniques
Seminar: Press trip

Exercises: Public relations strategies and tactics
11. Lectures: Crisis communications and public relations in times of crisis
Seminar: TV Interview

Exercises: Evaluation of media reporting and public relations
12. Lectures: Identity and image promotion and management of the army
Seminar: Radio Interview

Exercises: Creating and changing the identity and image of the army

13. Lectures: Interpersonal communication
Seminar: Public speech

Exercises: SPIN techniques and counter-propaganda

14. Lectures: Public and TV appearance techniques
Seminar: Interpersonal communication

Exercises: INSIGHTS method of enhancing communication skills

15. Lectures: International communication
Seminar: PR campaigns

Exercises: International communications environment and specific cultural characteristics

Literature



Peruško, Zrinjka ur. (2011).
Uvod u medije, Jesenski i
Turk



Božidar Novak (2001). *Krizno
komuniciranje i upravljanje
opasnostima*, Binoza press



Matej Škarica (2012).
*Propaganda kroz europsku
povijest*, Synopsis



Edward Bernays (2013).
*Kristaliziranje javnog
mnijenja*, Kairos

Similar Courses

- » Media and propaganda, Oxford

Military Geography with Topography

129233

Lecturer



Mladen Pahernik,
izv. prof. dr. sc.

Course Description

Development of the basic knowledge of military topography displaying topographical elements of land, orientation and reading topographic maps within NATO cartographic standards. Acquiring basic knowledge on military geographic features with the purpose of military geographical analysis of the modern military geoinformation systems.

Study Programmes

- » Military Engineering (Study) (*required course, 2nd semester, 1st year*)
- » Military Leadership and Management (Study) (*required course, 2nd semester, 1st year*)

Learning Outcomes

On successful completion of the course, students will be able to:

1. Identify the basic topographic land objects
2. Explain the basic features of UTM map projection
3. Use topographic map for land orientation and cartographic measurement
4. Appraise significant military geographic factors of land
5. Analyze military geographic factors through modern geoinformation systems
6. Plan military activities taking into consideration military geographic characteristics of the area
7. Assess land from military geographic point of view

Study Programme Learning Outcomes

Military Engineering

- 1 Basic competences of the military profession
 - 1.3 To make decisions independently and command a basic tactical unit
 - 1.4 To train, develop and assess the abilities of soldiers and a basic tactical unit
 - 1.5 To develop personal and collective determination, courage, enthusiasm and initiative of subordinates
 - 1.6 To nourish, channel and use creativity in accomplishing missions of a basic tactical unit
- 2 Special military competences
 - 2.2 To manage maintenance of combat and non-combat assets, ammunitions and mines of the branch/service
- 3 Basic technical knowledge
 - 3.1. To identify, analyse, model and resolve military engineering problems by

ECTS Credits	8.0
English Level	Lo
E-learning Level	L1
Study Hours	
Lectures	60
Field exercises	45

Associate Lecturers

Hrvoje Heštera, pred.
dr. sc. Marinko Lozančić, pred.
Jelena Petrović, pred.
doc. dr. sc. Dražen Tutić

Teaching Assistants

Emil Banek, dipl. ing.
Franjo Hrvojević, pred.

Grading

Grading: Assessment and evaluation of students during the semester (40%) + test paper (50%) + oral exam (10 %)
Obligations: Attendance in teaching, making GIS project, actively participate in the fieldwork

integrating basic knowledge of natural and technical sciences

4. Personal and professional skills and characteristics

- 4.1 To identify and analyze a problem in the military environment
- 4.2 To model and resolve a problem and to interpret problem solution by using appropriate knowledge and methods
- 4.3 To assume military, professional and ethical responsibility
- 4.4 To develop self-study abilities and the need for and methods of life-long learning in traditional and virtual environment

5. Social skills (team work and communication)

- 5.2 Organize and plan individual and team work in international and interdisciplinary work groups
- 5.3 To effectively present work results both orally and in writing to stakeholders in the military environment

6 Development, implementation and operation of technical systems in economic and social environment

- 6.3. To apply and select knowledge and relevant facts from different areas, and to assume responsibility for assessing the impact of military technology in social environment

Military Leadership and Management

1 Basic competences of the military profession

- 1.3 To make decisions independently and command a basic tactical unit
- 1.4 To train, develop and assess the abilities of soldiers and a basic tactical unit
- 1.5 To develop personal and collective determination, courage, enthusiasm and initiative of subordinates
- 1.6 To nourish, channel and use creativity in accomplishing missions of a basic tactical unit

2 Special military competences

- 2.2 To manage maintenance of combat and non-combat assets, ammunitions and mines of the branch/service

4. Personal and professional skills and characteristics

- 4.1 To identify and analyze a problem in the military environment
- 4.2 To model and resolve a problem and to interpret problem solution by using appropriate knowledge and methods
- 4.3 To assume military, professional and ethical responsibility
- 4.4 To develop self-study abilities and the need for and methods of life-long learning in traditional and virtual environment

5. Social skills (team work and communication)

- 5.2 Organize and plan individual and team work in international and interdisciplinary work groups
- 5.3 To effectively present work results both orally and in writing to stakeholders in the military environment

Screening of student's work

2 ECTS Midterm exam

2 ECTS Written exam

1 ECTS Oral exam

2 ECTS Practical work

1 ECTS Field work

8 ECTS

Forms of Teaching

- » Lectures
 - » Classes are held in classrooms for all students direction
- » Exercises
 - » Exercises are conducted in specialized classrooms in the two groups
- » Field work
 - » During the semester, the planned two field exercises
- » Independent assignments
 - » Independent work on the computer in the field of GIS

Week by Week Schedule

1. Lectures: Introduction to military topography; Simple land measurements
Seminar: Simple land measurements - measuring horizontal and vertical angles
2. Lectures: Topography of the land; Basic cartography - topographic maps in general
Seminar: Simple land measurements - land movements; Cartometry - Cartesian and geographic coordinates
3. Lectures: Basic cartography - mathematical elements of topographic maps
Seminar: Cartometry - horizontal and vertical angles, land profile
4. Lectures: Basic cartography - content topographic map sheet
Seminar: Cartometry – visibility analysis; Orientation with GPS receiver - Basics of GPS use
5. Lectures: Cartometry – distance and area measurement, determining the position of points
Seminar: Orientation with GPS receivers – land movements with GPS receivers; Topographical orientation - identifying positions on the map
6. Lectures: Cartometry - determining the position of points, measuring angles on a topographic map
Seminar: Topographic orientation - orientation and mobility using maps
7. Lectures: Cartometry – visibility check; Topographic orientation
Seminar: Topographic orientation - Topographic and tactical analysis of the march; Introduction to ArcGIS software package - basic applications
8. Lectures: Topographic land evaluation, Introduction to geoinformation systems; Application of GIS in the Armed Forces
Seminar: Introduction to ArcGIS software package - user Interface
9. Lectures: GIS components; GIS data sources
Seminar: Introduction to ArcGIS software package - entering and searching for spatial data
10. Lectures: Models and analysis of spatial data; Introduction to Military Geography
Seminar: Introduction to ArcGIS software package - data visualization; Military geographical analysis of space in the ArcGIS interface - vector data analysis
11. Lectures: Military space category; General military geographical factors
Seminar: Military geographical analysis of space in the ArcGIS interface - raster analysis
12. Lectures: Physical geographical and socio geographic factors
Seminar: Military geographical analysis of space in the ArcGIS interface – mobility analysis
13. Lectures: Regional military geographical characteristics
Seminar: Military geographical analysis of space in the ArcGIS interface – visibility analysis; Identification of landforms and types and other elements and factors in military land evaluation
14. Lectures: Military geographical analysis of space
Seminar: Identification of landforms and types and other elements and factors in military land evaluation

15. Lectures: Military Geographical characteristics of Croatian / Europe
Seminar: Identification of landforms and types and other elements and factors
in military land evaluation

Literature



Mladen Pahernik (2012).
Vojna topografija I, topografski objekti zemljišta, MORH, GSORH, Hrvatsko vojno učilište Petar Zrinski, Ministarstvo obrane Republike Hrvatske, Oružane snage Republike Hrvatske, Hrvatsko vojno učilište "Petar Zrinski"



Mladen Pahernik (2012).
Vojna topografija II, orijentacija i topografske karte, MORH, GSORH, Hrvatsko vojno učilište Petar Zrinski, Ministarstvo obrane Republike Hrvatske, Oružane snage Republike Hrvatske, Hrvatsko vojno učilište "Petar Zrinski"



Mladen Pahernik (2006). *Uvod u Geografsko Informacijske Sustave*, Ministarstvo obrane Republike Hrvatske, Oružane snage Republike Hrvatske, Hrvatsko vojno učilište "Petar Zrinski"

Similar Courses

» Geography, West Point

Military History

129238



Lecturer



prof. dr. sc.
Zdravko Matić

ECTS Credits 5.0

English Level Lo

E-learning Level L1

Study Hours

Lectures 30

Seminar 30

Teaching Assistant

mr. sc. Ante Samardžić, pred.

Grading

Grading: Keeping records of student activities and final exams. Obligations: Class attendance, participation in discussions, essay and term papers, final exam.

Course Description

Overview of major military history phenomenon from Antiquity to the 21st century.

The acquisition of knowledge that can be used to solve tactical, operational and strategic problems based on successful and unsuccessful examples from military history.

Study Programmes

» Military Engineering (Study) (*required course, 1st semester, 1st year*)

Learning Outcomes

On successful completion of the course, students will be able to:

1. Identify key events, people and processes in military history
2. Establish a timeline, space and features of wars
3. Consider leading reasons and multiple consequences of wars
4. Analyze individual battles and military operations in different wars
5. Compare the different wars and their characteristics
6. Discuss military figures and their military actions
7. Explain military achievements and constraints in history
8. Expose the development of weapons and war equipment
9. Discover ways of expanding war doctrine
10. Judge the different theories that have preoccupied theorists of war

Study Programme Learning Outcomes

Military Engineering

- 1 Basic competences of the military profession
 - 1.7 To be acquainted with and to respect historical, social and cultural diversities in the context of military activities
- 2 Special military competences
 - 2.5 To apply knowledge of the military history in resolving tactical and operational problems
- 4 Personal and professional skills and characteristics
 - 4.2 To model and resolve a problem and to interpret problem solution by using appropriate knowledge and methods
- 5 Social skills (team work and communication)
 - 5.3 To effectively present work results both orally and in writing to stakeholders in the military environment

6 Development, implementation and operation of technical systems in economic and social environment

6.3. To apply and select knowledge and relevant facts from different areas, and to assume responsibility for assessing the impact of military technology in social environment

Screening of student's work

o ECTS Lectures attendance
40 ECTS Midterm exam
60 ECTS Written exam
<u>100 ECTS</u>

Forms of Teaching

- » Lectures
- » Seminars and workshops

Week by Week Schedule

1. Lectures: Introduction. How do we research history and why is military history separate branch of historical science.
Exercises: Introduction. Conversation
2. Lectures: Definition of war, character and nature of war. Throughout history, the basic nature of war remains the same, but the character of war is constantly changing as societies are changing politically, economically, socially and culturally
Exercises: Analysis of assigned readings
3. Lectures: Western and non-western warfare. Roman Army. Reasons for western supremacy on the military field since Antiquity until 20th century.
Exercises: Movie. Analysis of assigned readings
4. Lectures: War and Warfare from Antiquity until late Middle Ages.
Development of state as monopolist in warfare.
Exercises: Analysis of assigned readings
5. Lectures: Development of warfare in early modern times (15-18th century).
Seven Years' War, national states, building of permanent military organizations, development of war technology and military science.
Exercises: Analysis of assigned readings
6. Lectures: Development of warfare in 19th century. From Napoleonic wars to World Wars. Economical Changes. Total War.
Exercises: Analysis of assigned readings
7. Lectures: American Civil War 1861-1964; industrial revolution and impact of new technologies. Changes of warfare. Russian and Japanese war 1904.
Exercises: Analysis of assigned readings
8. Lectures: The First World War
Exercises: Analysis of assigned readings
9. Lectures: Interwar period. Nazi and Soviet military.
Exercises: Analysis of assigned readings
10. Lectures: The Second World War.
Exercises: Film. Analysis of assigned readings
11. Lectures: Analysis of World Wars on three levels: the level of new military technologies (airplanes, armored vehicles, submarines, air-plain carriers), strategic and operational level (total war, industrial mobilization, coalition warfare).
Exercises: Analysis of assigned readings
12. Lectures: Cold War. Local wars during the Cold War: Korean, Vietnam war, wars in Africa.
Exercises: Movie. Analysis of assigned readings

13. Lectures: Nuclear weapons, development of nuclear strategies. Role of nuclear weapons today.
Exercises: Visit to Rudjer Boskovic Institute.
14. Lectures: The break up of the Socialist World, the end of the Cold War; Homeland war in Croatia. Wars of Yugoslav Succession.
Exercises: Conversation with war veteran. Comparison with historiography.
15. Lectures: War in early 21st century – theories of “new warfare” (Mary Kaldor, Herfried Munkler, Martin van Creveld)
Exercises: Conversation. Evaluation.

Literature



Howard, Michael, *Rat u europskoj povijesti*, Zagreb, 2002.



John Keegan, *The First World War*, Pimlico 1998.



Biddle, Stephen D., *Military Power: explaining victory and defeat in modern battle*, Princeton-Oxford, 2006.



Odd Arne Westad, *Globalni Hladni rat. Velike sile i treći svijet. Golden marketing-Tehnička knjiga*, Zagreb 2009.



Williamson Murray and Allan R. Millett, *A War to Be Won, Fighting the Second World War*, Harvard Uni Press 2010.

Military History I

129950

Lecturer



izv. prof. dr. sc.
Boris Olujić

Course Description

The acquisition of knowledge that can be used to solve tactical, operational and strategic problems based on successful and unsuccessful examples from military history.

Study Programmes

- » Military Leadership and Management (Study) (*required course, 3rd semester, 2nd year*)

Learning Outcomes

On successful completion of the course, students will be able to:

1. Identify key events, people and processes in military history
2. Define a timeline, space and features of wars
3. Discover leading reasons and multiple consequences of wars
4. Analyze individual battles and military operations in different wars
5. Compare the different wars and their characteristics
6. Judge military figures and their military actions
7. Explain military achievements and constraints in history
8. Explain the development of weapons and war equipment
9. Discover ways of expanding war doctrine
10. Classify the different theories that have preoccupied theorists of war

Study Programme Learning Outcomes

Military Leadership and Management

- 1 Basic competences of the military profession
 - 1.7 To be acquainted with and to respect historical, social and cultural diversities in the context of military activities
- 3 Basic competences in social and humanistic sciences
 - 3.6 To apply knowledge of the military history in resolving tactical and operational problems
4. Personal and professional skills and characteristics
 - 4.2 To model and resolve a problem and to interpret problem solution by using appropriate knowledge and methods
5. Social skills (team work and communication)
 - 5.3 To effectively present work results both orally and in writing to stakeholders in the military environment

ECTS Credits 4.0

English Level L1

E-learning Level L1

Study Hours

Lectures 30

Seminar 30

Associate Lecturer

dr. sc. Silvija Pisk

Teaching Assistants

mr. sc. Ante Samardžić, pred.

Mario Werhas

Grading

Grading: Keeping records of student activities and final exams. Obligations: Attendance of lessons, participation in discussions, writing essays and term papers, taking tests and exams.



Screening of student's work

2 ECTS Lectures attendance
0.5 ECTS Essay
0.5 ECTS Midterm exam
1 ECTS Written exam
4 ECTS

Forms of Teaching

- » Lectures
 - » Lectures
- » Seminars and workshops
 - » Analysis of assigned readings

Week by Week Schedule

1. Lectures: Introduction to the military history
Exercises: Analysis of assigned readings
2. Lectures: Armies, military leaders and battles of the Ancient Orient
Exercises: Analysis of assigned readings
3. Lectures: Sword and fire on land and sea: Ancient Greek Warfare
Exercises: Analysis of assigned readings
4. Lectures: The Rise and the fall of the Roman military forces
Exercises: Analysis of assigned readings
5. Lectures: Defensive battles in Croatian historical area
Exercises: Analysis of assigned readings
6. Lectures: Warrior and soldier in Ancient World: social position
Exercises: Analysis of assigned readings
7. Lectures: The Byzantine armed forces in context of the Medieval Warfare
Exercises: Analysis of assigned readings
8. Lectures: Military organization, armament and warfare in Medieval Europe
Exercises: Analysis of assigned readings
9. Lectures: Siege warfare, fortress and armament in the Medieval Period
Exercises: Analysis of assigned readings
10. Lectures: The rise of Ottomans to the military great power of the Late Medieval and the Early Modern Period
Exercises: Analysis of assigned readings
11. Lectures: Military revolution and the Thirty Years War
Exercises: Analysis of assigned readings
12. Lectures: Seven Years War: World War of the 18th century
Exercises: Analysis of assigned readings
13. Lectures: The American war of independence
Exercises: Analysis of assigned readings
14. Lectures: Warfare in the Napoleonic period
Exercises: Analysis of assigned readings
15. Lectures: Warfare in the Napoleonic period
Exercises: Analysis of assigned readings

Literature



Michael Eliot Howard (2002). *Rat u europskoj povijesti*, Srednja Europa



Martin J. Dougherty, Michael E. Haskew, Christer Jorgensen, Chris Mann, Chris McNab, Michael Neiberg, Michael Pavković (2014). *Velike bitke. Odlučujući sukobi koji su oblikovali povijest*, Znanje



Simon Anglim, Phyllis G. Jestice, Rob S. Rice, Scott M. Rusch, John Serrati (2013). *Fighting Techniques of the Ancient World (3000 B. C. to 500 A. D.)*, St. Martin's Press



Helen Nicholson (2003). *Medieval Warfare*, Palgrave Macmillan



Jeremy Black (2008). *War and the World*, Yale University Press

Similar Courses

» Military History, West Point

Military History II

129962

Lecturer



doc. dr. sc.
Martin Previšić

Course Description

The acquisition of knowledge that can be used to solve tactical, operational and strategic problems based on successful and unsuccessful examples from military history.

Study Programmes

» Military Leadership and Management (Study) (*required course, 4th semester, 2nd year*)

Learning Outcomes

On successful completion of the course, students will be able to:

1. Identify key events, people and processes in military history
2. Establish a timeline, space and features of wars
3. Consider leading reasons and multiple consequences of wars
4. Analyze individual battles and military operations in different wars
5. Compare the different wars and their characteristics
6. Discuss military figures and their military actions
7. Explain military achievements and constraints in history
8. Expose the development of weapons and war equipment
9. Discover ways of expanding war doctrine
10. Judge the different theories that have preoccupied theorists of war

Study Programme Learning Outcomes

Military Leadership and Management

- 1 Basic competences of the military profession
 - 1.7 To be acquainted with and to respect historical, social and cultural diversities in the context of military activities
- 3 Basic competences in social and humanistic sciences
 - 3.6 To apply knowledge of the military history in resolving tactical and operational problems
4. Personal and professional skills and characteristics
 - 4.2 To model and resolve a problem and to interpret problem solution by using appropriate knowledge and methods
5. Social skills (team work and communication)
 - 5.3 To effectively present work results both orally and in writing to stakeholders in the military environment

ECTS Credits 4.0

English Level Lo

E-learning Level L1

Study Hours

Lectures 30

Seminar 30

Teaching Assistants

mr. sc. Ante Samardžić, pred.
Mario Werhas

Grading

Grading: Keeping records of student activities and final exams. Obligations: Attendance of lessons, participation in discussions, writing essays and term papers, taking tests and exams.



Forms of Teaching

- » Lectures
- » Seminars and workshops

Week by Week Schedule

1. Lectures: A history of the art of war: warfare and its theoreticians
Exercises: Analysis of assigned readings
2. Lectures: Europe after the Congress of Vienna: reaction and rise of national states
Exercises: Analysis of assigned readings
3. Lectures: 1848 and consequences
Exercises: Analysis of assigned readings
4. Lectures: Americas: liberation wars and US Civil War
Exercises: Analysis of assigned readings
5. Lectures: European civilization, 1871-1914
Exercises: Analysis of assigned readings
6. Lectures: World War I
Exercises: Analysis of assigned readings
7. Lectures: Consequences of the World War I
Exercises: Analysis of assigned readings
8. Lectures: The interwar period (1918-1941) in international, European, and Croatian scope
Exercises: Analysis of assigned readings
9. Lectures: World War II
Exercises: Analysis of assigned readings
10. Lectures: Consequences of the World War II
Exercises: Analysis of assigned readings
11. Lectures: Cold War and the twentieth-century grand strategy
Exercises: Analysis of assigned readings
12. Lectures: Croatian Homeland War
Exercises: Analysis of assigned readings
13. Lectures: Methodology of analysis of war operations
Exercises: Analysis of assigned readings
14. Lectures: Military leaders and the art of command
Exercises: Analysis of assigned readings
15. Lectures: Weapons and warfare in the postmodern period
Exercises: Analysis of assigned readings

Literature



Howard, Michael, Rat u europskoj povijesti, Zagreb, 2002.



Pavičić, Slavko, Hrvatska vojna i ratna povijest i Prvi svjetski rat, Split, 2009.



Black, Jeremy, War and the World: Military Power and the Fate of Continents 1450-2000, New Haven-London, 2005.

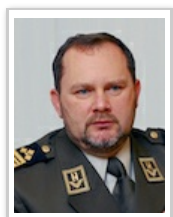


Archer, Christon I. et al., World History of Warfare, Lincoln, Nebr., 2002.

Military Leadership

141686

Lecturer



doc. dr. sc.
Slavko Barić

Course Description

This course aims at defining and developing students' personal approach to leadership and at instilling the students with the need for continuous development of their own leadership skills necessary for future command positions.

The students will examine the leader's/commander's traits and values as well as leadership theories in order to develop the ability to directly influence the subordinates and groups. Students will also learn how to influence indirectly through organisational systems and procedures, organisational culture and ethical climate in the unit.

Through integrating theory of leadership and real life examples of its application, the students will understand the influence of leadership on the command of a tactical level unit.

Study Programmes

- » Group of Courses Armour, Field Artillery, Engineers, Technical Support and Infantry -> Military Engineering (Course) (*required course, 3rd semester, 2nd year*)
- » Group of Courses Signals, Monitoring and Guidance and Air Defence -> Military Engineering (Course) (*required course, 3rd semester, 2nd year*)
- » Chemical, Biological, Radiological and Nuclear Defence -> Military Engineering (Course) (*required course, 3rd semester, 2nd year*) (**Note: course not offered in this academic year.**)
- » Military Leadership and Management (Study) (*required course, 3rd semester, 2nd year*)

Learning Outcomes

On successful completion of the course, students will be able to:

1. Explain the importance of leadership for an organization
2. Discuss and illustrate the difference between management and leadership in the military organization
3. Discuss and illustrate the Mission command concept
4. Discuss and illustrate the application of the Situational model of leadership in leading subordinates
5. Apply the methods of conflict management in the military organization
6. Recognize the sources of power and be able to apply the methods of influencing and leadership styles
7. Discuss and illustrate the levels of leadership and its uniqueness in a military organisation

ECTS Credits	5.0
English Level	Lo
E-learning Level	L1
Study Hours	
Lectures	45
Laboratory exercises	15

Associate Lecturers

dr. sc. Robert Barić, doc.
mr. sc. Slobodan Čurčija, pred.
mr. sc. Marin Jakulj, pred.
Dražen Jožef, univ. spec. oec.
mr. sc. Marijan Kostanjevac, pred.

Grading

Grading: Practical work is evaluated during entire semester. From the preliminary exam is necessary to achieve 50% of the points as a prerequisite for the written final exam. Overall evaluation is formed as the sum of points from the successfully pass the practical work, preliminary exam and a written final exam. It is necessary to get at least 50% of the points from the sum of scores successfully pass the practical work, preliminary exam and written final exam. Table linking the evaluation of the total number of points is formed at the beginning of the academic year: 100 - 87.5% = 5 (A), 87.5% - 75% = 4 (B), 75% - 62.5% = 3 (C), 62.5% - 50% = 2 (D), 49% and lower = 1 (F). Obligations: Students are required to attend lectures and exercises, and carry out practical work in accordance with the instructions.

8. Recognize and understand the role of leadership in command, as a key element of combat power, as well as the hierarchy of the chain of command and control in military organization
9. Apply the principles of group and team work
10. Assess and develop traits, skills and military values in a military officer

Study Programme Learning Outcomes

Military Engineering

- 1 Basic competences of the military profession
 - 1.1 To communicate, organize and plan effectively the activities of a basic tactical unit
 - 1.2 To assess the situation and implement appropriate tactics for a basic tactical unit
 - 1.3 To make decisions independently and command a basic tactical unit
 - 1.4 To train, develop and assess the abilities of soldiers and a basic tactical unit
 - 1.5 To develop personal and collective determination, courage, enthusiasm and initiative of subordinates
 - 1.6 To nourish, channel and use creativity in accomplishing missions of a basic tactical unit
- 2 Special military competences
 - 2.1 To analyse the environment and to develop and apply tactics of the branch/service
 - 2.3 To use combat and non-combat assets of the branch/service in a professional way
4. Personal and professional skills and characteristics
 - 4.1 To identify and analyze a problem in the military environment
 - 4.2 To model and resolve a problem and to interpret problem solution by using appropriate knowledge and methods
 - 4.3 To assume military, professional and ethical responsibility
 - 4.4 To develop self-study abilities and the need for and methods of life-long learning in traditional and virtual environment
5. Social skills (team work and communication)
 - 5.2 Organize and plan individual and team work in international and interdisciplinary work groups
 - 5.3 To effectively present work results both orally and in writing to stakeholders in the military environment

Military Leadership and Management

- 1 Basic competences of the military profession
 - 1.1 To communicate, organize and plan effectively the activities of a basic tactical unit
 - 1.2 To assess the situation and implement appropriate tactics for a basic tactical unit
 - 1.3 To make decisions independently and command a basic tactical unit
 - 1.4 To train, develop and assess the abilities of soldiers and a basic tactical unit
 - 1.5 To develop personal and collective determination, courage, enthusiasm and initiative of subordinates
 - 1.6 To nourish, channel and use creativity in accomplishing missions of a basic tactical unit
- 2 Special military competences
 - 2.1 To analyse the environment and to develop and apply tactics of the branch/service
 - 2.3 To use combat and non-combat assets of the branch/service in a professional way
- 3 Basic competences in social and humanistic sciences

- 3.4 To manage processes in the military environment using modern technologies
- 4. Personal and professional skills and characteristics
 - 4.1 To identify and analyze a problem in the military environment
 - 4.3 To assume military, professional and ethical responsibility
- 5. Social skills (team work and communication)
 - 5.2 Organize and plan individual and team work in international and interdisciplinary work groups
 - 5.3 To effectively present work results both orally and in writing to stakeholders in the military environment

Screening of student's work

- 1 ECTS Lectures attendance
- 1 ECTS Midterm exam
- 1 ECTS Written exam
- 1 ECTS Oral exam
- 1 ECTS Practical work
- 5 ECTS

Forms of Teaching

- » Lectures
 - » Lectures will be conducted through presentations and active interaction between lecturers and students.
- » Exercises
 - » Exercises will be geared toward practical application of knowledge and skills on concrete, real scenarios and examples. The exercises will be conducted in groups of 20-25 participants.

Week by Week Schedule

1. 1. Lectures (2 hours): Introduction – Military leadership class introduction, introduction to professors and teachers; introduction to class dynamics and content, conditions, and student requirements along with grading system and evaluations.
2. 2 Lectures (2 hours): Introduction to leadership
 - general understanding of leadership, leadership traits, what leaders do, mistakes and crucibles of leadership, developing personal leadership skills

Exercise (1 hour) - Case study - the analysis of leadership experiences of a commander (platoon/company)
3. 3. Lectures (2 hours): Basic approaches to leadership, the military and leadership; the principles of leadership; leadership vs. management in the military

Exercise (1 hour) Case study - compare the principles of leadership with their application in real-world situations
4. 4. Lectures (3 hours): Leadership as a command component
 - command components; levels of leadership in a military organization; organisational structure; delegating; leadership function; leadership vs. command

Exercise (1 hour) Case study - platoon structure and the process of delegation

5. 5. Lectures (3 hours): Mission command and leadership
- from Auftragstaktik to Mission Command; understanding the principles of Mission Command; leadership as the key element of combat power

Exercise (1 hour) - Case study - Mission Command in a platoon/company level unit

6. 6. Lectures (3 hours): Power and influencing
- sources and types of power; influencing; techniques of influencing; power vs. leadership; emotional intelligence; general leadership styles

Exercise (1 hour) - Case study - identify types of power and influencing techniques in real life situations from the CAF and international missions

7. 7. Lectures (3 hours): Ethical leadership: ethical thinking and virtues, ethical decision making criteria; negative leadership - toxic leadership; examples of negative leadership; consequences of negative leadership.

Exercise (1 hour): Situations in which a commander must be able to define good and bad behavior; counseling and evaluation report; disciplinary and damages accountability - disciplinary sanctions and procedures.

8. 8 Lectures (3 hours): Organisational culture and leadership
- notion and definition of organisational culture, levels of organisational culture, symbols of organisational culture; org. culture and leadership

Exercise (1 hour) - analysis of the examples of good and bad practice

9. 9. Lectures (3 hours): Groups – introduction to groups inside an organization and dynamics of processes within the group, terminology and types of groups, reasons for group development, group development phases and roles inside the group.

Exercise (1 hour): Working in groups - conduct counseling

10. 10. Lectures (3 hours): Teams and team approach in organization leadership; team definition, team development phases, leader activities, characteristics of a good military team, team dysfunctions.

Exercise (1 hour): Military team development - team development process assessment and creating conditions for effective team development.

11. 11. Lectures (3 hours): Subordinate's motivation: defining, motivation theories, importance of subordinate's motivation in organization.

Exercise (1 hour): Motivation techniques and providing purpose, direction and motivation.

12. 12. Lectures (3 hours): Conflict management – introduction to reasons, dynamics and conflict management in organization (conflict reasons and consequences in organization, types of conflicts, conflict process and conflict management).

Exercise (1 hour): Situation assessment, problem solving techniques in an organization, demonstration of conflict prevention and control; prevention and reporting of extraordinary events.

13. 13. Lectures (3 hours): Situational leadership – situational models; application of situational models in military organization; contemporary trends.

Exercise (1 hour): Situation analysis and application of situational models in troop leading.

14. 14. Lectures (3 hours): Core military values and commander/leader characteristics: what commander/leader must "be – know – do"; core military values; commander characteristics (mental, physical and emotional); basic commanding skills (interpersonal, technical, tactical and conceptual).

Exercise (1 hour): Identify values and characteristics of military leader's during the Domestic war.

15. Lectures: Final exam (3)
Seminar: Preliminary exam

Visit to a military unit in Zagreb and guest speaker

Literature



Sikavica, Pere, Fikreta Bahtijarević-Šiber (Prof. Dr.), Nina Pološki Vokić (Prof. Dr.) (2008). *Suvremeni menadžment - vještine, sustavi i izazovi, (određena poglavlja)*, Školska knjiga



Marijan Kostanjevac (2008). *Menadžment u vojnoj organizaciji, (određena poglavlja)*, Hrvatsko vojno učilište, Zagreb



P.G. Northouse: (2010). *Vodstvo - teorija i praksa, 5izdanje (određena poglavlja)*, Mate, Zagreb

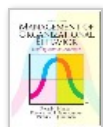


Edgar H. Schein (2010). *Organizational Culture and Leadership, 4th Edition (određena poglavlja)*, The Jossey-Bass Business & Management Series



NATO pravila: AJP-01(d), *Allied Joint Doctrine, ATP-3.2.2. Command and Control; AJP 3.2.; AJP-5; AJP 3(B) (određena poglavlja)*, NATO

Additional Literature



Paul Hersey and Kenneth H. Blanchard (2012). *Management of Organizational Behavior, 10th Edition (određena poglavlja)*, Pearson



Robert N. Lussier and Christopher F. Achua (2015). *Leadership: (neka poglavlja)*, Cengage Learning; 6 edition

Similar Courses

- » PL300 Military Leadership, West Point

Military Management

141688

Lecturer



doc. dr. sc.
Stjepan Domjančić

Course Description

This course focuses on the activities of management necessary to organisational leaders for the efficient management of organization resources. The students will learn how the functions of management, planning and achieving goals, time and stress management, group decision making, problem solving and leadership challenges are applied to the process of commanding. Through the illustration and analysis of theoretical principles by relevant case studies from the civilian and military environment of a manager/commander will enable the students to develop critical skills for the efficient command of a tactical level unit.

The ability to analyze the situation, organizes resources (people, time, materiel, financial), makes decision and oversees execution through control systems and processes as well as the ability to maintain organisational activities is vital for the commander's influence on the physical component of combat power.

Study Programmes

- » Armour -> Group of Courses Armour, Field Artillery, Engineers, Technical Support and Infantry (Course) (*required course, 5th semester, 3rd year*) (Note: course not offered in this academic year.)
- » Field Artillery -> Group of Courses Armour, Field Artillery, Engineers, Technical Support and Infantry (Course) (*required course, 5th semester, 3rd year*)
- » Engineers -> Group of Courses Armour, Field Artillery, Engineers, Technical Support and Infantry (Course) (*required course, 5th semester, 3rd year*) (Note: course not offered in this academic year.)
- » Technical Support -> Group of Courses Armour, Field Artillery, Engineers, Technical Support and Infantry (Course) (*required course, 5th semester, 3rd year*)
- » Infantry -> Group of Courses Armour, Field Artillery, Engineers, Technical Support and Infantry (Course) (*required course, 5th semester, 3rd year*) (Note: course not offered in this academic year.)
- » Signals -> Group of Courses Signals, Monitoring and Guidance and Air Defence (Course) (*required course, 5th semester, 3rd year*)
- » Monitoring and Guidance -> Group of Courses Signals, Monitoring and Guidance and Air Defence (Course) (*required course, 5th semester, 3rd year*) (Note: course not offered in this academic year.)
- » Air Defence -> Group of Courses Signals, Monitoring and Guidance and Air Defence (Course) (*required course, 5th semester, 3rd year*) (Note: course not offered in this academic year.)
- » Chemical, Biological, Radiological and Nuclear Defence -> Military Engineering (Course) (*required course, 5th semester, 3rd year*) (Note: course not offered in this academic year.)

ECTS Credits	5.0
English Level	Lo
E-learning Level	L1
Study Hours	
Lectures	45
Seminar	15

Associate Lecturers

mr. sc. Slobodan Čurčija, pred.
mr. sc. Katija Kovačić
mr. sc. Vesna Trut, v. pred.

Grading

Grading: Practical work is evaluated during entire semester. From the preliminary exam is necessary to achieve 50% of the points as a prerequisite for the written final exam. Overall evaluation is formed as the sum of points from the successfully pass the practical work, preliminary exam and a written final exam. It is necessary to get at least 50% of the points from the sum of scores successfully pass the practical work, preliminary exam and written final exam. Table linking the evaluation of the total number of points is formed at the beginning of the academic year: $100 - 87.5\% = 5$ (A), $87.5\% - 75\% = 4$ (B), $75\% - 62.5\% = 3$ (C), $62.5\% - 50\% = 2$ (D), 49% and lower = 1 (F). Obligations: Students are required to attend lectures and exercises, and carry out practical work in accordance with the instructions.

» Military Leadership and Management (Study) (*required course, 5th semester, 3rd year*)

Learning Outcomes

On successful completion of the course, students will be able to:

1. Recognize the hierarchy of the organizational chain of command and explain the connection between authority and responsibility
2. Illustrate the importance of organisational structure and creating of organisational units
3. Analyze the principles of Mission Command philosophy
4. Illustrate the activities of management in the process of commanding
5. Explain and describe the importance of decision making for managers/commanders as well as the techniques that facilitate decision making
6. Explain meaningful goal and priority identification, time, resources and people management
7. Explain how to set up working groups based on mission requirements, available resources and abilities of the group.
8. Analyze the role of cohesion, communication and motivation in a team or a group.
9. Explain the relationship between goal setting and feedback and apply this in establishing of a control system.
10. Explain the relationship between command, leadership and management for the efficient management of a military organisation.

Study Programme Learning Outcomes

Military Engineering

- 1 Basic competences of the military profession
 - 1.1 To communicate, organize and plan effectively the activities of a basic tactical unit
 - 1.2 To assess the situation and implement appropriate tactics for a basic tactical unit
 - 1.3 To make decisions independently and command a basic tactical unit
 - 1.4 To train, develop and assess the abilities of soldiers and a basic tactical unit
 - 1.5 To develop personal and collective determination, courage, enthusiasm and initiative of subordinates
 - 1.6 To nourish, channel and use creativity in accomplishing missions of a basic tactical unit
 - 1.7 To be acquainted with and to respect historical, social and cultural diversities in the context of military activities
- 2 Special military competences
 - 2.1 To analyse the environment and to develop and apply tactics of the branch/service
 - 2.3 To use combat and non-combat assets of the branch/service in a professional way
5. Social skills (team work and communication)
 - 5.1 To communicate effectively in the Croatian and English language applying modern presentation skills and techniques
 - 5.2 Organize and plan individual and team work in international and interdisciplinary work groups
 - 5.3 To effectively present work results both orally and in writing to stakeholders in the military environment

Military Leadership and Management

- 1 Basic competences of the military profession

- 1.1 To communicate, organize and plan effectively the activities of a basic tactical unit
- 1.2 To assess the situation and implement appropriate tactics for a basic tactical unit
- 1.3 To make decisions independently and command a basic tactical unit
- 1.7 To be acquainted with and to respect historical, social and cultural diversities in the context of military activities
- 2 Special military competences
 - 2.1 To analyse the environment and to develop and apply tactics of the branch/service
- 3 Basic competences in social and humanistic sciences
 - 3.1 To analyze and interpret processes in international environment, and to act within international alliances and organizations in which the Republic of Croatia participates
 - 3.2 To comprehend civil-military relations and to act in accordance with democratic standards
 - 3.6 To apply knowledge of the military history in resolving tactical and operational problems
 - 3.8 To apply results of intelligence and counter-intelligence activities in leadership and management of military units
- 4. Personal and professional skills and characteristics
 - 4.1 To identify and analyze a problem in the military environment
 - 4.3 To assume military, professional and ethical responsibility
- 5. Social skills (team work and communication)
 - 5.2 Organize and plan individual and team work in international and interdisciplinary work groups
 - 5.3 To effectively present work results both orally and in writing to stakeholders in the military environment

Screening of student's work

- 1 ECTS Lectures attendance
- 1 ECTS Midterm exam
- 1 ECTS Written exam
- 1 ECTS Oral exam
- 1 ECTS Practical work
- 5 ECTS

Forms of Teaching

- » Lectures
 - » Lectures will be conducted through presentations and active interaction between lecturers and students.
- » Seminars and workshops
 - » The Seminars will be geared toward practical application of knowledge and skills on concrete, real scenarios and examples. They will be conducted in groups up to 25 students.

Week by Week Schedule

- I. 1. Lectures (2 hours): Introduction – Military Management class introduction, introduction to professors and teachers; introduction to class dynamics and content, conditions, and student requirements along with grading system and evaluations.

2. 2. Lectures (2 hours): Understanding management in military organisation:
 - the connection between the functions of management and execution in the civilian and military organization; legal base for commanding (the Constitution, the Defense Law, the Law of Service); the base for management and command in the Armed Forces of the RC (the JD-1).

Exercise (1 hour): Examining the function of management and execution in the civilian and military organisation.

3. 3 Lectures (4 hours): The purpose of setting up and creating and organisation
 - the purpose and the importance of organisations; classic and modern principles of organizing; organisation as a system; the evolution of organisational development (civilian and military) from industrial to information age; elements of structure and organisational designs; shareholders and their expectations

Exercise (1 hour): Organisational structure of a military organisation (discussion).

4. 4. Lectures (3 hours): the principles of setting up a military organisation
 - organisational principles (the unity of command, clear chain of command, scope of control, delegating and decision making, the separation of staff and command function); the classical military force structure; command positions (the roles of commander and staff); task organizing; the continuity of command and control

Exercise (1 hour): Case study: setting up a task organisation (company level).

5. 5. Lectures (3 hours) Commanding a military organisation
 - authority and responsibility; principles of Mission Command; the art of command and control requirements; the command and control system

Exercise (1 hour): Case study: application of mission command philosophy on a platoon size unit.

6. 6. Lectures (4 hours) The knowledge and skills of a manager and a commander
 - comparison of a manager and a commander in their organisations; who are managers, where do they work; managerial functions, roles and skills; the principles of efficiency and efficacy.

Exercise (1 hour) AAR manager/commander applying the principle of efficiency and efficacy.

7. 7. Lectures (3 hours) the military view of management - past and present
 - the overview of basic theoretical approaches - what does management teach us; the development of military management; the change of paradigm; " the learning organisation"; universality of management.

Exercise (1 hour) Case study: an example of a military learning organisation (platoon size unit).

8. 8. Lectures (3 hours) Planning for mission accomplishment
 - what is planning, the goal setting and plan development; the hierarchy of goals in an organisation, planning tools and techniques

Exercise (1 hour) (Management by Objectives)

9. 9. Lectures (3 hours) Decision making as the essence of a managers' job
 - the functions of management and decision making; styles of decision making, the role of intuition; MDMP; ethical decision making in civilian and military context.

Exercise (1 hour) - MDMP

10. 10. Lectures (4 hours) The function of leadership in managing of a military organisation
 - individual and group behavior; team work (team building, types of teams, traits of successful teams); team management

Exercise (1 hour) Case study: team/group management

11. Lectures (3 hours): Managing organisational change
 - cause of organisational change (structure, technology, people);
 Commander/manager and change management; self-management, innovation and stress, time management

Exercise (1 hour) Case study: "I don't have enough time"

12. 12. Lectures (2 hours) Communication process in a military organisation
 - Communication process; obstacles in communication process; organisational communicating, communicating and IT, developing communication skills.

Exercise (1 hour) Case study: a case of poor communication

13. 13. Lectures (3 hours) Efficient management depends on leadership and trust
 - relationship of the types of power and the method of commander's influence in a unit (platoon size), leadership theory; situational leadership models in commanding; modern approaches to developing leadership

Exercise (1 hour) Case study: cases from the Homeland war and international missions

14. 14. Lectures (2 hours) Control - a function in managing a military organisation
 - what is control; importance of control for the commander; how it is conducted (aims and standards, efficiency of current measures, results vs. aims and standards, correction of activities for reaching the standards); control tools and techniques.

Exercise (1 hour) Case study: AAR, standards and SOPs (section, platoon)

15. 15. Lectures (2 hours) Interdependence of leadership, management and command
 - commander's role as a leader and a manager; the importance of developing managerial and leadership skill in a commander

Exercise (1 hour) - Analysis of the activities in command, leadership and management

Literature



Sikavica, Pere, Fikreta Bahtijarević-Šiber (Prof. Dr.), Nina Pološki Vokić (Prof. Dr.) (2008). *Temelji menadžmenta (određena poglavlja)*, Školska knjiga



Andrew J. DuBrin (2017). *Essentials of Management, 10e (određena poglavlja)*, Wessex Press, Inc.; 10th edition (June 1, 2016)



Marijan Kostanjevac (2008). *Menadžment u vojnoj organizaciji (određena poglavlja)*, Hrvatsko vojno učilište



John R. Schermerhorn, Jr. (2015). *Introduction to Management, 13th International student edition, 2015. (određena poglavlja)*, Wiley



NATO pravila: AJP-01(d), *Allied Joint Doctrine, ATP-3.2.2. Command and Control; AJP 3.2.; AJP-5; AJP 3(B) (određena poglavlja)*, NATO

Similar Courses

- » MG381 Introduction to Management, West Point

Military Pedagogy

129356

Lecturer



doc. dr. sc.
Ivan Markić

Course Description

The aim of the subject is that students acquire critically, understand and evaluate: the notion of (military) pedagogy, its subject, the methodology and research, theory curriculum of military education, andragogy theories and areas of educational standards of military pedagogy, didactic and methodical systems of education and lifelong learning in military training.

Study Programmes

- » Group of Courses Armour, Field Artillery, Engineers, Technical Support and Infantry -> Military Engineering (Course) (*required course, 4th semester, 2nd year*)
- » Group of Courses Signals, Monitoring and Guidance and Air Defence -> Military Engineering (Course) (*required course, 4th semester, 2nd year*)
- » Chemical, Biological, Radiological and Nuclear Defence -> Military Engineering (Course) (*required course, 4th semester, 2nd year*) (**Note: course not offered in this academic year.**)
- » Military Leadership and Management (Study) (*required course, 2nd semester, 1st year*)

Learning Outcomes

On successful completion of the course, students will be able to:

1. - identify pedagogy as a science and its relationship to other disciplines
2. - critically reflect on the curriculum of military education
3. - define and present objectives and learning outcomes
4. - define and explain the basic concepts of adult education
5. - define specific educational work in military education
6. - explain didactic models, educational systems, teaching methods and forms of work
7. - explain the phenomenon of lifelong learning in military education
8. - to enable students for the practical pedagogical, didactic and methodical action

Study Programme Learning Outcomes

Military Engineering

- 1 Basic competences of the military profession
 - 1.1 To communicate, organize and plan effectively the activities of a basic tactical unit
 - 1.3 To make decisions independently and command a basic tactical unit
 - 1.4 To train, develop and assess the abilities of soldiers and a basic tactical unit
4. Personal and professional skills and characteristics

ECTS Credits	5.0
English Level	Lo
E-learning Level	L3
Study Hours	
Lectures	30
Seminar	15
Exercises	15

Associate Lecturer

dr. sc. Andrija Kozina, pred.

Grading

Grading: The final score is the sum of the percentage achieved during the classes and the percentage of the final, and the makeup exam. - The evaluation is done on the basis of absolute distribution of the final achievement (% of total score). Students who have achieved during the course: 5 (excellent) - 90 to 100% score, -A 4 (very good) - 75 to 89.9% score, -B 3 (good) - 60 to 74.9% score, -C 2 (sufficient) D - 50 to 59.9% score -D 1 (unsatisfactory) - 0 to 49.9% score -E. Obligations: With his/her attendance and active participation in all forms of education, a student achieves 2.0 ECTS points. The student is allowed to be absent 30% of the scheduled hours (absence from the course is not an excuse for not performing the current tasks). A student who has been absent from more than 30% of classes and the student who does not fulfil all the tasks foreseen in the curriculum of the course is not entitled to take an exam. The students are expected to work and behave in such a way to contribute to the creation of working environment, positive and pleasant atmosphere. The student is required to comply with standards of Code of Ethics of the University of Zagreb and the Code of Ethics for students.

- 4.3 To assume military, professional and ethical responsibility
- 4.4 To develop self-study abilities and the need for and methods of life-long learning in traditional and virtual environment
- 5. Social skills (team work and communication)
 - 5.2 Organize and plan individual and team work in international and interdisciplinary work groups
 - 5.3 To effectively present work results both orally and in writing to stakeholders in the military environment

Military Leadership and Management

- 1 Basic competences of the military profession
 - 1.1 To communicate, organize and plan effectively the activities of a basic tactical unit
 - 1.3 To make decisions independently and command a basic tactical unit
 - 1.4 To train, develop and assess the abilities of soldiers and a basic tactical unit
- 3 Basic competences in social and humanistic sciences
 - 3.2 To comprehend civil-military relations and to act in accordance with democratic standards
- 4. Personal and professional skills and characteristics
 - 4.3 To assume military, professional and ethical responsibility
 - 4.4 To develop self-study abilities and the need for and methods of life-long learning in traditional and virtual environment
- 5. Social skills (team work and communication)
 - 5.2 Organize and plan individual and team work in international and interdisciplinary work groups
 - 5.3 To effectively present work results both orally and in writing to stakeholders in the military environment

Screening of student's work

- 2 ECTS Lectures attendance
- 2 ECTS Written exam
- 0.5 ECTS Seminar report
- 0.5 ECTS Oral exam
- 5 ECTS

Forms of Teaching

- » Lectures
- » Seminars and workshops
- » Field work
- » Independent assignments

Week by Week Schedule

- 1. Lectures: Theoretical and methodological foundation of pedagogy, her subject and area of research.
Seminar: Military pedagogy- research subject
- 2. Lectures: Theoretical and methodological foundation of pedagogy, her subject and area of research.
Seminar: Challenges of military education
- 3. Lectures: Curriculum military education, structural characteristics, competence outcomes
Seminar: Demonstration classes and critical-methodological participation in class

4. Lectures: Curriculum military education, structural characteristics, competence outcomes
Seminar: Learning styles (visual, reading, auditory, kinesthetic)
5. Lectures: Theory and practice of adult education
Seminar: Contemporary methods of teaching NCOs and officers
6. Lectures: Theory and practice of adult education
Seminar: Definition of military educational standards
7. Lectures: Educational standards of military pedagogy
Seminar: The modern educational systems
8. Lectures: Educational standards of military pedagogy
Seminar: Evaluation of military teaching
9. Lectures: Didactic models and strategies, educational systems, teaching methods, forms, procedures, principles of teaching
Seminar: Analyzing practical military training
10. Lectures: Didactic models and strategies, educational systems, teaching methods, forms, procedures principles of teaching
Seminar: Specifics of military planning teaching
11. Lectures: Planning, organization, implementation and evaluation of military teaching
Seminar: Evaluation of teaching activities
12. Lectures: Planning, organization, implementation and evaluation of military teaching
Seminar: Organization of adult education in the military environment
13. Lectures: Methodical specials (specificity) in working with military students.
Seminar: Approach to solving problems
14. Lectures: Lifelong learning in military training
Seminar: Military organizations and lifelong learning
15. Lectures: The future of military pedagogy
Seminar: The development of military pedagogy

Literature



Gudjons H., (1994),
Pedagogija, temeljna znanja.
Zagreb: Educa.



Kvernbekk, T. Simpson, H.
Peters M. A. (ur.) (2008.)
Military Pedagogies and Why They Matter. Sense publisher, Rotterdam (odabrana poglavlja)



Previšić, V. (ur.) (2007).
KURIKULUM: teorije - metodologija - sadržaj - struktura (odabrana poglavlja), Školska knjiga, Zagreb



Vukasović, A. (ur.) (1996.)
DOMOVINSKI ODGOJ
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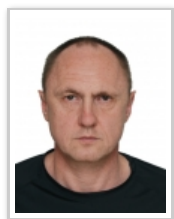


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Prilozi vojnoj pedagogiji,
MORH, Hrvatsko vojno učilište "Dr. Franjo Tuđman"

Military Psychology

129359

Lecturer



prof. dr. sc.
Denis Bratko

Course Description

Students will gain basic knowledge in the field of general and military psychology that they will be able to use in recognizing and understanding behaviour and experiences of individuals and groups in the military environment. Students will gain the most important psychological comprehension and skills useful for effective forecasting and effective professional functioning within the military.

Study Programmes

- » Group of Courses Armour, Field Artillery, Engineers, Technical Support and Infantry -> Military Engineering (Course) (*required course, 4th semester, 2nd year*)
- » Group of Courses Signals, Monitoring and Guidance and Air Defence -> Military Engineering (Course) (*required course, 4th semester, 2nd year*)
- » Chemical, Biological, Radiological and Nuclear Defence -> Military Engineering (Course) (*required course, 4th semester, 2nd year*) (**Note: course not offered in this academic year.**)
- » Military Leadership and Management (Study) (*required course, 4th semester, 2nd year*)

Learning Outcomes

On successful completion of the course, students will be able to:

1. Integrate knowledge in the field of general and military psychology in professional work
2. Analyze experiences and behaviour of individuals and groups in the military environment
3. Recognize ineffective behaviour and encourage effective forms of behaviour
4. Identify risky individuals and groups while conducting military tasks
5. Develop a system of psychological prevention and support in units
6. Identify the effects of professional stress on the personal and group (unit) level
7. Develop and maintain individual and unit psychological combat readiness
8. Integrate knowledge about unity, combat readiness, teamwork and cooperation
9. Understand, develop and maintain cooperation with unit psychologists

Study Programme Learning Outcomes

Military Engineering

- 1 Basic competences of the military profession
 - 1.1 To communicate, organize and plan effectively the activities of a basic tactical unit

ECTS Credits	4.0
English Level	Lo
E-learning Level	L1
Study Hours	
Lectures	30
Exercises	15

Associate Lecturer

doc. dr. sc. Tena Vukasović
Hlupić

Teaching Assistants

Suzana Filjak, pred.
Stanka Limov, prof.
mr. sc. Vesna Trut, v. pred.

Grading

Grading: The final grade is a result of student's activities during classes and exercises, achieved success at two mid-term exams and the final written and oral exam. Obligations: Students may be absent for a maximum of 30% of the foreseen fund of lecture hours. Absence from lectures does not justify non-completion of class obligations. A student that is absent for more than the allowed number of lecture hours, as well as a student that does not fulfill agreed upon obligations, will not gain a signature and be able to take the exam. Students are expected to contribute to creating a positive environment in classes through their work and behavior. Students are required to respect norms within the University Of Zagreb Code Of Ethics and the Code of Ethics for students.

- 1.2 To assess the situation and implement appropriate tactics for a basic tactical unit
- 1.4 To train, develop and assess the abilities of soldiers and a basic tactical unit
- 1.5 To develop personal and collective determination, courage, enthusiasm and initiative of subordinates
- 4. Personal and professional skills and characteristics
 - 4.1 To identify and analyze a problem in the military environment
 - 4.2 To model and resolve a problem and to interpret problem solution by using appropriate knowledge and methods
 - 4.3 To assume military, professional and ethical responsibility
- 5. Social skills (team work and communication)
 - 5.2 Organize and plan individual and team work in international and interdisciplinary work groups

Military Leadership and Management

- 1 Basic competences of the military profession
 - 1.1 To communicate, organize and plan effectively the activities of a basic tactical unit
 - 1.2 To assess the situation and implement appropriate tactics for a basic tactical unit
 - 1.4 To train, develop and assess the abilities of soldiers and a basic tactical unit
 - 1.5 To develop personal and collective determination, courage, enthusiasm and initiative of subordinates
- 3 Basic competences in social and humanistic sciences
 - 3.1 To analyze and interpret processes in international environment, and to act within international alliances and organizations in which the Republic of Croatia participates
 - 3.7 To apply knowledge of military psychology and sociology in leadership and command in predictable and unpredictable situations
- 4. Personal and professional skills and characteristics
 - 4.1 To identify and analyze a problem in the military environment
 - 4.2 To model and resolve a problem and to interpret problem solution by using appropriate knowledge and methods
 - 4.3 To assume military, professional and ethical responsibility
- 5. Social skills (team work and communication)
 - 5.2 Organize and plan individual and team work in international and interdisciplinary work groups

Screening of student's work

- 0.5 ECTS Lectures attendance
- 2 ECTS Midterm exam
- 1.5 ECTS Written exam

- 4 ECTS

Forms of Teaching

- » Lectures
 - » Ex cathedra lectures on a specific topic for a particular week.
- » Exercises
 - » Different types of exercises will be included in order to complement the theoretical topic covered in that week's lecture, but in a more practical manner.

Week by Week Schedule

1. Lectures: Introduction to military psychology, subject and fields of learning, tasks of the psychological profession in the military
Exercises: Introduction to military psychology
2. Lectures: Psychological selection and classification in the military
Exercises: Psychological selection and classification in the military
3. Lectures: Psychological characteristics of soldier personality, desired psychological characteristics and possibilities for action
Exercises: Psychological characteristics of soldier personality
4. Lectures: Psychological characteristics of command behaviour and building military units
Exercises: Psychological characteristics of command behavior
5. Lectures: Motivational activities in the military, theoretic interpretation and principles of motivational activity
Exercises: Motivational activities in the military
6. Lectures: Adapted and non-adapted behaviour in the military, role of the commander and psychological profession
Exercises: Adapted and non-adapted behaviour in the military
7. Lectures: Psychological combat readiness, factors of readiness, individual and unit psychological combat readiness
Exercises: Psychological combat readiness
8. Lectures: Attention and perception in the military, practical application of comprehension in military tasks
Exercises: Attention and perception in the military
9. Lectures: The effects of fatigue on military effectiveness
Exercises: The effects of fatigue on military effectiveness
10. Lectures: Emotions and military effectiveness
Exercises: Emotions and military effectiveness
11. Lectures: The appearance of stress, theoretical interpretations, sources and consequences, combat stress and its prevention
Exercises: Stress in military
12. Lectures: Psychological characteristics of international military operations, goals, conditions and manners of activity
Exercises: Psychological characteristics of international military operations
13. Lectures: Psychological characteristics of international military operations, consequences of participation in international military operations for units, individuals and families
Exercises: Consequences of deployment for units, individuals and families
14. Lectures: Psychological crisis interventions in the military
Exercises: Psychological crisis interventions in the military
15. Lectures: Psychological preparation of soldiers, goals and contents of preparations, roles of the commander and military psychologist
Exercises: Psychological preparation of soldiers

Literature



Pavlina, Ž. i Komar, Z. (ur.) (2000). *Vojna psihologija - priručnik za hrvatske časnike, Knjiga prva*, MORH



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(2015). *Individualna psihička
spremnost vojnika*, MORH

Additional Literature



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University Press, Inc.



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nepsihologe*, Naklada Slap



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*Psihološki vodič za
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Uprava za ljudske resurse

Similar Courses

- » General Psychology, The Citadel
- » Theories of Personality, The Citadel
- » Social Psychology, The Citadel

Military Sociology and Sociology of War

129979

Lecturers



prof. dr. sc.
Ozren Žunec



prof. dr. sc.
Mirko Bilandžić

Course Description

The aim of the course is to familiarise the students with the military as a social group, its specific social and cultural characteristics and its social role as well as to train them to comprehend and think critically about the social nature and the transformation of armed conflicts.

Study Programmes

» Military Leadership and Management (Study) (*required course, 5th semester, 3rd year*)

Learning Outcomes

On successful completion of the course, students will be able to:

1. To understand the military as a state and social institution and its influence on the society and individuals, to be aware of and to be able to compare its specific qualities.
2. To synthesise sociological concepts and theories in military sociology
3. To comprehend, analyse and organise the dynamics of small and medium social groups
4. To comprehend and analyse concepts, institutions and processes of civil-military relations
5. To identify the causes of making wrong decisions
6. To analyse and apply sociological perspective, theories and methods on the contemporary problems of the military and warfare
7. To comprehend and analyse war as a social phenomenon and to apply that knowledge when choosing a doctrine
8. To be familiar with and to apply the principles of good leadership
9. To comprehend, analyse and evaluate sociological research of the military and war and to apply it in leadership and management
10. To comprehend, analyse and predict the modus operandi of the armed forces in the multicultural environment

Study Programme Learning Outcomes

Military Leadership and Management

- 1 Basic competences of the military profession
 - 1.7 To be acquainted with and to respect historical, social and cultural diversities in the context of military activities
- 3 Basic competences in social and humanistic sciences
 - 3.2 To comprehend civil-military relations and to act in accordance with

ECTS Credits 4.0

English Level L0

E-learning Level L1

Study Hours

Lectures 30

Seminar 15

Teaching Assistant

Andrija Platužić, pred.

Grading

Grading: Students are eligible to take the exam if they fulfill attendance requirements, if they actively participate in seminar discussions and submit a satisfactory seminar paper. Seminar paper will be graded 1-5. Performance in the exam will be graded 1-5. Obligations: Students should be present at 75% of lectures and seminars, should submit a seminar paper and take an oral exam.



democratic standards

3.7 To apply knowledge of military psychology and sociology in leadership and command in predictable and unpredictable situations

4. Personal and professional skills and characteristics

4.3 To assume military, professional and ethical responsibility

Forms of Teaching

- » Lectures
- » Seminars and workshops
- » Work with mentor

Week by Week Schedule

1. Lectures: Military and war as sociological topics - a short review of the beginning and the development of the scientific discipline.
Exercises: Classics of the social history of war: Herodotus, Thucydides (selected texts)
2. Lectures: Military as an institution and a profession (institutional and professional model of the military). Institutional characteristics of the military: patriotism, loyalty to the nation and the state, lifelong commitment, historical traditions, features of a total institution.
Exercises: Social theories of war and military doctrines: Scharnhorst, Clausewitz (selected texts)
3. Lectures: Typical and distinctive features of the military profession: expert knowledge and skills in employing violence, lifelong learning, advancement through the whole or the major parts of the organisation and frequent changes of posts within the organisation, profession autonomy and self-regulation (awards, penalties, controlled personnel recruitment and advancement) under continuous civilian sector supervision, obligation to serve the nation in the most difficult conditions with no right to compensation, a special value system to maintain professionalism and obligations towards society, commitment to the profession and the organisation at all times and in all relations, restrictions of family life.
Exercises: Classics of sociology and theories of state as a violence monopolist: Max Weber (selected texts)
4. Lectures: Entry in the institution, personnel selection, education and training, institutional assimilation and its phases, patterns of service and promotion, codex of behaviour, military etiquette and rituals, political activity of the military personnel, return to civilian life. Composition of the armed forces being socially representative of the general population, the position of the minorities within the military (national, sexual and other minorities).
Exercises: Samuel Huntington, civil-military relations (selected texts)
5. Lectures: Women and gender policy in the armed forces. Military families. Military as a social institution (absorbing surplus labour from the labour market, benefits).
Exercises: Samuel Huntington, military professionalism (selected texts)
6. Lectures: Modern and post-modern military, social changes and their impact on the military.
Exercises: Morris Janowitz, technology development and military profession dynamics (selected texts)
7. Lectures: Sociology of combat. Cohesion, motivation, esprit de corps, leadership.
Exercises: Charles Moskos and modern and post-modern militaries (selected texts)

8. Lectures: Civil-military relations. History of the relationship between the military and the political community, civilian supervision of the armed forces (institutions and procedures), fluctuations in staffing by using the obligatory and volunteer recruitment, implications of massive armies on changes of social relations, nations and militaries, autonomy and integration of the military institution into the society (military education system, military health system, housing, retirement pensions.)
Exercises: Michael Mann, Martin Shaw and power issues (selected texts)
9. Lectures: Civil-military relations (continuation)
Exercises: Origins of human aggressiveness and violence (selected texts)
10. Lectures: Human aggressiveness. Theories of social violence and value systems.
Exercises: Mary Kaldor, Martin van Creveld and warfare transformations (selected texts)
11. Lectures: Conceptualisation of war as a social phenomenon. Doctrines of deciding upon starting a war and the issues of when and why societies wage war. Organisation and mobilisation of the society for war and in war.
Exercises: Siniša Malešević and the new sociology of war and violence (selected texts)
12. Lectures: Impact of war on the society, societal and social consequences of war.
Exercises: International operations and multicultural context of military operations (selected texts)
13. Lectures: New wars: identity and civil wars, low intensity conflict, peacekeeping and humanitarian military operations in multicultural environment, asymmetric conflicts and counter-terrorism and their social correlates responsible for war.
Exercises: International operations and multicultural context of military operations (discussion with stakeholders)
14. Lectures: Policing tasks of the military and problems of the legitimacy of the use of armed forces in non-international armed conflicts and riots.
Exercises: Analysis of a model sociological research
15. Lectures: Ideology, enemy image, media coverage of the war and its spectacularisation.
Exercises: Presentations of selected seminar papers

Literature



Malešević, Siniša (2011.) Sociologija rata i nasilja. Prevela Mirjana Pač Jurinić, Zagreb: Jesenski i Turk.



Smerić, Tomislav (2005.) Sparta Usred Babilona? Sociologijski aspekti vojne profesije. Zagreb: Hrvatska sveučilišna naklada.



Žunec, Ozren (1998.) Rat i društvo. Ogledi iz sociologije vojske i rata. Predgovor: Nenad Fanuko. Zagreb: Hrvatsko sociološko društvo - Naklada Jesenski i Turk.

Mine and Explosive Ordnance

129395

Lecturer



izv. prof. dr. sc.
Mario Dobrilović

Course Description

Teach students professional and safe handling of mine and explosive ordnance. Train students to work in teams and to apply technical protection measures during the use of mines and explosive ordnance.

Study Programmes

- » Engineers -> Group of Courses Armour, Field Artillery, Engineers, Technical Support and Infantry (Course) (*required course, 6th semester, 3rd year*) (Note: course not offered in this academic year.)

Learning Outcomes

On successful completion of the course, students will be able to:

1. Explain the concept, graduation and characteristic of explosives
2. Classify, explain and safely operate with mine and explosive ordnance.
3. Identify and analyze the factors affecting on the functioning of the mine and explosive ordnance.
4. Work in teams during the use of mine and explosive ordnance.
5. Organize, lead and manage the work with the mine and explosive ordnance
6. Explain and apply the technical protection measures during the work with mine and explosive ordnance.

Study Programme Learning Outcomes

Military Engineering

1 Basic competences of the military profession

- 1.1 To communicate, organize and plan effectively the activities of a basic tactical unit
- 1.5 To develop personal and collective determination, courage, enthusiasm and initiative of subordinates
- 1.6 To nourish, channel and use creativity in accomplishing missions of a basic tactical unit

2 Special military competences

- 2.2 To manage maintenance of combat and non-combat assets, ammunitions and mines of the branch/service
- 2.3 To use combat and non-combat assets of the branch/service in a professional way

3 Basic technical knowledge

- 3.2. To apply complex methodology by integrating engineering knowledge and

ECTS Credits 3.0

English Level Lo

E-learning Level L1

Study Hours

Lectures 30

Laboratory exercises 15

Associate Lecturers

doc. dr. sc. Vječislav Bohanek

Mladen Fusić, pred.

Vladimir Horvat, pred.

Marko Šimić, pred.

doc. dr. sc. Vinko Škrlec

Grading

Grading: During the course realize 2 colloquium, and final written and oral exam. Students which pass both colloquium are exempt from the written exam. Obligations: Attendance at lectures, exercises and positive marks on colloquiums.

Prerequisites for

Practical Military Training - Engineers

- skills in military engineering practice
- 3.3. To integrate and apply engineering principles and techniques in the operation of military system in unpredictable conditions
- 4. Personal and professional skills and characteristics
 - 4.1 To identify and analyze a problem in the military environment
 - 4.2 To model and resolve a problem and to interpret problem solution by using appropriate knowledge and methods
 - 4.3 To assume military, professional and ethical responsibility
 - 4.4 To develop self-study abilities and the need for and methods of life-long learning in traditional and virtual environment
- 5. Social skills (team work and communication)
 - 5.2 Organize and plan individual and team work in international and interdisciplinary work groups
 - 5.3 To effectively present work results both orally and in writing to stakeholders in the military environment
- 6 Development, implementation and operation of technical systems in economic and social environment
 - 6.1. To analyse and evaluate the effect of engineering solutions on society and environment
 - 6.2. To apply and create engineering approaches in analysing and assessing products and processes in security environment

Forms of Teaching

- » Lectures
- » Exercises
- » Field work

Week by Week Schedule

1. Lectures: Introduction, concept, development history, classification, characteristics of explosives
Seminar: Presentation school samples of explosives, the initial system and supporting devices with a demonstration of action harmless funds.
2. Lectures: The theory of action of explosives, the general concepts and mechanics of the explosion,
Seminar: Presentation school samples of explosives, the initial system and supporting devices with a demonstration of action harmless funds
3. Lectures: The use of explosives and test methods.
Seminar: Test methods for explosives.
4. Lectures: Working with explosives in a safe manner and legislative regulations.
Seminar: Test methods for initial funds.
5. Lectures: Technical protection measures during working with mine and explosive ordnance.
Seminar: Individual performance of several test methods for explosives and initial funds.
6. Lectures: Initial systems for activation of explosive charges,
Seminar: Simulation of activation slow-burning fuse.
7. Lectures: Initial systems for activation of explosive charges,
Seminar: Simulation of activation electric blasting capsule.
8. Lectures: Initial systems for activation of explosive charges.
Seminar: Individual making and activation of slow-burning fuse.
9. Lectures: Initial systems for activation of explosive charges.
Seminar: Individually activate electric blasting capsule.
10. Lectures: Initial systems for activation of explosive charges.
Seminar: Individually activation of explosive charge with slow-burning fuse.

11. Lectures: Safety fuse for igniting explosive charges.
Seminar: Individually activation explosive charge with electric detonator capsule.
12. Lectures: Electrical and guidable networks for igniting explosive charges.
Seminar: Simulation of activation explosive charges with detonation-fuse.
13. Lectures: Safety fuse, electrical and guidable networks for igniting explosive charges.
Seminar: Simulation of activation explosive charges with electrical networks.
14. Lectures: Impacts of use of explosives, security zones,
Seminar: Activation of explosive charges with detonation-fuse.
15. Lectures: Special use of explosives.
Seminar: Activation of explosive charges with electrical networks.

Literature



Zukas, J.A.; Walters, W.P.
(1998): *Explosive Effects and Applikations*, Springer, New York, 431



Atlas Powder Company,
(1987): *Explosives and Rock Blasting*, vol. I., Atlas Powder Company,



Per-Anders Persson, Roger Holmberg, Jaimin Lee (1993).
Rock Blasting and Explosives Engineering, CRC Press



AAP-19 Nato rječnik borbene inženjerije



Vladimir Horvat, Ivan Babić
(2018). *Uputa i program vježbi s bojivim MES, MORH*

National Security and Intelligence

129998



Lecturer



prof. dr. sc.
Mirko Bilandžić

Course Description

Explain and understand: the role of intelligence (counterintelligence) in multisectoral model of national security, traditional and postmodern intelligence, relationship of politics and intelligence, the legal regulation of the intelligence system, the relationship of ethics and intelligence, intelligence ethics; analyze and understand the modalities of modern intelligence operations.

Study Programmes

» Infantry -> Military Leadership and Management (Course) (*elective course for the 7th semester mlm-infantry study, 7th semester, 4th year*)

Learning Outcomes

On successful completion of the course, students will be able to:

1. Explain the role of the intelligence community in the national security system
2. Formulate ethical issues related to intelligence activities
3. Adopt the principles of intelligence ethics
4. Understand oversight system of the intelligence community
5. Encourage and create mutual trust in the intelligence community between professional intelligence organizations and society
6. Understand intelligence processes, tactics and procedures
7. Compare traditional and postmodern intelligence
8. Understand counterintelligence processes, tactics and procedures
9. Understand the organization and operation of the intelligence system of the Republic of Croatia
10. Critically evaluate case studies

Study Programme Learning Outcomes

Military Leadership and Management

- 1 Basic competences of the military profession
 - 1.7 To be acquainted with and to respect historical, social and cultural diversities in the context of military activities
- 2 Special military competences
 - 2.1 To analyse the environment and to develop and apply tactics of the branch/service
 - 2.2 To manage maintenance of combat and non-combat assets, ammunitions and mines of the branch/service
 - 2.3 To use combat and non-combat assets of the branch/service in a

ECTS Credits 5.0

English Level Lo

E-learning Level L1

Study Hours

Lectures 30

Seminar 30

Associate Lecturer

doc. dr. sc. Danijela Lucić

Teaching Assistants

Damir Stručić, dipl.krim.

Željko Živanović, dipl.ing.k.teh.

Grading

Grading: The success of the course is the sum of points and ratings success will be carried out according to the following table: A - 90-100 points B - 80-89 points C - 61-79 points D - 51-60 points F - 50 points
Obligations: Class attendance and active participation in class (questions, comments, analysis); attending seminars, consulting seminar's literatures and active participation in the seminar classes; project proposal; final oral exam

ME

ME-M

ARM

ART

ENG

TS

IN-E

ME-E

SIG

MG

AD

CBR

MLM

IN-L

professional way

3 Basic competences in social and humanistic sciences

3.1 To analyze and interpret processes in international environment, and to act within international alliances and organizations in which the Republic of Croatia participates

3.2 To comprehend civil-military relations and to act in accordance with democratic standards

3.3 To apply International War and Humanitarian Law

3.4 To manage processes in the military environment using modern technologies

3.6 To apply knowledge of the military history in resolving tactical and operational problems

3.7 To apply knowledge of military psychology and sociology in leadership and command in predictable and unpredictable situations

3.8 To apply results of intelligence and counter-intelligence activities in leadership and management of military units

4. Personal and professional skills and characteristics

4.1 To identify and analyze a problem in the military environment

4.2 To model and resolve a problem and to interpret problem solution by using appropriate knowledge and methods

4.3 To assume military, professional and ethical responsibility

4.4 To develop self-study abilities and the need for and methods of life-long learning in traditional and virtual environment

5. Social skills (team work and communication)

5.2 Organize and plan individual and team work in international and interdisciplinary work groups

Forms of Teaching

» Lectures

» Seminars and workshops

» Independent assignments

» Multimedia and the internet

» Other

» diskusije, studije slučaja

Week by Week Schedule

1. Lectures: Introduction to the course, a description of the content and objectives of the course, the structure of the course, an introduction to the seminar, review of the literature
Exercises: Shadow people: documentary film
2. Lectures: Introduction to intelligence: intelligence systems and services/agencies
Exercises: Shadow people: documentary film
3. Lectures: The role of the intelligence community in support of national security policy
Exercises: Intelligence operations: case study (Cold War)
4. Lectures: Managing intelligence community: legal regulation
Exercises: Intelligence operations: case study (Cold War)
5. Lectures: Managing intelligence systems: functional aspects
Exercises: Intelligence operations: case study (Cold War)
6. Lectures: Ethics and intelligence
Exercises: Intelligence operations: case study (Cold War)
7. Lectures: Intelligence ethics
Exercises: Intelligence operations: case study (defectors)

8. Lectures: Traditional and postmodern intelligence
Exercises: Intelligence operations: case study (defectors)
9. Lectures: Counterterrorism and intelligence: socio-political aspects, dilemmas and consequences
Exercises: Intelligence operations: case study (defectors)
10. Lectures: Counterterrorism and intelligence: functional aspects
Exercises: Counterintelligence operations: case study (deception)
11. Lectures: Republic of Croatia: history of intelligence system
Exercises: Counterintelligence operations: case study (double-cross systems)
12. Lectures: Republic of Croatia: organization of intelligence system
Exercises: Intelligence operations: case study (traditional counterterrorism)
13. Lectures: Intelligence system of the Republic of Croatia and Euro-Atlantic integration
Exercises: Intelligence operations: case study (counterterrorism/War on Terror)
14. Lectures: Republic of Croatia: intelligence oversight
Exercises: Intelligence operations: case study (counterterrorism/War on Terror)
15. Lectures: Review of the overall teaching and preparing students (through discussion) for final oral exam
Exercises: Intelligence operations: project proposal

Literature



George, Z.R.; Kline, D.R. (2005.) (eds.), *Intelligence and the National Security Strategists: Enduring Issues and Challenges*, Lanham/New York/Oxford: Rowman Littlefield Publishers.



Herman, M. (1996.) *Intelligence: Power in Peace and War*, Cambridge: Cambridge University Press.



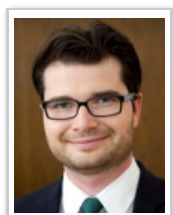
Goldman, J. (2006.) (ed.) *Ethics of Spying: A Reader for the Intelligence Professional*, Lanham/Toronto/Oxford: The Scarecrow Press.

Network System

130170



Lecturer



izv. prof. dr. sc.
Vedran Podobnik

Course Description

Familiarize students with the network systems: communication networks and systems used in different corps.

Study Programmes

- » Monitoring and Guidance -> Group of Courses Signals, Monitoring and Guidance and Air Defence (Course) (*required course, 7th semester, 4th year*) (Note: course not offered in this academic year.)
- » Air Defence -> Group of Courses Signals, Monitoring and Guidance and Air Defence (Course) (*required course, 7th semester, 4th year*) (Note: course not offered in this academic year.)

Learning Outcomes

On successful completion of the course, students will be able to:

1. Define network systems.
2. Define network systems in different corps.
3. Describe network system in different corps.
4. Reproduce knowledge about network system in different corps.
5. Reproduce fundamental knowledge about communication protocols.
6. Reproduce fundamental knowledge about routing.
7. Reproduce fundamental knowledge about electronic mail.
8. Reproduce fundamental knowledge about WWW.
9. Reproduce fundamental knowledge about network security.
10. Reproduce fundamental knowledge about military network.

Study Programme Learning Outcomes

Military Engineering

- 1 Basic competences of the military profession
 - 1.1 To communicate, organize and plan effectively the activities of a basic tactical unit
 - 1.2 To assess the situation and implement appropriate tactics for a basic tactical unit
 - 1.3 To make decisions independently and command a basic tactical unit
 - 1.8 To make geographic and topographic analysis of the area and to decide upon the tactics of a basic tactical unit
- 2 Special military competences
 - 2.5 To apply knowledge of the military history in resolving tactical and

ECTS Credits	5.0
English Level	Lo
E-learning Level	L1
Study Hours	
Lectures	30
Exercises	45

Associate Lecturers

doc. dr. sc. Jurica Babić
prof. dr. sc. Gordan Ježić

Teaching Assistants

dr. sc. Darko Možnik, doc.
Dario Pevec, mag. ing. inf. et
comm. techn.
Hrvoje Vdović, mag.ing.el.
mr. sc. Vinko Zebić, pred.

Grading

Grading: It is necessary to achieve 50% of the total number of points for the exam.
Obligations: Attendance and participation in class, learning subject matter, Homework, exams.

Prerequisites for

Practical Military Training - Air Defence
Practical Military Training - Monitoring and Guidance

operational problems

3 Basic technical knowledge

3.1. To identify, analyse, model and resolve military engineering problems by integrating basic knowledge of natural and technical sciences

3.2. To apply complex methodology by integrating engineering knowledge and skills in military engineering practice

4 Personal and professional skills and characteristics

4.1 To identify and analyze a problem in the military environment

4.2 To model and resolve a problem and to interpret problem solution by using appropriate knowledge and methods

5 Social skills (team work and communication)

5.1 To communicate effectively in the Croatian and English language applying modern presentation skills and techniques

5.2 Organize and plan individual and team work in international and interdisciplinary work groups

5.4 To apply knowledge of the structure and functioning of the political system, state and public administration in resolving unstructured problems

5.5 To apply knowledge of military psychology and sociology in leadership and command in predictable and unpredictable situations

6 Development, implementation and operation of technical systems in economic and social environment

6.1. To analyse and evaluate the effect of engineering solutions on society and environment

6.2. To apply and create engineering approaches in analysing and assessing products and processes in security environment

Screening of student's work

2.5 ECTS Lectures attendance

0.5 ECTS Written exam

1 ECTS Research

1 ECTS Seminar report

5 ECTS

Forms of Teaching

» Lectures

» Lectures, with lecture notes and presentations available in advance on the web.

» Exercises

» Network examples

» Laboratory

» Simulation and emulation of network

Week by Week Schedule

1. Lectures: Introduction to communication network.
Seminar: Simulation and emulation of network
2. Lectures: Basic network architecture
Seminar: Simulation and emulation of network: IP
3. Lectures: Physical layer
Seminar: Simulation and emulation of network: RIP
4. Lectures: Data layer
Seminar: Simulation and emulation of network: RIP
5. Lectures: Network layer
Seminar: Simulation and emulation of network: OSPF

6. Lectures: Internet protocols of network layer
Seminar: Simulation and emulation of network: OSPF
7. Lectures: Network interconnection
Seminar: Simulation and emulation of network: DHCP
8. Lectures: Transport layer
Seminar: Simulation and emulation of network: ICMP
9. Lectures: Protocol TCP
Seminar: Simulation and emulation of network: ping
10. Lectures: Protocol UDP
Seminar: Simulation and emulation of network: traceroute
11. Lectures: Application layer
Seminar: Simulation and emulation of network: TCP, UDP
12. Lectures: Domain name system
Seminar: Simulation and emulation of network: DNS
13. Lectures: World wide web (WWW)
Seminar: Simulation and emulation of network: DNS
14. Lectures: Network security
Seminar: Simulation and emulation of network: SMTP, IMAP, POP
15. Lectures: Military network
Seminar: Simulation and emulation of network: SMTP, IMAP, POP

Literature



Osnovne arhitekture mreža A.
Bažant, G. Gledec, Ž. Ilić, G.
Ježić, M. Kos, M. Kunštić, I.
Lovrek, M. Matijašević, B.
Mikac, V. Sinković Element
2004



Computer Networking: A Top-Down Approach Featuring the Internet (3rd Edition) J.F. Kurose, K.W. Ross Addison Wesley 2004

Similar Courses

» Networking, West Point

Organic Chemistry

129980

Lecturer



izv. prof. dr. sc.
Tatjana Gazivoda
Kraljević

Course Description

The objective of the course is to give students the knowledge required to understand the basic principles of modern organic chemistry. To learn the students how to use the fundamental knowledge of organic chemistry for military purposes.

Study Programmes

- » Chemical, Biological, Radiological and Nuclear Defence -> Military Engineering (Course) (required course, 5th semester, 3rd year) (Note: course not offered in this academic year.)

Learning Outcomes

On successful completion of the course, students will be able to:

1. Define and use the terms of organic chemistry.
2. Define and designate the different classes of organic compounds and reproduce their structures
3. Explain the chemical transformations and mechanisms for alkanes, alkenes, alkynes, alkyl halides, alcohols, aromatic compounds, carbonyl and carboxylic compounds
4. Analyze and apply the principles of reaction mechanisms of all types of organic compounds with functional groups
5. Apply the stereochemical considerations in transformations of organic molecules
6. Prepare, isolate, purify and identify some representatives of organic compounds related to the fundamental knowledge of organic chemistry
7. Use the knowledge and skills of organic chemistry for applied in resolving of military engineering problems

Study Programme Learning Outcomes

Military Engineering

- 1 Basic competences of the military profession
 - 1.6 To nourish, channel and use creativity in accomplishing missions of a basic tactical unit
- 3 Basic technical knowledge
 - 3.1. To identify, analyse, model and resolve military engineering problems by integrating basic knowledge of natural and technical sciences
4. Personal and professional skills and characteristics
 - 4.1 To identify and analyze a problem in the military environment
 - 4.2 To model and resolve a problem and to interpret problem solution by using

ECTS Credits	5.0
English Level	Lo
E-learning Level	L3
Study Hours	
Lectures	30
Seminar	15
Laboratory exercises	15

Associate Lecturers

izv. prof. dr. sc. Marijana Hranjec
prof. dr. sc. Silvana Raić-Malić

Teaching Assistants

Ivana Cetina, pred.
dr. sc. Valentina Ključarić, pred.
doc. dr. sc. Dragana Vuk

Grading

Grading: During lectures spend 2 partial exams, written and oral exam if a student fails the partial exams or wants a better grade. Obligations: Regularly attend classes, seminars and exercises. Regularly participation in partial exams organized during the semester.



- appropriate knowledge and methods
- 4.4 To develop self-study abilities and the need for and methods of life-long learning in traditional and virtual environment
- 5. Social skills (team work and communication)
 - 5.1 To communicate effectively in the Croatian and English language applying modern presentation skills and techniques
 - 5.2 Organize and plan individual and team work in international and interdisciplinary work groups
 - 5.3 To effectively present work results both orally and in writing to stakeholders in the military environment
- 6 Development, implementation and operation of technical systems in economic and social environment
 - 6.1. To analyse and evaluate the effect of engineering solutions on society and environment
 - 6.2. To apply and create engineering approaches in analysing and assessing products and processes in security environment
 - 6.3. To apply and select knowledge and relevant facts from different areas, and to assume responsibility for assessing the impact of military technology in social environment
 - 6.4. To plan, organise, create and implement engineering testing, and to analyse and interpret the results

Screening of student's work

- 1 ECTS Lectures attendance
- 0.5 ECTS Experimental work
- 2 ECTS Midterm exam
- 1 ECTS Written exam
- 0.5 ECTS Oral exam
- 5 ECTS

Forms of Teaching

- » Lectures
 - » ex cathedra
- » Exercises
 - » ex cathedra
- » Partial e-learning
 - » using system for e-learning (Merlin)
- » Laboratory
 - » individual

Week by Week Schedule

1. Lectures: Carbon compounds and chemical bonds: octet rule, Lewis structures, formal charge, resonance
Seminar: Additional problems on bond and isomerism: bonding and Lewis structures, structural isomers, structural formulas.
Exercises: Application of thin layer chromatography (TLC) for identification of organic compounds.
2. Lectures: Classes of carbon compounds: functional groups, hydrocarbons: representative alkanes, alkenes, alkynes and aromatic compounds
Seminar: Additional problems on bond and isomerism: formal charge, resonance, electronic structure and molecular geometry, classification of organic compounds
Exercises: Application of thin layer chromatography (TLC) for purification of organic compounds.

3. Lectures: Alkanes and cycloalkanes: nomenclature, conformational analysis, introduction to synthesis
Seminar: Additional problems on alkanes and cycloalkanes: nomenclature and structural formulas, conformations, cis-trans isomerism, reactions of alkanes: combustion and halogenation
Exercises: Application of column chromatography (CC) for identification of organic compounds.
4. Lectures: Stereochemistry: chiral molecules, constitutional isomers, stereoisomers, enantiomers, optical activity
Seminar: Additional problems on stereochemistry: definitions and stereogenic centers, stereoisomers, the R-S and E-Z conventions, Fischer and Newman projections, chemical reactions.
Exercises: Application of column chromatography (CC) for purification of organic compounds.
5. Lectures: Nucleophilic substitution (S_N1 i S_N2) and elimination reactions of alkyl halides, kinetics
Seminar: Additional problems on organic halogen compounds: alkyl halide structure, nucleophilic substitution reactions of alkyl halides,
Exercises: Purification of organic compounds by using recrystallization from water as solvent.
6. Lectures: Stereochemistry and mechanism for S_N1 and S_N2 reactions, substitution versus elimination
Seminar: Additional problems on stereochemistry of nucleophilic substitution reactions of alkyl halides
Exercises: Purification of organic compounds by using recrystallization from ethanol as solvent.
7. Lectures: Alkenes and alkynes: properties and synthesis, elimination and addition reactions
Seminar: Additional problems on alkenes and alkynes: nomenclature and structure, electrophilic addition to alkenes, reactions of conjugated dienes, other reaction
Exercises: Synthesis of alkyl halides by nucleophilic substitution reaction: Synthesis of n-butyl bromide
8. Lectures: Alcohols and ethers: structure and nomenclature, synthesis and reactions
Seminar: Additional problems on alcohols, ethers and epoxides: structure, nomenclature and properties, preparation and reaction of Grignard reagents, preparation and behavior of ethers in acids and bases, preparations and reactions of epoxides, cyclic ethers.
Exercises: Synthesis of alkyl halides by nucleophilic substitution reaction: Synthesis of n-butyl bromide
9. Lectures: Aromatic compounds: the Kekulé structure of benzene, aromaticity, nomenclature of benzene derivatives,
Seminar: Additional problems on aromatic compounds: nomenclature and structural formulas, aromaticity and resonance
Exercises: Synthesis of alkyl halides by nucleophilic substitution reaction: Synthesis of n-butyl bromide
10. Lectures: Aromatic compounds: reactions of benzene, electrophilic aromatic substitutions
Seminar: Mechanism of electrophilic aromatic substitution and reactions of substituted benzenes: activating and directing effects
Exercises: Synthesis of alkyl halides by nucleophilic substitution reaction: Synthesis of n-butyl bromide
11. Lectures: Aldehyde and ketones: nomenclature, synthesis, nucleophilic addition to the carbonyl group, aldol reaction
Seminar: Additional problems on aldehydes and ketones: synthesis and reactions, reactions with Grignard reagents, oxidations and reductions, enols, enolates, the aldol reaction.
Exercises: Synthesis of alkyl halides by nucleophilic substitution reaction: Synthesis of n-butyl bromide

12. Lectures: Carboxylic acids and their derivatives: nomenclature, nucleophilic addition-elimination reaction at the acyl carbon
Seminar: Additional problems on carboxylic acids and their derivatives: nomenclature and structure, synthesis, nomenclature and structure of carboxylic acid derivatives, synthesis and reactions of esters, the Claisen condensation
Exercises: Synthesis of carboxylic acid derivatives by nucleophilic substitution reactions: Synthesis of ethyl acetate by esterification of acetic acid with ethanol
13. Lectures: Carboxylic acids and their derivatives: nomenclature, nucleophilic addition-elimination reaction at the acyl carbon
Seminar: Additional problems on carboxylic acids and their derivatives: nomenclature and structure, synthesis, nomenclature and structure of carboxylic acid derivatives, synthesis and reactions of esters, the Claisen condensation
Exercises: Synthesis of carboxylic acid derivatives by nucleophilic substitution reactions: Synthesis of ethyl acetate by esterification of acetic acid with ethanol
14. Lectures: Amines: nomenclature and structure of amines, basicity of amines, synthesis of amines.
Seminar: Additional problems on amines and related nitrogen compounds: nomenclature and structure of amines, properties of amines and quaternary ammonium salts, preparation and reactions of amines
Exercises: Synthesis of carboxylic acid derivatives by nucleophilic substitution reactions: Synthesis of ethyl acetate by esterification of acetic acid with ethanol
15. Lectures: Introduction to spectroscopic methods in determination of organic compounds: Nuclear magnetic resonance (NMR) and mass spectrometry (MS)
Seminar: Examples related to spectroscopy and structure determinations by ^1H and ^{13}C NMR spectroscopy and mass spectrometry.
Exercises: Synthesis of carboxylic acid derivatives by nucleophilic substitution reactions: Synthesis of ethyl acetate by esterification of acetic acid with ethanol

Literature



John McMurry (2014). *Osnove organske kemije*, Zrinski dd., Čakovec

Additional Literature



S. H. Pine (1994). *Organska kemija*, Školska knjiga, Zagreb



T. W. Graham Solomons, Craig B. Fryhle, Scott A. Snyder (2013). *Organic Chemistry, 11th Edition*, J. Wiley and Sons, Inc., New York

Similar Courses

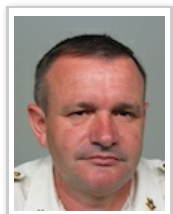
» Organic chemistry, West Point

Organization and Technology of Military Equipment Maintenance

129377



Lecturers



izv. prof. dr. sc.
Mirko Jakopčić



doc. dr. sc.
Petar Ćurković

Course Description

Students should understand the definition, importance and theoretical features of the technical systems maintaining process. Students should distinguish and evaluate approaches, methods, and maintenance procedures. Students should be prepared and trained to apply the acquired theoretical knowledge in the field of military equipment maintenance.

Study Programmes

- » Armour -> Group of Courses Armour, Field Artillery, Engineers, Technical Support and Infantry (Course) (required course, 6th semester, 3rd year) (Note: course not offered in this academic year.)
- » Field Artillery -> Group of Courses Armour, Field Artillery, Engineers, Technical Support and Infantry (Course) (required course, 6th semester, 3rd year)
- » Engineers -> Group of Courses Armour, Field Artillery, Engineers, Technical Support and Infantry (Course) (required course, 6th semester, 3rd year) (Note: course not offered in this academic year.)
- » Technical Support -> Group of Courses Armour, Field Artillery, Engineers, Technical Support and Infantry (Course) (required course, 6th semester, 3rd year)
- » Infantry -> Group of Courses Armour, Field Artillery, Engineers, Technical Support and Infantry (Course) (required course, 6th semester, 3rd year) (Note: course not offered in this academic year.)
- » Signals -> Group of Courses Signals, Monitoring and Guidance and Air Defence (Course) (required course, 6th semester, 3rd year)
- » Monitoring and Guidance -> Group of Courses Signals, Monitoring and Guidance and Air Defence (Course) (required course, 6th semester, 3rd year) (Note: course not offered in this academic year.)
- » Air Defence -> Group of Courses Signals, Monitoring and Guidance and Air Defence (Course) (required course, 6th semester, 3rd year) (Note: course not offered in this academic year.)
- » Chemical, Biological, Radiological and Nuclear Defence -> Military Engineering (Course) (required course, 6th semester, 3rd year) (Note: course not offered in this academic year.)
- » Military Leadership and Management (Study) (required course, 6th semester, 3rd year)

ECTS Credits 4.0

English Level Lo

E-learning Level L1 (5%)

Study Hours

Lectures 30

Exercises 15

Associate Lecturer

Ivan Leutar, pred.

Teaching Assistant

Damir Đuretek, dipl. ing.

Grading

Grading: During semester, students will be monitored and evaluated. Students will be given a score of two colloquiums, one seminar and final exam. To obtain a positive final score, all components must be rated positive. Obligations: Regular class attendance. Making and deliver of seminar. Take colloquiums and the final exam

Learning Outcomes

On successful completion of the course, students will be able to:

1. Distinguish theoretical attributes of maintenance.
2. Distinguish the wear process of technical systems parts
3. Apply maintenance technological processes
4. Apply diagnostic procedures of equipment.
5. Identify features of technical systems overhaul.
6. Use spare parts and materials
7. Apply the regulations, standards and rules of military techniques maintenance

Study Programme Learning Outcomes

Military Engineering

- 1 Basic competences of the military profession
 - 1.6 To nourish, channel and use creativity in accomplishing missions of a basic tactical unit
- 2 Special military competences
 - 2.2 To manage maintenance of combat and non-combat assets, ammunitions and mines of the branch/service
 - 2.3 To use combat and non-combat assets of the branch/service in a professional way
- 3 Basic technical knowledge
 - 3.1. To identify, analyse, model and resolve military engineering problems by integrating basic knowledge of natural and technical sciences
 - 3.2. To apply complex methodology by integrating engineering knowledge and skills in military engineering practice
4. Personal and professional skills and characteristics
 - 4.1 To identify and analyze a problem in the military environment
 - 4.2 To model and resolve a problem and to interpret problem solution by using appropriate knowledge and methods
5. Social skills (team work and communication)
 - 5.3 To effectively present work results both orally and in writing to stakeholders in the military environment
- 6 Development, implementation and operation of technical systems in economic and social environment
 - 6.2. To apply and create engineering approaches in analysing and assessing products and processes in security environment
 - 6.4. To plan, organise, create and implement engineering testing, and to analyse and interpret the results

Military Leadership and Management

- 2 Special military competences
 - 2.2 To manage maintenance of combat and non-combat assets, ammunitions and mines of the branch/service
 - 2.3 To use combat and non-combat assets of the branch/service in a professional way
- 3 Basic competences in social and humanistic sciences
 - 3.4 To manage processes in the military environment using modern technologies
4. Personal and professional skills and characteristics
 - 4.1 To identify and analyze a problem in the military environment
5. Social skills (team work and communication)
 - 5.3 To effectively present work results both orally and in writing to

stakeholders in the military environment

Screening of student's work

- 0.5 ECTS Lectures attendance
- 2 ECTS Midterm exam
- 0.5 ECTS Seminar report
- 1 ECTS Oral exam

- 4 ECTS

Forms of Teaching

- » Lectures
 - » lectures in the classroom
- » Exercises
 - » exercises in the cabinet
- » Field work
 - » exercises in the maintenance workshop

Week by Week Schedule

1. Lectures: Introduction information about the subject. Definition of maintenance. Maintenance in the lifetime of technical systems (TS). Primary and secondary maintenance functions. 2
Exercises: Features of use and maintenance of military techniques. 1
2. Lectures: Theoretical features of maintenance and equipment quality. 2
Exercises: Calculate TS reliability and availability. 1
3. Lectures: Development approaches and methods of maintenance activities TS. 2
Exercises: Comparison of the main features of the maintenance methods. 1
4. Lectures: Processes of friction. Mechanisms and cases of TS parts wear. Tribological measures for extending TS life. 2
Exercises: Tribological equipment and tests for properties of materials. 1
5. Lectures: Technological processes of TS maintaining. 2
Exercises: Seminar presentation of maintenance technologies and procedures. 1
6. Lectures: Diagnostics of TS. Vibration measurement. Measurement of ball bearings noise. Ferrography of used oil. 2
Exercises: Types of diagnostic instruments. Thermo-vision diagnostics. 1
7. Lectures:
Exercises:
Midterm exam: 3
8. Lectures: Specifics of maintenance technologies: production of spare parts, lubrication and corrosion protection. Technology for the regeneration of damaged and broken parts. 3
Exercises: 0
9. Lectures: Technological process of TS overhaul. 3
Exercises: 0
10. Lectures: Technological process of TS overhaul. 2
Exercises: Seminars. 1
11. Lectures: Documentation of maintenance activities: manufacturer documentation, technological and operational maintenance documentation. 3
Exercises: 0
12. Lectures: 0
Exercises: Overhaul maintenance of TS. 3
13. Lectures: 0
Exercises: Overhaul maintenance of TS. 3

14. Lectures: The organizational forms of TS maintenance activity. Modules of technological processes, employees, spare parts. Production of maintenance process flow. 3
Exercises: 0
15. Lectures: Regulations, standards and rules on military techniques maintenance. 2
Exercises: Seminars. 1

Literature



Inženjerski priručnik, dio 4, poglavlje 9, Školska knjiga, Zagreb, 2002.



Jakopčić, M.: Održavanje naoružanja, GS OS RH, Zapovjedništvo HKoV,



Naputak o održavanju TMS, GS OS RH



Jakopčić, Mirko (2009). *Trošenje cijevi topničkih oružja*, MORH, OSRH, HVU "Petar Zrinski"

Similar Courses

» Maintenance Technology, Stanford University

Organization of Technical Services

130161



Lecturer



prof. dr. sc.
Nedeljko Štefanić

Course Description

Introduction to basic concepts, organization and tasks of the technical service in the Armed Forces in implementing its tasks in peace and war, as well as in NATO environment Gaining knowledge about the role and tasks of technical services in the process of furnishing, purchasing, storage, and maintenance TMR in the Croatian Armed Forces, in all conditions.

Study Programmes

- » Technical Support -> Group of Courses Armour, Field Artillery, Engineers, Technical Support and Infantry (Course) (*required course, 7th semester, 4th year*)

Learning Outcomes

On successful completion of the course, students will be able to:

1. Recognize the role and importance of technical service in the Armed Forces in all operating conditions, peace and war,
2. Identify organizational and working processes which deals with the technical service in the entire lifetime of technical material resources
3. Use of modern methods of resource management of material resources which deals with TSI
4. Distinguish and comment on the impact of individual factors on the cost of exploitation and maintenance of technical material resources TMR
5. Understand the duties, jurisdiction and responsibilities of TSI in the Armed Forces
6. Apply the acquired knowledge in the planning and budgeting needs supply class materials dealt with TSI in the Armed Forces

Study Programme Learning Outcomes

Military Engineering

- 1 Basic competences of the military profession
 - 1.3 To make decisions independently and command a basic tactical unit
 - 1.6 To nourish, channel and use creativity in accomplishing missions of a basic tactical unit
- 2 Special military competences
 - 2.3 To use combat and non-combat assets of the branch/service in a professional way
- 3 Basic technical knowledge
 - 3.1. To identify, analyse, model and resolve military engineering problems by integrating basic knowledge of natural and technical sciences

ECTS Credits 4.0

English Level Lo

E-learning Level L1

Study Hours

Lectures 30

Laboratory exercises 15

Associate Lecturer

Mirko Ljevar, pred.

Teaching Assistants

Ivan Damiani, dipl. ing.

Jadranko Tuta, pred.

Grading

Grading: Evaluation and validation of student work during teaching in the form of 2 colloquia, and participation during exercises. Final examination is oral after successful written exam. Obligations: Obligation of participation in lectures and exercises

- 3.2. To apply complex methodology by integrating engineering knowledge and skills in military engineering practice
- 3.3. To integrate and apply engineering principles and techniques in the operation of military system in unpredictable conditions
- 4. Personal and professional skills and characteristics
 - 4.1 To identify and analyze a problem in the military environment
- 5. Social skills (team work and communication)
 - 5.2 Organize and plan individual and team work in international and interdisciplinary work groups
 - 5.3 To effectively present work results both orally and in writing to stakeholders in the military environment

Forms of Teaching

- » Lectures
- » Exercises
- » Independent assignments
- » Work with mentor

Week by Week Schedule

1. Lectures: Introduction to the subject. The organization, structure and tasks of the technical services (aim of the course, the content of teaching topics, learning outcomes)
Seminar: Planning and calculation of the cost of maintaining TMR, 1
2. Lectures: Competences and responsibilities in technical service CAF (jurisdiction and responsibilities in the TSL in organizational units CAF, jurisdiction and responsibilities of TSL in NATO and international missions)
Seminar: Planning and calculation of the cost of maintaining TMR, 1
3. Lectures: Tasks of organs and units TSL within stationary and field logistics support
Seminar: Resource Management TMR (clock, weather, and other cycles), 1
4. Lectures: TSL in the implementation of equipment, production, import, repair, regeneration and repair of TMR
Seminar: Resource Management TMR (clock, weather, and other cycles), 1
5. Lectures: TSI in the implementation of the tasks of maintaining TMR (TMR maintenance planning, maintenance TMR implementation, control and supervision of the TMR, records statutsa and state safety TMR)
Seminar: TSI work in the military decision-making process, 1
6. Lectures: Applying LEAN maintenance the principle.
Seminar: TSI work in the military decision-making process, 1
7. Lectures: Tactics, organization and operation of TSI in military operations. (TSI work in military decision-making process, the work of the TSI implementation support different types of military operations)
Seminar: Mapping maintenance process, 1
8. Lectures: TSI in the implementation of the tasks in supply types of material resources: III, V, VII, IX, (supply of materials for the classes which is responsible TSI)
Seminar: Mapping maintenance process, 1
9. Lectures: TSI in the implementation of tasks receipt, storage, warehousing TMR and maintenance on storage
Seminar: Mapping maintenance process, 1
10. Lectures: Specifics of the organization and tasks of TSI in the branches of the Armed Forces
Seminar: TSI documentation, manufactureing and making up, 1
11. Lectures: TSI in the implementation of the tasks of quality control, (receipt of goods from the market, quality control execution of maintenance work)
Seminar: TSI documentation, manufactureing and making up, 1

12. Lectures: Documentation of technical services, (professional technical documentation and publications, regulations, technical manuals, maintenance and repair, books and standards, Technical Repair documentation, technical books and manuals, technical bulletins technical books and technical Cards, instructions, regulatory-normative and publishing activity for TSI)
Seminar: Reliability and operational availability of TMR, 1
13. Lectures: Education and training of TSI personnel
Seminar: Reliability and operational availability of TMR, 1
14. Lectures: Implementation of safety measures during work with TSI personnel
Seminar: Preparation of documents and the implementation of quality control maintenance, 1
15. Lectures: Development and improvement of information systems for the TSI, (development and improvement of the organization and TSI)
Seminar: Preparation of documents and the implementation of quality control maintenance, 1

Literature



*Skripta s lekcijama
Organizacija tehničke službe,
u izradi*

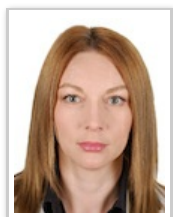


*NATO Logistics Handbook,
November 2012, SNLC
Secretariat NATO HQ 1110
Brussels*

Peace Support Operations

129967

Lecturer



doc. dr. sc.
Ružica Jakešević

ECTS Credits 4.0

English Level Lo

E-learning Level L1

Study Hours

Lectures 30

Seminar 30

Associate Lecturer

doc. dr. sc. Robert Mikac

Grading

Grading: Attendance of lectures (10 percent), one bound essay from 2.000 to 2.500 words (25 percent), one required written colloquium (30 percent), one paper (15 percent) and an oral exam at the end (20 percent). Obligations: Attending lectures and seminars, and independent preparation of presentation and essay.

Course Description

The aim of the course is to define the concepts of international and collective security, collective defence. The emphasis is on collective security, its forms, organizations and mechanisms. The idea, establishment, development and implementation of peace support operations, especially UN operations will be studied. The impact of operations on Croatian security policy will also be studied.

Study Programmes

» Military Leadership and Management (Study) (*required course, 5th semester, 3rd year*)

Learning Outcomes

On successful completion of the course, students will be able to:

1. Explain the concept of collective security and the importance of maintaining world peace and security
2. Identify collective security mechanisms and actions of contemporary states in achieving world peace and security
3. Describe the development and design of security organizations and their mechanisms in the preservation of peace and security on the global and regional levels
4. Prepare qualitative and quantitative research on various types of peace support operations
5. Analyze the effectiveness of UN, NATO, EU and other regional organizations' peace support operations
6. Analyze Croatian participation in peace support operations and their impact on security policy

Study Programme Learning Outcomes

Military Leadership and Management

- 1 Basic competences of the military profession
 - 1.7 To be acquainted with and to respect historical, social and cultural diversities in the context of military activities
- 2 Special military competences
 - 2.1 To analyse the environment and to develop and apply tactics of the branch/service
- 3 Basic competences in social and humanistic sciences
 - 3.1 To analyze and interpret processes in international environment, and to act within international alliances and organizations in which the Republic of

Croatia participates

3.3 To apply International War and Humanitarian Law

4. Personal and professional skills and characteristics

4.1 To identify and analyze a problem in the military environment

Screening of student's work

1 ECTS Lectures attendance

2 ECTS Midterm exam

1 ECTS Presentation

4 ECTS

Forms of Teaching

» Lectures

» Two hours of lectures weekly.

» Seminars and workshops

» Two hours of seminars weekly.

» Independent assignments

» Presentation

» Work with mentor

» Mentoring the preparation of presentations.

Week by Week Schedule

1. Lectures: The content and concept of peace support operations
Exercises: Peace initiatives and efforts before the World War I
2. Lectures: The development of the concept of peace support operations
Exercises: Capabilities and limitations in activities of the League of Nations on the establishment and preservation of world peace and security
3. Lectures: The sources of legitimacy of peace support operations
Exercises: Reasons for failures of peace support efforts under the League of Nations
4. Lectures: Requirements for launching peace support operations
Exercises: Discussions within the UN on the concept of peace support operations after World War II
5. Lectures: Peace support operations during the Cold War
Exercises: Conditions for launching peace support operations - the role of the Security Council
6. Lectures: Concepts of peace support operations and their transformation after the Cold War
Exercises: The influence of great powers on launching UN peace support operations during the Cold War
7. Lectures: The role and activity of UN Security Council during and after the Cold War
Exercises: Specifics of peace support operations after the Cold War
8. Lectures: Cooperation between UN and regional organizations in the implementation of peace support operations
Exercises: Capabilities and limitations in UN Security Council activities during the Cold War
9. Lectures: UN and regional organizations' peace support operations in former Yugoslavia
Exercises: Development of UN peace support operations: case study of DR Congo
10. Lectures: Peace support operations and transformation of Croatian defence system
Exercises: Experiences in the work of the peace support operations in South East Europe

11. Lectures: Croatian participation in UN, NATO and EU peace support operations
Exercises: Experiences and lessons learned during the peace support operation UNPROFOR
12. Lectures: Experiences and perspectives of UN peace support operations
Exercises: Experiences and lessons learned during the peace support operation UNTAES
13. Lectures: Experiences and perspectives of NATO peace support operations
Exercises: Transformation of the Republic of Croatia from receiver to donor of international aid
14. Lectures: Experiences and perspectives of EU peace support operations
Exercises: Experiences from the Croatian participation in peace support operations
15. Lectures: Future missions of armed forces and participation in peace support operations
Exercises: Similarities and differences between UN, NATO and EU peace support operations

Literature



Jakešević, R., Hrvatska i mirovne misije ujedinjenih nacija, Politička kultura, Zagreb, 2012.



LeRoy, A., Bennett, J. i Oliver, K., Međunarodne organizacije, Politička kultura, Zagreb, 2004.

Similar Courses

» United Nations Peacekeeping, Stanford University

Physical Training I

129237

Lecturer



Marinko Vrkić,
pred.

Course Description

Adopt and apply motor abilities needed for effective maintaining and enhancing health and a better use of free time. Everyday motor exercises particularly in urgent situations and developing specific working abilities.

Study Programmes

- » Military Engineering (Study) (*required course, 1st semester, 1st year*)
- » Military Leadership and Management (Study) (*required course, 1st semester, 1st year*)

Learning Outcomes

On successful completion of the course, students will be able to:

1. Analyze the effect of specially programmed military training exercises to the development of anthropologic features
2. Analyze methodology of examination of kinesiological readiness in the CAF
3. Explain possibilities of applying military training in recreational programmes
4. Conduct examinations of anthropologic features.
5. Show basic fighting techniques
6. Use methodological procedures in conducting kinesiological activities
7. Autonomous performing of basic kinesiological programmes
8. Use methodical procedures for correcting the mistakes
9. Explain the organization and effects of kinesiological system in CAF
10. Explain sports and military competitions of special interest for CAF

Study Programme Learning Outcomes

Military Engineering

- 1 Basic competences of the military profession
 - 1.3 To make decisions independently and command a basic tactical unit
 - 1.4 To train, develop and assess the abilities of soldiers and a basic tactical unit
 - 1.5 To develop personal and collective determination, courage, enthusiasm and initiative of subordinates
- 2 Special military competences
 - 2.2 To manage maintenance of combat and non-combat assets, ammunitions and mines of the branch/service
- 3 Basic technical knowledge
 - 3.1. To identify, analyse, model and resolve military engineering problems by integrating basic knowledge of natural and technical sciences
4. Personal and professional skills and characteristics

ECTS Credits 0.0

English Level Lo

E-learning Level L1

Study Hours

Physical education exercises 30

Teaching Assistants

Domagoj Bagarić, pred.

Dražan Ćurčić, pred.

Goran Rogalo, pred.

Joso Šarlija, pred.

Grading

Grading: Check up of physical readiness and motor abilities.
Obligations: Regular attendance of the curriculum.



- 4.1 To identify and analyze a problem in the military environment
- 4.2 To model and resolve a problem and to interpret problem solution by using appropriate knowledge and methods
- 4.3 To assume military, professional and ethical responsibility
- 4.4 To develop self-study abilities and the need for and methods of life-long learning in traditional and virtual environment
- 5. Social skills (team work and communication)
 - 5.1 To communicate effectively in the Croatian and English language applying modern presentation skills and techniques
 - 5.2 Organize and plan individual and team work in international and interdisciplinary work groups
 - 5.3 To effectively present work results both orally and in writing to stakeholders in the military environment
- 6 Development, implementation and operation of technical systems in economic and social environment
 - 6.2. To apply and create engineering approaches in analysing and assessing products and processes in security environment
 - 6.3. To apply and select knowledge and relevant facts from different areas, and to assume responsibility for assessing the impact of military technology in social environment

Military Leadership and Management

- 1 Basic competences of the military profession
 - 1.3 To make decisions independently and command a basic tactical unit
 - 1.4 To train, develop and assess the abilities of soldiers and a basic tactical unit
 - 1.5 To develop personal and collective determination, courage, enthusiasm and initiative of subordinates
- 2 Special military competences
 - 2.2 To manage maintenance of combat and non-combat assets, ammunitions and mines of the branch/service
- 3 Basic competences in social and humanistic sciences
 - 3.1 To analyze and interpret processes in international environment, and to act within international alliances and organizations in which the Republic of Croatia participates
- 4. Personal and professional skills and characteristics
 - 4.1 To identify and analyze a problem in the military environment
 - 4.2 To model and resolve a problem and to interpret problem solution by using appropriate knowledge and methods
 - 4.3 To assume military, professional and ethical responsibility
 - 4.4 To develop self-study abilities and the need for and methods of life-long learning in traditional and virtual environment
- 5. Social skills (team work and communication)
 - 5.1 To communicate effectively in the Croatian and English language applying modern presentation skills and techniques
 - 5.2 Organize and plan individual and team work in international and interdisciplinary work groups
 - 5.3 To effectively present work results both orally and in writing to stakeholders in the military environment

Forms of Teaching

- » Lectures
- » Exercises

Week by Week Schedule

1. Seminar: Testing of anthropological features
2. Seminar: Testing of anthropological features
3. Seminar: Development of functional capabilities
Development of motor abilities
4. Seminar: Development of functional capabilities
Development of motor abilities
5. Seminar Fitness programmes
Development of motor abilities
6. Seminar: Development of functional capabilities
Fitness programmes
7. Seminar: Fitness programmes
Development of motor abilities
8. Seminar: Fitness programmes
Development of motor abilities
9. Seminar: Development of functional capabilities
Development of motor abilities
10. Seminar: Development of functional capabilities
11. Seminar: Development of functional capabilities
Fitness programmes
12. Seminar: Fitness programmes
13. Seminar: Basics of martial art
14. Seminar: Basics of martial art
15. Seminar: Fitness programmes

Literature



Findak, V. (1989.) Metodika tjelesne i zdravstvene kulture



Milanović, D. (1996.) Priručnik za tjelovježbu



Lucić, J. (2000., 2006. 2007.) Judo u hrvatskoj vojsci Kniga 1., 2. 3.



Šarlija, J. Vrkić, M. (2010.) Upute za vježbanje na spravama



Mišigoj Duraković, M i sur. (1999.) Tjelesno vježbanje i zdravlje

Physical Training II

129227

Lecturer



Marinko Vrkić,
pred.

Course Description

Adopt and apply motor abilities needed for effective maintaining and enhancing health and a better use of free time. Everyday motor exercises particularly in urgent situations and developing specific working abilities.

Study Programmes

- » Military Engineering (Study) (*required course, 2nd semester, 1st year*)
- » Military Leadership and Management (Study) (*required course, 2nd semester, 1st year*)

Learning Outcomes

On successful completion of the course, students will be able to:

1. Analyze the effect of specially programmed military training exercises to the development of anthropologic features
2. Analyze methodology of examination of kinesiological readiness in the CAF
3. Explain possibilities of applying military training in recreational programmes
4. Conduct examinations of anthropologic features.
5. Show basic fighting techniques
6. Perform basic kinesiological programmes autonomously
7. Use methodological procedures during the performance of kinesiological activities
8. Use methodical procedures for correcting the mistakes
9. Explain the organization and effects of kinesiological system in CAF
10. Explain sports and military competitions of special interest for CAF

Study Programme Learning Outcomes

Military Engineering

- 1 Basic competences of the military profession
 - 1.3 To make decisions independently and command a basic tactical unit
 - 1.4 To train, develop and assess the abilities of soldiers and a basic tactical unit
 - 1.5 To develop personal and collective determination, courage, enthusiasm and initiative of subordinates
 - 1.6 To nourish, channel and use creativity in accomplishing missions of a basic tactical unit
- 2 Special military competences
 - 2.2 To manage maintenance of combat and non-combat assets, ammunitions and mines of the branch/service

ECTS Credits 0.0

English Level Lo

E-learning Level L1

Study Hours

Physical education exercises 30

Teaching Assistants

Domagoj Bagarić, pred.

Dražan Ćurčić, pred.

Goran Rogalo, pred.

Joso Šarlija, pred.

Grading

Grading: Examination of physical and motor abilities.

Obligations: Regular attendance of classes.



3 Basic technical knowledge

- 3.1. To identify, analyse, model and resolve military engineering problems by integrating basic knowledge of natural and technical sciences

4. Personal and professional skills and characteristics

- 4.1 To identify and analyze a problem in the military environment
- 4.2 To model and resolve a problem and to interpret problem solution by using appropriate knowledge and methods
- 4.3 To assume military, professional and ethical responsibility
- 4.4 To develop self-study abilities and the need for and methods of life-long learning in traditional and virtual environment

5. Social skills (team work and communication)

- 5.1 To communicate effectively in the Croatian and English language applying modern presentation skills and techniques
- 5.2 Organize and plan individual and team work in international and interdisciplinary work groups
- 5.3 To effectively present work results both orally and in writing to stakeholders in the military environment

6 Development, implementation and operation of technical systems in economic and social environment

- 6.3. To apply and select knowledge and relevant facts from different areas, and to assume responsibility for assessing the impact of military technology in social environment

Military Leadership and Management

1 Basic competences of the military profession

- 1.3 To make decisions independently and command a basic tactical unit
- 1.4 To train, develop and assess the abilities of soldiers and a basic tactical unit
- 1.5 To develop personal and collective determination, courage, enthusiasm and initiative of subordinates

2 Special military competences

- 2.2 To manage maintenance of combat and non-combat assets, ammunitions and mines of the branch/service

3 Basic competences in social and humanistic sciences

- 3.1 To analyze and interpret processes in international environment, and to act within international alliances and organizations in which the Republic of Croatia participates

4. Personal and professional skills and characteristics

- 4.1 To identify and analyze a problem in the military environment
- 4.2 To model and resolve a problem and to interpret problem solution by using appropriate knowledge and methods
- 4.3 To assume military, professional and ethical responsibility
- 4.4 To develop self-study abilities and the need for and methods of life-long learning in traditional and virtual environment

5. Social skills (team work and communication)

- 5.1 To communicate effectively in the Croatian and English language applying modern presentation skills and techniques
- 5.2 Organize and plan individual and team work in international and interdisciplinary work groups
- 5.3 To effectively present work results both orally and in writing to stakeholders in the military environment

Forms of Teaching

- » Lectures
- » Exercises

Week by Week Schedule

1. Seminar: Fitness programmes
2. Seminar: Development of functional capabilities
Fitness programmes
3. Seminar: Fitness programmes
Development of motor abilities
4. Seminar: Fitness programmes
Development of motor abilities
5. Seminar: Fitness programmes
Development of motor abilities
6. Seminar: Development of functional capabilities
Development of motor abilities
7. Seminar: Fitness programmes
8. Seminar: Fitness programmes
9. Seminar: Development of functional capabilities
Fitness programmes
10. Seminar: Testing of anthropological features
11. Seminar: Development of functional capabilities
Fitness programmes
12. Seminar: Development of functional capabilities
Fitness programmes
13. Seminar: Fitness programmes
14. Seminar: Development of functional capabilities
Development of motor abilities
15. Seminar: Development of functional capabilities
Development of motor abilities

Literature



*Findak, V. (1989.) Metodika
tjelesne i zdravstvene kulture*



Priručnici za tjelovježbu



*Šarlija, J. Vrkić, M. (2010.)
Upute za vježbanje na
spravama*



*Lucić, J. (2000., 2006., 2007.)
Judo u hrvatskoj vojsci Knjiga
1. 2. 3.*



*Milanović, D. i sur. (1996.)
Fitness*

Physical Training III

129343

Lecturer



Dražan Ćurčić,
pred.

ECTS Credits 0.0

English Level Lo

E-learning Level L1

Study Hours

Physical education exercises 30

Teaching Assistants

Goran Rogalo, pred.

Joso Šarlija, pred.

Marinko Vrkić, pred.

Grading

Grading: Check up of physical readiness and motor abilities.

Obligations: Regular attendance.

Course Description

Acquiring basic knowledge, skills and habits needed for adapting to new motor activities, reaching the desired level of motor achievements and improvement and keeping up of physical abilities of the students for better use of their free time.

Study Programmes

- » Group of Courses Armour, Field Artillery, Engineers, Technical Support and Infantry -> Military Engineering (Course) (*required course, 3rd semester, 2nd year*)
- » Group of Courses Signals, Monitoring and Guidance and Air Defence -> Military Engineering (Course) (*required course, 3rd semester, 2nd year*)
- » Chemical, Biological, Radiological and Nuclear Defence -> Military Engineering (Course) (*required course, 3rd semester, 2nd year*) (**Note: course not offered in this academic year.**)
- » Military Leadership and Management (Study) (*required course, 3rd semester, 2nd year*)

Learning Outcomes

On successful completion of the course, students will be able to:

1. Analyze the effect of specially programmed military training exercises to the development of anthropologic features
2. Analyze methodology of examination of kinesiological readiness in the CAF
3. Explain possibilities of applying military training in recreational programmes
4. Conduct examinations of anthropologic features.
5. Show basic fighting techniques
6. Autonomous performance of basic kinesiological programmes
7. Use methodological procedures during the performance of kinesiological activities
8. Use methodical procedures for correcting the mistakes
9. Explain the organization and effects of kinesiological system in CAF
10. Explain sports and military competitions of special interest for CAF

Study Programme Learning Outcomes

Military Engineering

- 1 Basic competences of the military profession
 - 1.3 To make decisions independently and command a basic tactical unit
 - 1.5 To develop personal and collective determination, courage, enthusiasm and initiative of subordinates

1.6 To nourish, channel and use creativity in accomplishing missions of a basic tactical unit

2 Special military competences

2.2 To manage maintenance of combat and non-combat assets, ammunitions and mines of the branch/service

3 Basic technical knowledge

3.1. To identify, analyse, model and resolve military engineering problems by integrating basic knowledge of natural and technical sciences

4. Personal and professional skills and characteristics

4.1 To identify and analyze a problem in the military environment

4.2 To model and resolve a problem and to interpret problem solution by using appropriate knowledge and methods

4.3 To assume military, professional and ethical responsibility

4.4 To develop self-study abilities and the need for and methods of life-long learning in traditional and virtual environment

5. Social skills (team work and communication)

5.1 To communicate effectively in the Croatian and English language applying modern presentation skills and techniques

5.2 Organize and plan individual and team work in international and interdisciplinary work groups

5.3 To effectively present work results both orally and in writing to stakeholders in the military environment

6 Development, implementation and operation of technical systems in economic and social environment

6.3. To apply and select knowledge and relevant facts from different areas, and to assume responsibility for assessing the impact of military technology in social environment

Military Leadership and Management

1 Basic competences of the military profession

1.3 To make decisions independently and command a basic tactical unit

1.4 To train, develop and assess the abilities of soldiers and a basic tactical unit

1.5 To develop personal and collective determination, courage, enthusiasm and initiative of subordinates

2 Special military competences

2.2 To manage maintenance of combat and non-combat assets, ammunitions and mines of the branch/service

3 Basic competences in social and humanistic sciences

3.1 To analyze and interpret processes in international environment, and to act within international alliances and organizations in which the Republic of Croatia participates

4. Personal and professional skills and characteristics

4.1 To identify and analyze a problem in the military environment

4.2 To model and resolve a problem and to interpret problem solution by using appropriate knowledge and methods

4.3 To assume military, professional and ethical responsibility

4.4 To develop self-study abilities and the need for and methods of life-long learning in traditional and virtual environment

5. Social skills (team work and communication)

5.1 To communicate effectively in the Croatian and English language applying modern presentation skills and techniques

5.2 Organize and plan individual and team work in international and interdisciplinary work groups

5.3 To effectively present work results both orally and in writing to stakeholders in the military environment

Forms of Teaching

- » Lectures
- » Exercises

Week by Week Schedule

1. Seminar: Testing of anthropological features
2. Seminar: Physical training and health
3. Seminar: Neuro-muscular training
Development of functional capabilities
4. Seminar: Fitness programmes
5. Seminar: Development of functional capabilities
Development of motor abilities
6. Seminar: Development of functional capabilities
Fitness programmes
7. Seminar: Development of functional capabilities
Neuro-muscular training
8. Seminar: Fitness programmes
9. Seminar: Development of functional capabilities
Fitness programmes
10. Seminar: Fitness programmes
11. Seminar: Development of functional capabilities
Development of motor abilities
12. Seminar: Fitness programmes
Neuro-muskularni trening
13. Seminar: Basics of martial art
14. Seminar: Basics of martial art
15. Seminar: Basics of martial art

Literature



*Milanović, D. (1996.)
Priručnik za tjelovježbu*



Kulier, I. (1995.) Prehrana



*Sertić, H. (2001.) Osnove
borilačkih sportova*



*Šarlija, J. Vrkić, M. (2010.)
Upute za vježbanje na
spravama*



*Mišigoj Duraković, M. i sur.
(1999.) Tjelesno vježbanje i
zdravlje*

Physical Training IV

129350

Lecturer



Dražan Ćurčić,
pred.

Course Description

Acquiring basic knowledge, skills and habits needed for adapting to new motor activities, reaching the desired level of motor achievements and improvement and keeping up of physical abilities of the students for better use of their free time.

Study Programmes

- » Group of Courses Armour, Field Artillery, Engineers, Technical Support and Infantry -> Military Engineering (Course) (*required course, 4th semester, 2nd year*)
- » Group of Courses Signals, Monitoring and Guidance and Air Defence -> Military Engineering (Course) (*required course, 4th semester, 2nd year*)
- » Chemical, Biological, Radiological and Nuclear Defence -> Military Engineering (Course) (*required course, 4th semester, 2nd year*) (**Note: course not offered in this academic year.**)
- » Military Leadership and Management (Study) (*required course, 4th semester, 2nd year*)

Learning Outcomes

On successful completion of the course, students will be able to:

1. Analyze the effect of specially programmed military training exercises to the development of anthropologic features
2. Analyze methodology of examination of kinesiological readiness in the CAF
3. Explain possibilities of applying military training in recreational programmes
4. Conduct examinations of anthropologic features.
5. Show basic fighting techniques
6. Autonomous performance of basic kinesiological programmes
7. Use methodological procedures during the performance of kinesiological activities
8. Use methodical procedures for correcting the mistakes
9. Explain the organization and effects of kinesiological system in CAF
10. Explain sports and military competitions of special interest for CAF

Study Programme Learning Outcomes

Military Engineering

- 1 Basic competences of the military profession
 - 1.3 To make decisions independently and command a basic tactical unit
 - 1.4 To train, develop and assess the abilities of soldiers and a basic tactical unit
 - 1.5 To develop personal and collective determination, courage, enthusiasm and

ECTS Credits 0.0

English Level Lo

E-learning Level L1

Study Hours

Physical education exercises 30

Teaching Assistants

Goran Rogalo, pred.

Joso Šarlija, pred.

Marinko Vrkić, pred.

Grading

Grading: Check up of physical readiness and motor abilities.
Obligations: Regular attendance.



initiative of subordinates

2 Special military competences

2.2 To manage maintenance of combat and non-combat assets, ammunitions and mines of the branch/service

3 Basic technical knowledge

3.1. To identify, analyse, model and resolve military engineering problems by integrating basic knowledge of natural and technical sciences

4. Personal and professional skills and characteristics

4.1 To identify and analyze a problem in the military environment

4.2 To model and resolve a problem and to interpret problem solution by using appropriate knowledge and methods

4.3 To assume military, professional and ethical responsibility

4.4 To develop self-study abilities and the need for and methods of life-long learning in traditional and virtual environment

5. Social skills (team work and communication)

5.1 To communicate effectively in the Croatian and English language applying modern presentation skills and techniques

5.2 Organize and plan individual and team work in international and interdisciplinary work groups

5.3 To effectively present work results both orally and in writing to stakeholders in the military environment

6 Development, implementation and operation of technical systems in economic and social environment

6.3. To apply and select knowledge and relevant facts from different areas, and to assume responsibility for assessing the impact of military technology in social environment

Military Leadership and Management

1 Basic competences of the military profession

1.3 To make decisions independently and command a basic tactical unit

1.4 To train, develop and assess the abilities of soldiers and a basic tactical unit

1.5 To develop personal and collective determination, courage, enthusiasm and initiative of subordinates

2 Special military competences

2.2 To manage maintenance of combat and non-combat assets, ammunitions and mines of the branch/service

3 Basic competences in social and humanistic sciences

3.1 To analyze and interpret processes in international environment, and to act within international alliances and organizations in which the Republic of Croatia participates

4. Personal and professional skills and characteristics

4.1 To identify and analyze a problem in the military environment

4.2 To model and resolve a problem and to interpret problem solution by using appropriate knowledge and methods

4.3 To assume military, professional and ethical responsibility

4.4 To develop self-study abilities and the need for and methods of life-long learning in traditional and virtual environment

5. Social skills (team work and communication)

5.1 To communicate effectively in the Croatian and English language applying modern presentation skills and techniques

5.2 Organize and plan individual and team work in international and interdisciplinary work groups

5.3 To effectively present work results both orally and in writing to stakeholders in the military environment

Forms of Teaching

- » Lectures
- » Exercises

Week by Week Schedule

1. Seminar: Development of functional capabilities
Development of motor abilities
2. Seminar: Fitness programmes
3. Seminar: Fitness programmes
Neuro-muscular training
4. Seminar: Fitness programmes
5. Seminar: Fitness programmes
Neuro-muscular training
6. Seminar: Development of functional capabilities
Development of motor abilities
7. Seminar: Fitness programmes
8. Seminar: Development of functional capabilities
Development of motor abilities
9. Seminar: Fitness programmes
10. Seminar: Development of functional capabilities
Development of motor abilities
11. Seminar: Testing of anthropological features
12. Seminar: Fitness programmes
13. Seminar: Development of functional capabilities
Development of motor abilities
14. Seminar: Development of functional capabilities
15. Seminar: Development of functional capabilities
Development of functional capabilities

Literature



*Milanović, D. (1996.)
Priručnik za tjelovježbu*



Kulier, I. (1995.) Prehrana



*Sertić, H. (2001.) Osnove
borilačkih sportova*



*Šarlija, J. Vrkić, M. (2010.)
Upute za vježbanje na
spravama*



*Mišigoj Duraković, M. i sur.
(1999.) Tjelesno vježbanje i
zdravlje*

Physical Training V

129626

Lecturer



Goran Rogalo,
pred.

Course Description

Optimal development of basic physical abilities pertinent to individual characteristics of the students and the development of normal intellectual abilities and corrections of pathological factors. Acquiring specific motor knowledge, skills and habits particularly those that have practical application during the work and life.

Study Programmes

- » Armour -> Group of Courses Armour, Field Artillery, Engineers, Technical Support and Infantry (Course) (*required course, 5th semester, 3rd year*) (Note: course not offered in this academic year.)
- » Field Artillery -> Group of Courses Armour, Field Artillery, Engineers, Technical Support and Infantry (Course) (*required course, 5th semester, 3rd year*)
- » Engineers -> Group of Courses Armour, Field Artillery, Engineers, Technical Support and Infantry (Course) (*required course, 5th semester, 3rd year*) (Note: course not offered in this academic year.)
- » Technical Support -> Group of Courses Armour, Field Artillery, Engineers, Technical Support and Infantry (Course) (*required course, 5th semester, 3rd year*)
- » Infantry -> Group of Courses Armour, Field Artillery, Engineers, Technical Support and Infantry (Course) (*required course, 5th semester, 3rd year*) (Note: course not offered in this academic year.)
- » Signals -> Group of Courses Signals, Monitoring and Guidance and Air Defence (Course) (*required course, 5th semester, 3rd year*)
- » Monitoring and Guidance -> Group of Courses Signals, Monitoring and Guidance and Air Defence (Course) (*required course, 5th semester, 3rd year*) (Note: course not offered in this academic year.)
- » Air Defence -> Group of Courses Signals, Monitoring and Guidance and Air Defence (Course) (*required course, 5th semester, 3rd year*) (Note: course not offered in this academic year.)
- » Chemical, Biological, Radiological and Nuclear Defence -> Military Engineering (Course) (*required course, 5th semester, 3rd year*) (Note: course not offered in this academic year.)
- » Military Leadership and Management (Study) (*required course, 5th semester, 3rd year*)

ECTS Credits 0.0

English Level Lo

E-learning Level L1

Study Hours
Physical education exercises 30

Teaching Assistants
Dražan Ćurčić, pred.
Joso Šarlija, pred.
Marinko Vrkić, pred.

Grading
Grading: Check up of physical readiness and motor abilities.
Obligations: Regular attendance.

Learning Outcomes

On successful completion of the course, students will be able to:

1. Analyze the effect of specially programmed military training exercises to the development of anthropologic features
2. Analyze methodology of examination of kinesiological readiness in the CAF
3. Explain possibilities of applying military training in recreational programmes
4. Conduct examinations of anthropologic features.
5. Show basic fighting techniques
6. Autonomous performance of basic kinesiological programmes
7. Use methodological procedures during the performance of kinesiological activities
8. Use methodical procedures for correcting the mistakes
9. Explain the organization and effects of kinesiological system in CAF
10. Explain sports and military competitions of special interest for CAF

Study Programme Learning Outcomes

Military Engineering

- 1 Basic competences of the military profession
 - 1.3 To make decisions independently and command a basic tactical unit
 - 1.4 To train, develop and assess the abilities of soldiers and a basic tactical unit
 - 1.5 To develop personal and collective determination, courage, enthusiasm and initiative of subordinates
- 2 Special military competences
 - 2.2 To manage maintenance of combat and non-combat assets, ammunitions and mines of the branch/service
- 3 Basic technical knowledge
 - 3.1. To identify, analyse, model and resolve military engineering problems by integrating basic knowledge of natural and technical sciences
4. Personal and professional skills and characteristics
 - 4.1 To identify and analyze a problem in the military environment
 - 4.2 To model and resolve a problem and to interpret problem solution by using appropriate knowledge and methods
 - 4.3 To assume military, professional and ethical responsibility
 - 4.4 To develop self-study abilities and the need for and methods of life-long learning in traditional and virtual environment
5. Social skills (team work and communication)
 - 5.1 To communicate effectively in the Croatian and English language applying modern presentation skills and techniques
 - 5.2 Organize and plan individual and team work in international and interdisciplinary work groups
 - 5.3 To effectively present work results both orally and in writing to stakeholders in the military environment
- 6 Development, implementation and operation of technical systems in economic and social environment
 - 6.3. To apply and select knowledge and relevant facts from different areas, and to assume responsibility for assessing the impact of military technology in social environment

Military Leadership and Management

- 1 Basic competences of the military profession
 - 1.3 To make decisions independently and command a basic tactical unit
 - 1.4 To train, develop and assess the abilities of soldiers and a basic tactical unit
 - 1.5 To develop personal and collective determination, courage, enthusiasm and

initiative of subordinates

2 Special military competences

2.2 To manage maintenance of combat and non-combat assets, ammunitions and mines of the branch/service

3 Basic competences in social and humanistic sciences

3.1 To analyze and interpret processes in international environment, and to act within international alliances and organizations in which the Republic of Croatia participates

4 Personal and professional skills and characteristics

4.1 To identify and analyze a problem in the military environment

4.2 To model and resolve a problem and to interpret problem solution by using appropriate knowledge and methods

4.3 To assume military, professional and ethical responsibility

4.4 To develop self-study abilities and the need for and methods of life-long learning in traditional and virtual environment

5. Social skills (team work and communication)

5.1 To communicate effectively in the Croatian and English language applying modern presentation skills and techniques

5.2 Organize and plan individual and team work in international and interdisciplinary work groups

5.3 To effectively present work results both orally and in writing to stakeholders in the military environment

Forms of Teaching

» Lectures

» Exercises

Week by Week Schedule

1. Seminar: Testing of anthropological features
2. Seminar: Development of functional capabilities
Development of motor abilities
3. Seminar: Development of functional capabilities
Development of motor abilities
4. Seminar: Fitness programmes
5. Seminar: Fitness programmes
Development of motor abilities
6. Seminar: Development of functional capabilities
Fitness programmes
7. Seminar: Fitness programmes
8. Seminar: Development of functional capabilities
Development of motor abilities
9. Seminar: Fitness programmes
10. Seminar: Fitness programmes
11. Seminar: Development of functional capabilities
Development of motor abilities
12. Seminar: Fitness programmes
Development of motor abilities
13. Seminar: Basics of martial art
14. Seminar: Development of functional capabilities
15. Seminar: Development of motor abilities

Literature



*Findak, V. (1989.) Metodika
tjelesne i zdravstvene kulture*



*Milanović, D. (1996.)
Priručnik za tjelovježbu*



*Šarlija, J.; Vrkić, M. (2010.)
Upute za vježbanje na
spravama*



*Milanović, D. i sur. (1996.)
Zbornik radova - Fitness*

Physical Training VI

129382

Lecturer



Goran Rogalo,
pred.

Course Description

Optimal development of basic physical abilities pertinent to individual characteristics of the students and the development of normal intellectual abilities and corrections of pathological factors. Acquiring specific motor knowledge, skills and habits particularly those that have practical application during the work and life.

Study Programmes

- » Armour -> Group of Courses Armour, Field Artillery, Engineers, Technical Support and Infantry (Course) (*required course, 6th semester, 3rd year*) (Note: course not offered in this academic year.)
- » Field Artillery -> Group of Courses Armour, Field Artillery, Engineers, Technical Support and Infantry (Course) (*required course, 6th semester, 3rd year*)
- » Engineers -> Group of Courses Armour, Field Artillery, Engineers, Technical Support and Infantry (Course) (*required course, 6th semester, 3rd year*) (Note: course not offered in this academic year.)
- » Technical Support -> Group of Courses Armour, Field Artillery, Engineers, Technical Support and Infantry (Course) (*required course, 6th semester, 3rd year*)
- » Infantry -> Group of Courses Armour, Field Artillery, Engineers, Technical Support and Infantry (Course) (*required course, 6th semester, 3rd year*) (Note: course not offered in this academic year.)
- » Signals -> Group of Courses Signals, Monitoring and Guidance and Air Defence (Course) (*required course, 6th semester, 3rd year*)
- » Monitoring and Guidance -> Group of Courses Signals, Monitoring and Guidance and Air Defence (Course) (*required course, 6th semester, 3rd year*) (Note: course not offered in this academic year.)
- » Air Defence -> Group of Courses Signals, Monitoring and Guidance and Air Defence (Course) (*required course, 6th semester, 3rd year*) (Note: course not offered in this academic year.)
- » Chemical, Biological, Radiological and Nuclear Defence -> Military Engineering (Course) (*required course, 6th semester, 3rd year*) (Note: course not offered in this academic year.)
- » Military Leadership and Management (Study) (*required course, 6th semester, 3rd year*)

ECTS Credits 0.0

English Level Lo

E-learning Level L1

Study Hours

Physical education exercises 30

Teaching Assistants

Dražan Ćurčić, pred.

Joso Šarlija, pred.

Marinko Vrkić, pred.

Grading

Grading: Check up of physical readiness and motor abilities.
Obligations: Regular attendance.

Learning Outcomes

On successful completion of the course, students will be able to:

1. Analyze the effect of specially programmed military training exercises to the development of anthropologic features
2. Analyze methodology of examination of kinesiological readiness in the CAF
3. Explain possibilities of applying military training in recreational programmes
4. Conduct examinations of anthropologic features.
5. Show basic fighting techniques
6. Autonomous performance of basic kinesiological programmes
7. Use methodological procedures during the performance of kinesiological activities
8. Use methodical procedures for correcting the mistakes
9. Explain the organization and effects of kinesiological system in CAF
10. Explain sports and military competitions of special interest for CAF

Study Programme Learning Outcomes

Military Engineering

- 1 Basic competences of the military profession
 - 1.3 To make decisions independently and command a basic tactical unit
 - 1.4 To train, develop and assess the abilities of soldiers and a basic tactical unit
 - 1.5 To develop personal and collective determination, courage, enthusiasm and initiative of subordinates
- 2 Special military competences
 - 2.2 To manage maintenance of combat and non-combat assets, ammunitions and mines of the branch/service
- 3 Basic technical knowledge
 - 3.1. To identify, analyse, model and resolve military engineering problems by integrating basic knowledge of natural and technical sciences
4. Personal and professional skills and characteristics
 - 4.1 To identify and analyze a problem in the military environment
 - 4.2 To model and resolve a problem and to interpret problem solution by using appropriate knowledge and methods
 - 4.3 To assume military, professional and ethical responsibility
 - 4.4 To develop self-study abilities and the need for and methods of life-long learning in traditional and virtual environment
5. Social skills (team work and communication)
 - 5.1 To communicate effectively in the Croatian and English language applying modern presentation skills and techniques
 - 5.2 Organize and plan individual and team work in international and interdisciplinary work groups
 - 5.3 To effectively present work results both orally and in writing to stakeholders in the military environment
- 6 Development, implementation and operation of technical systems in economic and social environment
 - 6.3. To apply and select knowledge and relevant facts from different areas, and to assume responsibility for assessing the impact of military technology in social environment

Military Leadership and Management

- 1 Basic competences of the military profession
 - 1.3 To make decisions independently and command a basic tactical unit
 - 1.5 To develop personal and collective determination, courage, enthusiasm and initiative of subordinates

- 2 Special military competences
 - 2.2 To manage maintenance of combat and non-combat assets, ammunitions and mines of the branch/service
- 3 Basic competences in social and humanistic sciences
 - 3.1 To analyze and interpret processes in international environment, and to act within international alliances and organizations in which the Republic of Croatia participates
4. Personal and professional skills and characteristics
 - 4.1 To identify and analyze a problem in the military environment
 - 4.2 To model and resolve a problem and to interpret problem solution by using appropriate knowledge and methods
 - 4.3 To assume military, professional and ethical responsibility
 - 4.4 To develop self-study abilities and the need for and methods of life-long learning in traditional and virtual environment
5. Social skills (team work and communication)
 - 5.1 To communicate effectively in the Croatian and English language applying modern presentation skills and techniques
 - 5.2 Organize and plan individual and team work in international and interdisciplinary work groups
 - 5.3 To effectively present work results both orally and in writing to stakeholders in the military environment

Forms of Teaching

- » Lectures
- » Exercises

Week by Week Schedule

1. Seminar: Fitness programmes
2. Seminar: Development of functional capabilities
Development of motor abilities
3. Seminar: Development of motor abilities
Fitness programmes
4. Seminar: Fitness programmes
Development of functional capabilities
5. Seminar: Development of motor abilities
Fitness programmes
6. Seminar: Development of functional capabilities
Development of motor abilities
7. Seminar: Fitness programmes
8. Seminar: Fitness programmes
Development of functional capabilities
9. Seminar: Fitness programmes
Development of functional capabilities
10. Seminar: Fitness programmes
11. Seminar: Testing of anthropological features
12. Seminar: Fitness programmes
Development of functional capabilities
13. Seminar: Fitness programmes
14. Seminar: Development of functional capabilities
Development of motor abilities
15. Seminar: Fitness programmes
Development of functional capabilities

Literature



*Findak, V. (1989.) Metodika
tjelesne i zdravstvene kulture*



*Milanović, D. (1996.)
Priručnik za tjelovježbu*



*Šarlija, J. Vrkić, M. (2010.)
Upute za vježbanje na
spravama*



*Milanović, D. i sur. (1996.)
Zbornik radova - Fitness*



*Sertić, H. (2001.) Osnove
borilačkih sportova*

Physical training VII

130108

Lecturer



Joso Šarlija,
pred.

ECTS Credits 0.0

English Level Lo

E-learning Level L1

Study Hours
Physical education exercises 30

Teaching Assistants
Dražan Ćurčić, pred.
Goran Rogalo, pred.
Marinko Vrkić, pred.

Grading

Grading: Check up of physical readiness and motor abilities.
Obligations: Regular attendance.

Course Description

Acquiring basic knowledge, skills and habits needed for specific kinesiological activities in the Croatian Armed Forces, reaching the desired level of kinesiological transformation processes in the CAF.

Study Programmes

- » Armour -> Group of Courses Armour, Field Artillery, Engineers, Technical Support and Infantry (Course) (*required course, 7th semester, 4th year*)
- » Field Artillery -> Group of Courses Armour, Field Artillery, Engineers, Technical Support and Infantry (Course) (*required course, 7th semester, 4th year*)
- » Engineers -> Group of Courses Armour, Field Artillery, Engineers, Technical Support and Infantry (Course) (*required course, 7th semester, 4th year*)
- » Technical Support -> Group of Courses Armour, Field Artillery, Engineers, Technical Support and Infantry (Course) (*required course, 7th semester, 4th year*)
- » Infantry -> Group of Courses Armour, Field Artillery, Engineers, Technical Support and Infantry (Course) (*required course, 7th semester, 4th year*) (**Note: course not offered in this academic year.**)
- » Signals -> Group of Courses Signals, Monitoring and Guidance and Air Defence (Course) (*required course, 7th semester, 4th year*) (**Note: course not offered in this academic year.**)
- » Monitoring and Guidance -> Group of Courses Signals, Monitoring and Guidance and Air Defence (Course) (*required course, 7th semester, 4th year*) (**Note: course not offered in this academic year.**)
- » Air Defence -> Group of Courses Signals, Monitoring and Guidance and Air Defence (Course) (*required course, 7th semester, 4th year*) (**Note: course not offered in this academic year.**)
- » Chemical, Biological, Radiological and Nuclear Defence -> Military Engineering (Course) (*required course, 7th semester, 4th year*)
- » Infantry -> Military Leadership and Management (Course) (*required course, 7th semester, 4th year*)

Learning Outcomes

On successful completion of the course, students will be able to:

1. Analyze the effect of specially programmed military training exercises to the development of anthropologic features
2. Analyze methodology of examination of kinesiological readiness in the CAF
3. Explain possibilities of applying military training in recreational programmes
4. Conduct examinations of anthropologic features.
5. Show basic fighting techniques

6. Autonomous performance of basic kinesiological programmes
7. Use methodological procedures during the performance of kinesiological activities
8. Use methodical procedures for correcting the mistakes
9. Explain the organization and effects of kinesiological system in CAF
10. Explain sports and military competitions of special interest for CAF

Study Programme Learning Outcomes

Military Engineering

- 1 Basic competences of the military profession
 - 1.3 To make decisions independently and command a basic tactical unit
 - 1.4 To train, develop and assess the abilities of soldiers and a basic tactical unit
 - 1.5 To develop personal and collective determination, courage, enthusiasm and initiative of subordinates
- 2 Special military competences
 - 2.2 To manage maintenance of combat and non-combat assets, ammunitions and mines of the branch/service
- 3 Basic technical knowledge
 - 3.1. To identify, analyse, model and resolve military engineering problems by integrating basic knowledge of natural and technical sciences
4. Personal and professional skills and characteristics
 - 4.1 To identify and analyze a problem in the military environment
 - 4.2 To model and resolve a problem and to interpret problem solution by using appropriate knowledge and methods
 - 4.3 To assume military, professional and ethical responsibility
 - 4.4 To develop self-study abilities and the need for and methods of life-long learning in traditional and virtual environment
5. Social skills (team work and communication)
 - 5.1 To communicate effectively in the Croatian and English language applying modern presentation skills and techniques
 - 5.2 Organize and plan individual and team work in international and interdisciplinary work groups
 - 5.3 To effectively present work results both orally and in writing to stakeholders in the military environment
- 6 Development, implementation and operation of technical systems in economic and social environment
 - 6.3. To apply and select knowledge and relevant facts from different areas, and to assume responsibility for assessing the impact of military technology in social environment

Military Leadership and Management

- 1 Basic competences of the military profession
 - 1.3 To make decisions independently and command a basic tactical unit
 - 1.4 To train, develop and assess the abilities of soldiers and a basic tactical unit
 - 1.5 To develop personal and collective determination, courage, enthusiasm and initiative of subordinates
- 2 Special military competences
 - 2.2 To manage maintenance of combat and non-combat assets, ammunitions and mines of the branch/service
4. Personal and professional skills and characteristics
 - 4.1 To identify and analyze a problem in the military environment
 - 4.2 To model and resolve a problem and to interpret problem solution by using appropriate knowledge and methods
 - 4.3 To assume military, professional and ethical responsibility

- 4.4 To develop self-study abilities and the need for and methods of life-long learning in traditional and virtual environment
- 5. Social skills (team work and communication)
 - 5.1 To communicate effectively in the Croatian and English language applying modern presentation skills and techniques
 - 5.2 Organize and plan individual and team work in international and interdisciplinary work groups
 - 5.3 To effectively present work results both orally and in writing to stakeholders in the military environment

Forms of Teaching

- » Lectures
- » Exercises

Week by Week Schedule

1. Seminar: Testing of anthropological features
2. Seminar: Development of functional capabilities
Development of motor abilities
3. Seminar: Development of functional capabilities
Development of motor abilities
4. Seminar: Fitness programmes
5. Seminar: Development of functional capabilities
Fitness programmes
6. Seminar: Development of functional capabilities
Development of motor abilities
7. Seminar: Fitness programmes
8. Seminar: Development of functional capabilities
Development of motor abilities
9. Seminar: Fitness programmes
Development of motor abilities
10. Seminar: Fitness programmes
11. Seminar: Development of functional capabilities
Development of motor abilities
12. Seminar: Basics of martial art
13. Seminar: Basics of martial art
14. Seminar: Basics of martial art
15. Seminar: Fitness programmes

Literature



Findak, V. (1989.) Metodika tjelesne i zdravstvene kulture



Milanović, D. (1996.) Priručnik za tjelovježbu



Šarlija, J. Vrkić, M. (2010.) Upute za vježbanje na spravama



Milanović, D. i sur. (1996.) Zbornik radova - Fitness



Sertić, H. (2001.) Osnove boričkih sportova

Physical Training VIII

129455

Lecturer



Joso Šarlija,
pred.

Course Description

Acquiring basic knowledge, skills and habits needed for specific kinesiological activities, reaching the desired level of kinesiological transformation processes in the CAF.

Study Programmes

- » Armour -> Group of Courses Armour, Field Artillery, Engineers, Technical Support and Infantry (Course) (*required course, 8th semester, 4th year*)
- » Field Artillery -> Group of Courses Armour, Field Artillery, Engineers, Technical Support and Infantry (Course) (*required course, 8th semester, 4th year*)
- » Engineers -> Group of Courses Armour, Field Artillery, Engineers, Technical Support and Infantry (Course) (*required course, 8th semester, 4th year*)
- » Technical Support -> Group of Courses Armour, Field Artillery, Engineers, Technical Support and Infantry (Course) (*required course, 8th semester, 4th year*)
- » Infantry -> Group of Courses Armour, Field Artillery, Engineers, Technical Support and Infantry (Course) (*required course, 8th semester, 4th year*) (Note: course not offered in this academic year.)
- » Signals -> Group of Courses Signals, Monitoring and Guidance and Air Defence (Course) (*required course, 8th semester, 4th year*) (Note: course not offered in this academic year.)
- » Monitoring and Guidance -> Group of Courses Signals, Monitoring and Guidance and Air Defence (Course) (*required course, 8th semester, 4th year*) (Note: course not offered in this academic year.)
- » Air Defence -> Group of Courses Signals, Monitoring and Guidance and Air Defence (Course) (*required course, 8th semester, 4th year*) (Note: course not offered in this academic year.)
- » Chemical, Biological, Radiological and Nuclear Defence -> Military Engineering (Course) (*required course, 8th semester, 4th year*)
- » Infantry -> Military Leadership and Management (Course) (*required course, 8th semester, 4th year*)

Learning Outcomes

On successful completion of the course, students will be able to:

1. Analyze the effect of specially programmed military training exercises to the development of anthropologic features
2. Analyze methodology of examination of kinesiological readiness in the CAF
3. Explain possibilities of applying military training in recreational programmes
4. Conduct examinations of anthropologic features.
5. Show basic fighting techniques

ECTS Credits 0.0

English Level Lo

E-learning Level L1

Study Hours

Physical education exercises 30

Teaching Assistants

Dražan Ćurčić, pred.

Goran Rogalo, pred.

Marinko Vrkić, pred.

Grading

Grading: Check up of physical readiness and motor abilities.

Obligations: Regular attendance.

6. Autonomous performance of basic kinesiological programmes
7. Use methodological procedures during the performance of kinesiological activities
8. Use methodical procedures for correcting the mistakes
9. Explain the organization and effects of kinesiological system in CAF
10. Explain sports and military competitions of special interest for CAF

Study Programme Learning Outcomes

Military Engineering

- 1 Basic competences of the military profession
 - 1.3 To make decisions independently and command a basic tactical unit
 - 1.4 To train, develop and assess the abilities of soldiers and a basic tactical unit
 - 1.5 To develop personal and collective determination, courage, enthusiasm and initiative of subordinates
- 2 Special military competences
 - 2.2 To manage maintenance of combat and non-combat assets, ammunitions and mines of the branch/service
- 4 Personal and professional skills and characteristics
 - 4.1 To identify and analyze a problem in the military environment
 - 4.2 To model and resolve a problem and to interpret problem solution by using appropriate knowledge and methods
 - 4.3 To assume military, professional and ethical responsibility
 - 4.4 To develop self-study abilities and the need for and methods of life-long learning in traditional and virtual environment
- 5 Social skills (team work and communication)
 - 5.1 To communicate effectively in the Croatian and English language applying modern presentation skills and techniques
 - 5.2 Organize and plan individual and team work in international and interdisciplinary work groups
 - 5.3 To effectively present work results both orally and in writing to stakeholders in the military environment
- 6 Development, implementation and operation of technical systems in economic and social environment
 - 6.3. To apply and select knowledge and relevant facts from different areas, and to assume responsibility for assessing the impact of military technology in social environment

Military Leadership and Management

- 1 Basic competences of the military profession
 - 1.3 To make decisions independently and command a basic tactical unit
 - 1.4 To train, develop and assess the abilities of soldiers and a basic tactical unit
 - 1.5 To develop personal and collective determination, courage, enthusiasm and initiative of subordinates
- 2 Special military competences
 - 2.2 To manage maintenance of combat and non-combat assets, ammunitions and mines of the branch/service
- 3 Basic competences in social and humanistic sciences
 - 3.1 To analyze and interpret processes in international environment, and to act within international alliances and organizations in which the Republic of Croatia participates
- 4 Personal and professional skills and characteristics
 - 4.1 To identify and analyze a problem in the military environment
 - 4.2 To model and resolve a problem and to interpret problem solution by using appropriate knowledge and methods

- 4.3 To assume military, professional and ethical responsibility
- 4.4 To develop self-study abilities and the need for and methods of life-long learning in traditional and virtual environment
- 5. Social skills (team work and communication)
 - 5.1 To communicate effectively in the Croatian and English language applying modern presentation skills and techniques
 - 5.2 Organize and plan individual and team work in international and interdisciplinary work groups
 - 5.3 To effectively present work results both orally and in writing to stakeholders in the military environment

Forms of Teaching

- » Lectures
- » Exercises

Week by Week Schedule

1. Seminar: Development of functional capabilities
Development of motor abilities
2. Seminar: Development of functional capabilities
Fitness programmes
3. Seminar: Development of functional capabilities
Fitness programmes
4. Seminar: Fitness programmes
5. Seminar: Fitness programmes
Development of motor abilities
6. Seminar: Development of functional capabilities
Fitness programmes
7. Seminar: Development of functional capabilities
Fitness programmes
8. Seminar: Development of functional capabilities
Development of motor abilities
9. Seminar: Fitness programmes
10. Seminar: Development of functional capabilities
Fitness programmes
11. Seminar: Testing of anthropological features
12. Seminar: Fitness programmes
Development of motor abilities
13. Seminar: Development of functional capabilities
Development of motor abilities
14. Seminar: Development of functional capabilities
Fitness programmes
15. Seminar: Fitness programmes

Literature



Findak, V. (1989.) Metodika tjelesne i zdravstvene kulture



Milanović, D. (1996.) Priručnik za tjelovježbu



Šarlija, J. Vrkić, M. (2010.) Upute za vježbanje na spravama



Milanović, D. i sur. (1996.) Zbornik radova - Fitness



*Sertić, H. (2001.) Osnove
borilačkih sportova*

Physics I

129218

Lecturer



doc. dr. sc.
Sanda Pleslić

Course Description

Understanding of classical physical principles and theory of mechanical waves and oscillations. Theoretical and experimental approach to phenomena and application of models and methods of physics in their modelling, utilization and maintenance of devices, circuits and systems in military engineering. Continuation with education in modern science.

Study Programmes

» Military Engineering (Study) (*required course, 1st semester, 1st year*)

Learning Outcomes

On successful completion of the course, students will be able to:

1. Analyze simple mechanical systems and solve equations of motion.
2. Explain the conditions of statics of rigid bodies and the equation of motion for rotation of the rigid body around fixed axis.
3. Explain and apply the conservation laws (energy, momentum).
4. Explain oscillation systems in mechanics with special accent on total mathematical problem solving.
5. Explain the wave phenomenon, mechanical waves creation and their propagation.
6. Apply the equations of continuity and Bernoulli in simple problems from fluid mechanics.
7. Explain laws of thermodynamics and apply in simple thermodynamic cycles.

Study Programme Learning Outcomes

Military Engineering

3 Basic technical knowledge

- 3.1. To identify, analyse, model and resolve military engineering problems by integrating basic knowledge of natural and technical sciences
- 3.2. To apply complex methodology by integrating engineering knowledge and skills in military engineering practice
- 3.3. To integrate and apply engineering principles and techniques in the operation of military system in unpredictable conditions

4. Personal and professional skills and characteristics

- 4.1 To identify and analyze a problem in the military environment
- 4.2 To model and resolve a problem and to interpret problem solution by using appropriate knowledge and methods
- 4.4 To develop self-study abilities and the need for and methods of life-long

ECTS Credits	7.0
English Level	L3
E-learning Level	L1
Study Hours	
Lectures	45
Seminar	30
Laboratory exercises	15

Teaching Assistants

doc. dr. sc. Ana Babić
Stefan Cikota
doc. dr. sc. Vjeran Gomzi
mr. sc. Radomir Ječmenica
doc. dr. sc. Mario Matijević
Marko Sossich, mag. phys.

Grading

Grading: Evaluation and validation of student work during teaching in the form of colloquium, homework and colloquium for laboratory exercises. Final examination is oral after successful written exam. Exams during semester: midterm exam - written 15% + final exam - written 15% + oral exam 50% + homework 10% + laboratory exercise colloquium 10%. Threshold: 50%/100% Terms - exams: 1st, 2nd, 3rd: written exam 30% + oral exam 50% + homework 10% + laboratory exercise colloquium 10%. Threshold: 50%/100% Threshold for written midterm and final exams: 2 solved problems/6 problems for each. Threshold for written 1st, 2nd, 3rd exams: 3 solved problems/7 problems. Precondition: laboratory exercises and laboratory exercise colloquium must be completed. Marks: 5 - 85-100%, 4 - 70-84%, 3 - 60-69%, 2 - 50-59%

learning in traditional and virtual environment

6 Development, implementation and operation of technical systems in economic and social environment

6.1. To analyse and evaluate the effect of engineering solutions on society and environment

6.2. To apply and create engineering approaches in analysing and assessing products and processes in security environment

6.3. To apply and select knowledge and relevant facts from different areas, and to assume responsibility for assessing the impact of military technology in social environment

6.4. To plan, organise, create and implement engineering testing, and to analyse and interpret the results

Screening of student's work

1 ECTS Lectures attendance

1 ECTS Midterm exam

1 ECTS Written exam

3 ECTS Oral exam

1 ECTS Homework.

7 ECTS

Forms of Teaching

» Lectures

» Lectures will be given in three hours blocks with problems and hints, and with demonstration experiments.

» Seminars and workshops

» Problems will be solved with students' active participation.

» Exercises

» Laboratory exercises will be performed in two hours blocks.

» Partial e-learning

» Homework.

» Laboratory

» Lab will be held in two hours blocks with laboratory measurements, data analysis and report writing.

Week by Week Schedule

1. Lectures: Physical researches. SI. Vectors. Particle motion laws. Concept of derivation - velocity problem, tangent line problem.
Seminar: Physical researches. SI. Theory of errors. Vectors. Particle motion laws. Concept of derivation - velocity problem, tangent line problem.
Exercises: Introduction to theory of errors.
2. Lectures: Work, energy, power. Conservation laws. Integral.
Seminar: Work, energy, power. Conservation laws. Integral.
Exercises: Introduction to theory of errors.
3. Lectures: Mechanics of rigid body. Center of mass. Angular momentum. Statics of rigid body.
Seminar: Mechanics of rigid body. Center of mass. Angular momentum. Statics of rigid body.
Exercises: Different measurements.
4. Lectures: Rotation of rigid body. Energy in rotation. Top.
Seminar: Rotation of rigid body. Energy in rotation. Top.
Exercises: Rigid body density.

5. Lectures: Gravitation. Inertial and noninertial frames. Special theory of relativity.
Seminar: Gravitation. Inertial and noninertial frames. Special theory of relativity.

Exercises: Alcohol density.
6. Lectures: Elasticity and material hardness. Tension. Oscillation. Mathematical and torsion pendulum. Physical pendulum. Forced and damped oscillations. Resonance.
Seminar: Elasticity and material hardness. Tension. Oscillation. Mathematical and torsion pendulum. Physical pendulum. Forced and damped oscillations. Resonance.
Exercises: Mainspring law.
7. Midterm exam.
8. Lectures: Mechanical waves. Sound waves. Doppler effect.
Seminar: Mechanical waves. Sound waves. Doppler effect.
Exercises: Torsion oscillation.
9. Lectures: Fluid mechanics 1 (statics).
Seminar: Fluid mechanics 1 (statics).
Exercises: Physical pendulum.
10. Lectures: Fluid mechanics 2 (dynamics).
Seminar: Fluid mechanics 2 (dynamics).
Exercises: Speed of sound in air and CO₂.
11. Lectures: Temperature. Celsius. Kelvin. Thermal expansion of solids, gases and fluids.
Seminar: Temperature. Celsius. Kelvin. Thermal expansion of solids, gases and fluids.
Exercises: Heat pump.
12. Lectures: Gas laws. Calorimetry. Phase diagrams and phase transitions.
Seminar: Gas laws. Calorimetry. Phase diagrams and phase transitions.
Exercises: Heat of vaporization.
13. Lectures: Heat transmission. Conduction. Convection. Radiation. The first law of thermodynamics. Gas work in different processes.
Seminar: Heat transmission. Conduction. Convection. Radiation. The first law of thermodynamics. Gas work in different processes.
Exercises: Joule law - heat capacity.
14. Lectures: Cycles. Carnot. Heat pump.
Seminar: Cycles. Carnot. Heat pump.
Exercises: Final colloquium.
15. Final exam.

Literature



Petar Kulišić (2005).
Mehanika i toplina, Školska knjiga, Zagreb



V. Henč-Bartolić, P. Kulišić (2004). *Valovi i optika*, Školska knjiga, Zagreb



P. Kulišić, L. Bistričić, D. Horvat, Z. Narančić, T. Petković, D. Pevec (2002).
Riješeni zadaci iz mehanike i topline, Školska knjiga, Zagreb



V. Henč-Bartolić, M. Baće. P. Kulišić, L. Bistričić, D. Horvat, Z. Narančić, T. Petković, D. Pevec (2002).
Riješeni zadaci iz valova i optike, Školska knjiga, Zagreb



Zavod za primijenjenu fiziku (2014). *Skripta za laboratorijske vježbe iz Fizike 1*, ZPF

Additional Literature



Dubravko Horvat (2005).
Fizika 1 - Mehanika i toplotina,
Hinus, Zagreb, 2005, Hinus



Dubravko Horvat (2011).
Fizika 2 - Titranje, valovi,
elektromagnetizam, optika i
uvod u modernu fiziku,
Neodidakta, Zagreb, 2011,
Neodidakta, Zagreb



David Halliday, Robert Resnick,
Jearl Walker (2010).
Fundamentals of Physics, John
Wiley & Sons

Similar Courses

- » General Physics, Oxford
- » Physics, Stanford University
- » Physics I, West Point
- » Physics, The Citadel

Physics II

129217

Lecturer



doc. dr. sc.
Sanda Pleslić

Course Description

Understanding of modern physical principles, electricity and magnetism and physical and geometrical optics. Theoretical and experimental approach to natural phenomena and physical methods application in their modelling, and utilization and maintenance of circuits and systems in military engineering. Continuation with education in modern science.

Study Programmes

» Military Engineering (Study) (*required course, 2nd semester, 1st year*)

Learning Outcomes

On successful completion of the course, students will be able to:

1. Explain basic physical concepts of electricity and magnetism.
2. Analyze simple circuits.
3. Explain connection between electricity and magnetism.
4. Explain generation and propagation of EM waves.
5. Analyze simple optical systems using the methods of geometrical optics.
6. Explain the phenomena of interference, diffraction and polarization of light.
7. Explain radiation laws.
8. Explain atomic structure and nuclear structure.

Study Programme Learning Outcomes

Military Engineering

3 Basic technical knowledge

- 3.1. To identify, analyse, model and resolve military engineering problems by integrating basic knowledge of natural and technical sciences
- 3.2. To apply complex methodology by integrating engineering knowledge and skills in military engineering practice
- 3.3. To integrate and apply engineering principles and techniques in the operation of military system in unpredictable conditions

4. Personal and professional skills and characteristics

- 4.1 To identify and analyze a problem in the military environment
- 4.2 To model and resolve a problem and to interpret problem solution by using appropriate knowledge and methods
- 4.4 To develop self-study abilities and the need for and methods of life-long learning in traditional and virtual environment

6 Development, implementation and operation of technical systems in economic

ECTS Credits	6.0
English Level	Lo
E-learning Level	L3
Study Hours	
Lectures	45
Seminar	15
Laboratory exercises	15

Associate Lecturer
doc. dr. sc. Ana Babić

Teaching Assistants

Stefan Cikota
doc. dr. sc. Vjėran Gomzi
mr. sc. Radomir Ječmenica
doc. dr. sc. Mario Matijević
Marko Sossich, mag. phys.

Grading

Grading: Evaluation and validation of student work during teaching in the form of colloquium, homework and colloquium for laboratory exercises. Final examination is oral after successful written exam. Exams during semester: midterm exam - written 15% + final exam - written 15% + oral exam 50% + homework 10% + laboratory exercise colloquium 10%. Threshold: 50%/100% Terms - exams: 1st, 2nd, 3rd: written exam 30% + oral exam 50% + homework 10% + laboratory exercise colloquium 10%. Threshold: 50%/100% Threshold for written midterm and final exams: 2 solved problems/6 problems for each. Threshold for written 1st, 2nd, 3rd exams: 3 solved problems/7 problems. Precondition: laboratory exercises and laboratory exercise colloquium must be completed. Marks: 5 - 85-100%, 4 - 70-84%, 3 - 60-69%, 2 - 50-59%

and social environment

- 6.1. To analyse and evaluate the effect of engineering solutions on society and environment
- 6.2. To apply and create engineering approaches in analysing and assessing products and processes in security environment
- 6.3. To apply and select knowledge and relevant facts from different areas, and to assume responsibility for assessing the impact of military technology in social environment
- 6.4. To plan, organise, create and implement engineering testing, and to analyse and interpret the results

Screening of student's work

- 1 ECTS Lectures attendance
- 1 ECTS Midterm exam
- 1 ECTS Written exam
- 2 ECTS Oral exam
- 1 ECTS Homework.
- 6 ECTS

Forms of Teaching

- » Lectures
 - » Lectures will be given in three hours blocks with problems and hints, and with demonstration experiments.
- » Seminars and workshops
 - » Problems will be solved with students' active participation.
- » Exercises
 - » Laboratory exercises will be performed in two hours blocks.
- » Partial e-learning
 - » Homework.
- » Laboratory
 - » Lab will be held in two hours blocks with laboratory measurements, data analysis and report writing.

Week by Week Schedule

1. Lectures: Electrical charge. Electrical influence. Electrical field. Principle of superposition. Coulomb law. Electrical potential.
Seminar: Electrical charge. Electrical influence. Electrical field. Principle of superposition. Coulomb law. Electrical potential.
Exercises: Introduction to theory of errors.
2. Lectures: Electrical field in materials. Polarization. Capacitors. Work in electrical field. Potential energy. Electrical current. Electrical resistance. Thermal dependence of resistance.
Seminar: Electrical field in materials. Polarization. Capacitors. Work in electrical field. Potential energy. Electrical current. Electrical resistance. Thermal dependence of resistance.
Exercises: RC generator calibration.
3. Lectures: EMF. Circuits. Kirchoff rules. Electrical measurement instruments.
Seminar: EMF. Circuits. Kirchoff rules. Electrical measurement instruments.
Exercises: Ohm law.
4. Lectures: Oersted's experiment. Magnetic field. Lorentz force. Force on conductor in magnetic field. Hall effect. Biot-Savart and Ampere laws. Definition of ampere.
Seminar: Oersted's experiment. Magnetic field. Lorentz force. Force on conductor in magnetic field. Hall effect. Biot-Savart and Ampere laws. Definition of ampere.
Exercises: AC power.

5. Lectures: Magnetic field. Inductance. Electromagnetic induction. Energy of EM field. Mutual induction.
Seminar: Magnetic field. Inductance. Electromagnetic induction. Energy of EM field. Mutual induction.
Exercises: Copper coulometer.
6. Lectures: RLC circuit and analogy with mechanics. Resonance. AC circuits. Power. Transformers.
Seminar: RLC circuit and analogy with mechanics. Resonance. AC circuits. Power. Transformers.
Exercises: Spheric mirror. Bessel method for lens focal length measurement.
7. Midterm exam.
8. Lectures: EM waves. Generation and propagation of EM waves.
Seminar: EM waves. Generation and propagation of EM waves.
Exercises: Laser beam power modulation.
9. Lectures: Nature of light. geometrical and physical optics. Geometrical optics laws. Reflection and refraction. Optical elements and optical instruments. Plane mirror, spherical mirror.
Seminar: Nature of light. geometrical and physical optics. Geometrical optics laws. Reflection and refraction. Optical elements and optical instruments. Plane mirror, spherical mirror.
Exercises: Circular polarimeter.
10. Lectures: Thin lens. Aberration of lens. Eye. Magnifier. Binoculars. Telescope. Photometry.
Seminar: Thin lens. Eye. Magnifier. Binoculars. Telescope. Photometry.
Exercises: Thermocell calibration.
11. Lectures: Wave nature of light. Interference. Diffraction. polarization. Optical activity.
Seminar: Wave nature of light. Interference. Diffraction. polarization.
Exercises: Photometry laws.
12. Lectures: Radiation laws. Planck law. Photoelectric effect. Wave properties of particle.
Seminar: Radiation laws. Planck law. Photoelectric effect. Wave properties of particle.
Exercises: Refractive index determination with apparent depth.
13. Lectures: Bohr model. Spectra. Atomic structure. Lasers. Nuclear structure.
Seminar: Bohr model. Spectra. Atomic structure. Lasers. Nuclear structure.
Exercises: Young experiment.
14. Lectures: Nuclear decays. Radiation detectors. Fission. Fusion. reactors.
Seminar: Nuclear decays. Radiation detectors. Fission. Fusion. reactors.
Exercises: Final colloquium.
15. Final exam.

Literature



V. Henč-Bartolić, P. Kulišić (2004). *Valovi i optika*, Školska knjiga, Zagreb



V. Henč-Bartolić, M. Baće. P. Kulišić, L. Bistričić, D. Horvat, Z. Narančić, T. Petković, D. Pevec (2002). *Riješeni zadaci iz valova i optike*, Školska knjiga, Zagreb



P. Kulišić, V. Lopac (1991). *Elektromagnetske pojave i struktura tvari*, Školska knjiga, Zagreb



Zavod za primijenjenu fiziku (2015). *Skripta za laboratorijske vježbe iz Fizike 2*, ZPF

Additional Literature



Dubravko Horvat (2011).
*Fizika 2 - Titranje, valovi,
elektromagnetizam, optika i
uvod u modernu fiziku*,
Neodidakta, Zagreb



D. Halliday, R. Resnick, J.
Walker (2003).
Fundamentals of physics, J.
Wiley, New York

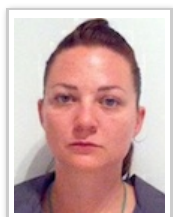
Similar Courses

- » General Physics, Oxford
- » Physics, Stanford University
- » Physics II, West Point
- » Physics, The Citadel

Political Geography and Geopolitics

129958

Lecturer



izv. prof. dr. sc.
Marta Zorko

Course Description

Main goal is the study and research of political geography, geopolitics and geostrategy in contemporary world. The course will be focused on the contemporary resource based confrontations, issues of new divisions in the world order, geopolitical flashpoints, geopolitical order, geostrategic regions and contemporary challenges to world security will be analyzed.

Study Programmes

- » Military Leadership and Management (Study) (*required course, 4th semester, 2nd year*)

Learning Outcomes

On successful completion of the course, students will be able to:

1. Define key terms, concepts and theories within political geography, geopolitics, critical geopolitics and geostrategy in International Relations perspectives.
2. Use methodology of contemporary geopolitical and geostrategic analysis.
3. Develop intellectual and research capacities in identifying and analyzing contemporary geopolitical phenomena and processes.
4. Identify and analyze geographical and geopolitical background in documents, strategic studies and political decisions of modern states from the critical geopolitics point of view.
5. Analyze political processes and decision making processes within areas connected to geopolitical and geostrategic studies, for instance international relations and national security.
6. Analyze geopolitical position of any given country as well as apply knowledge of influence of geographical factor on bilateral and multilateral relations.
7. Interpret security and contemporary security issues throughout geopolitical point of view.
8. Apply given knowledge on analysis of geopolitical discourses, public perception/public diplomacy and mass media.

Study Programme Learning Outcomes

Military Leadership and Management

- 1 Basic competences of the military profession
 - 1.6 To nourish, channel and use creativity in accomplishing missions of a basic tactical unit
 - 1.7 To be acquainted with and to respect historical, social and cultural diversities in the context of military activities

ECTS Credits	4.0
English Level	L1
E-learning Level	L1
Study Hours	
Lectures	30
Seminar	15
Exercises	15

Teaching Assistant

dr. sc. Jugoslav Jozić

Grading

Grading: Two mid term exams during the semester or written exam on the end of semester comprise 70 percent of the grade. Two mid term exams (2X35 points) equals final exam (70 points). Student should get at least 18 points in each mid term exam or at least 36 points in final exam to be considered for final grade. Short written papers on given topics comprise 10 percent of the grade (there will be two of them, 5 points each) and 20 percent brings contribution in classes, 10 percent or 10 points of which will be distributed for contribution in debates, and 10 points for workshop. Distribution of points equals grades: 0-35 insufficient (1); 36-52 sufficient (2); 53-68 good (3); 69-84 very good (4) and 85-100 excellent (5) Obligations: Class attendance, debates, written short papers on given topics and written exam on the end of semester or two mid term exams during the semester.

- 3 Basic competences in social and humanistic sciences
 - 3.1 To analyze and interpret processes in international environment, and to act within international alliances and organizations in which the Republic of Croatia participates
 - 3.4 To manage processes in the military environment using modern technologies
- 4. Personal and professional skills and characteristics
 - 4.1 To identify and analyze a problem in the military environment
 - 4.2 To model and resolve a problem and to interpret problem solution by using appropriate knowledge and methods
- 5. Social skills (team work and communication)
 - 5.2 Organize and plan individual and team work in international and interdisciplinary work groups
 - 5.3 To effectively present work results both orally and in writing to stakeholders in the military environment

Screening of student's work

- 2 ECTS Lectures attendance
- 1 ECTS Written exam
- 0.5 ECTS Workshop
- 0.5 ECTS Short written papers
- 4 ECTS

Forms of Teaching

- » Lectures
 - » 30 lectures
- » Seminars and workshops
 - » 15 hours of practical work
- » Exercises
 - » 15 hours of practical work
- » Independent assignments
 - » Included in seminars and exercise
- » Work with mentor
 - » Mentoring work for seminars and exercise

Week by Week Schedule

1. Lectures: Introduction to Political Geography, Geopolitics and Geostrategy. Territory in Politics.
Seminar: Metodology in geopolitical position analysis. 3 G position.
Metodology of contemporary analysis

Exercises: World of cartography, perception and power 1
2. Lectures: Subjects and Objects. Divides in space. Geostrategy. Global Geostrategy. Geography and Geostrategy.
Seminar: Metodology in geopolitical position analysis. 3 G position.
Metodology of contemporary analysis

Exercises: World of cartography, perception and power 2
3. Lectures: Geopolitical position of Republic of Croatia
Seminar: Documentary/Propaganda film The Nazis strike - analysis in context of imperial discourses

Exercises: World of cartography, perception and power 3

4. Lectures: Imperial Geopolitics 1
Seminar: Documentary/Propaganda film The Nazis strike - analysis in context of imperial discourses

Exercises: Halford J. Mackinder: The Geographical Pivot of History

5. Lectures: Imperial Geopolitics 2
Seminar: Metodology of Critical Geopolitics. Contemporary cartography. Analysis and interpretations of statistical data

Exercises: Halford J. Mackinder: The Geographical Pivot of History

6. Lectures: Cold War Geopolitics
Seminar: Metodology of Critical Geopolitics. Contemporary cartography. Analysis and interpretations of statistical data

Exercises: Geopolitics and discourse: Practical geopolitical reasoning in American foreign policy

7. Lectures: 1st mid term exam
Seminar: Documentary film Holy wars - analysis in context of culture and religion influence on security

Exercises: Geopolitics and discourse: Practical geopolitical reasoning in American foreign policy

8. Lectures: Contemporary Geopolitics, contemporary geopolitical analysis, Globalization, Deterritorialization, Reterritorialization
Seminar: Documentary film Holy wars - analysis in context of culture and religion influence on security

Exercises: Thomas P. M. Barnett: The Pentagon New Map

9. Lectures: Popular Geopolitics
Seminar: Documentary film Blood in the Mobile - analysis in context of contemporary security

Exercises: Thomas P. M. Barnett: The Pentagon New Map

10. Lectures: Global geopolitics. Discourse of The West. Contemporary geostrategy. Geopolitical flashpoints. Geostrategy of NATO enlargement
Seminar: Documentary film Blood in the Mobile - analysis in context of contemporary security

Exercises: New geopolitical flashpoints-case study 1

11. Lectures: Geopolitics and/or Geo-economy
Seminar: Preparation of the Workshop

Exercises: New geopolitical flashpoints-case study 1

12. Lectures: Geopolitics of global challenges to world security - Globalization of humanitarianism and Geopolitics
Seminar: Preparation of the Workshop

Exercises: New geopolitical flashpoints-case study 2

13. Lectures: The Geopolitics of Climate Change
Seminar: Workshop

Exercises: New geopolitical flashpoints-case study 2

14. Lectures: Geopolitics of War and Peace, Flashpoints, Deconstruction of world order, failed states and rogue states
Seminar: Workshop

Exercises: New geopolitical flashpoints-case study 3

15. Lectures: 2nd mid term exam
Seminar: Workshop

Exercises: New geopolitical flashpoints-case study 3

Literature



Ó Tuathail, Gearóid; Dalby, Simon; Routledge, Paul (2007). *Uvod u geopolitiku*, Politička kultura



Zorko, Marta (2018). *Geopolitika i teritorijalnost*, Jesenski i Turk

Additional Literature



Moreau Defarges, Philippe (2006). *Geopolitički rječnik*, CPI

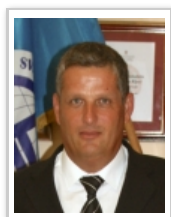
Similar Courses

- » Geography of Global Cultures, West Point
- » Geography of Europe, West Point
- » Environmental Security, West Point

Practical Military Training – Air Defence

129621

Lecturer



doc. dr. sc.
Luka Mihanović

Course Description

The aim of practical military training is to provide direct contact with the military environment for students in the final phase of their studies. The purpose of the subject is to enable quality teaching by means of a partnership between university teachers and military professionals. Through practical training the students will gain new knowledge and skills learning from professional experience which will complement the academic environment. This should be beneficial for students in the process of acquiring practical engineering and military knowledge. Also, they will be better prepared for the job they can expect after finishing the studies and they will be provided opportunities for better individual profiling in the process of gaining specialist knowledge in their final year of academic study. The course promotes closer cooperation between the military system and the academic community. At the same time, the teachers get feedback on the knowledge and skills the employers expect, which has a positive backwash effect on the teaching-learning process. Each student will have his/her own supervisor of the Practical Military Training, an officer or a military specialist from the branch or service of the student's speciality. The supervisor defines the training program and assigns tasks to the student in accordance with the plan. The student is obliged to follow instructions and meet obligations, recording this in his/her work diary. The work diary is the basis for producing the final student's report on the activities conducted. The supervisor will keep notes of the student's progress and records of the activities he/she has successfully completed in accordance with the plan, which should form the basis for suggesting the student's final grade. Upon finishing the practical military training the student has to prepare a report on his/her work and submit it to the supervisor. The report includes the information about the supervisor, the work plan and the specifications of the tasks carried out, the time frame and the work diary. The supervisor verifies the report and recommends the final grade for the student. The student's final thesis advisor is the teacher of the Practical Military Training, who is either a university professor or Vice Dean for teaching of the Faculty which provides practical military training for the particular branch or service. The advisor is obliged to read the student's report and, on the basis of the recommendation given by the supervisor, assign the final grade. Students should be taught basic terms in the organization and conduct of the activities of the air defence units, based on the experience from the Homeland War. Therefore they would be able to efficiently apply the acquired knowledge to unit leadership. The students should also be enabled to successfully command over air defence platoon/battery during all combat activities. Furthermore, the students should be taught basic elements of air surveillance and notification for optimal use of tactical and technical capabilities of air surveillance and notification system, automatization system in the airspace control, for the purpose of theoretical and practical readiness to use and apply C2, C3, C3I systems. Moreover, the students should be taught basic theoretical terms of missile and target movement in the airspace, theoretical basis of sighting devices, and their handling during the shooting of targets in the airspace and at land/water, as well as rocket systems guidance in order to efficiently apply the acquired knowledge in practice and in enabling their subordinates.

ECTS Credits 15.0

English Level Lo

E-learning Level L1

Study Hours

Project laboratory 30

Laboratory exercises 90

Field exercises 60

Teaching Assistant

Jozo Mešić

Grading

Grading: During lectures spend 3 colloquiums and a written and oral exam. Positive final score shall be made if all elements of the assessment are positive. Obligations: Regular attendance at exercise and field exercise. Passed all colloquia and final exam.

Prerequisites

Air Defence Artillery Weapons
Computer and
Telecommunication Devices,
Systems and Networks
Network System
Radar Systems and Air Traffic
Management
Rocket Air Defence Systems

Study Programmes

- » Air Defence -> Group of Courses Signals, Monitoring and Guidance and Air Defence (Course) (*required course, 8th semester, 4th year*) (Note: course not offered in this academic year.)

Learning Outcomes

On successful completion of the course, students will be able to:

1. Use air defence platoons within the air defence battery in support of combat units during the execution of an operation.
2. Use weapons and equipment of an unit.
3. Plan and organize fire conduct system.
4. Plan and organize targeting processing system.
5. Apply the knowledge during the training of an individual, squad and platoon specialties of the air defence.

Study Programme Learning Outcomes

Military Engineering

- 1 Basic competences of the military profession
 - 1.1 To communicate, organize and plan effectively the activities of a basic tactical unit
 - 1.2 To assess the situation and implement appropriate tactics for a basic tactical unit
 - 1.3 To make decisions independently and command a basic tactical unit
 - 1.4 To train, develop and assess the abilities of soldiers and a basic tactical unit
 - 1.6 To nourish, channel and use creativity in accomplishing missions of a basic tactical unit
- 2 Special military competences
 - 2.1 To analyse the environment and to develop and apply tactics of the branch/service
 - 2.2 To manage maintenance of combat and non-combat assets, ammunitions and mines of the branch/service
 - 2.3 To use combat and non-combat assets of the branch/service in a professional way
 - 2.4. To apply International War and Humanitarian Law
- 3 Basic technical knowledge
 - 3.1. To identify, analyse, model and resolve military engineering problems by integrating basic knowledge of natural and technical sciences
 - 3.2. To apply complex methodology by integrating engineering knowledge and skills in military engineering practice
 - 3.3. To integrate and apply engineering principles and techniques in the operation of military system in unpredictable conditions
4. Personal and professional skills and characteristics
 - 4.2 To model and resolve a problem and to interpret problem solution by using appropriate knowledge and methods
 - 4.3 To assume military, professional and ethical responsibility
 - 4.4 To develop self-study abilities and the need for and methods of life-long learning in traditional and virtual environment
5. Social skills (team work and communication)
 - 5.1 To communicate effectively in the Croatian and English language applying modern presentation skills and techniques
 - 5.2 Organize and plan individual and team work in international and interdisciplinary work groups

5.3 To effectively present work results both orally and in writing to stakeholders in the military environment

6 Development, implementation and operation of technical systems in economic and social environment

6.2. To apply and create engineering approaches in analysing and assessing products and processes in security environment

6.3. To apply and select knowledge and relevant facts from different areas, and to assume responsibility for assessing the impact of military technology in social environment

Screening of student's work

3 ECTS Lectures attendance

4 ECTS Written exam

2 ECTS Oral exam

6 ECTS Practical work

15 ECTS

Forms of Teaching

» Exercises

» Construction exercises will be carried out to familiarize cadets with combat systems. Exercises in the tactical use of ADA units will be conducted in laboratory.

» Field work

» At field exercise, cadets will be present at the shooting of ADA troops.

Week by Week Schedule

1. Introduction to Exercise: Content the subject (contents, place and meaning of the subject in the air defence); Air defence tactics as a theory and practice, Introduction to Exercise: Conduct of tactical tasks for the level of the commander of air defence platoon/battery,
2. Introduction to Exercise: General characteristics of contemporary system of air defence, Exercise: Tactical training exercises of platoon/battery combat use,
3. Introduction to Exercise: Organization and structure of Air Defence units in the CAF, Exercise: Radar FPS-117 (deployment of Radar FPS-117 elements, mutual interaction of radar subunits and functioning of the radar as a closed system of automatic regulation,
4. Introduction to Exercise: Contemporary threats from the airspace, Exercise: Radar positions of air defence units (deployment of radar station, organization of life and work of radar station, direct physical protection of radar position),
5. Introduction to Exercise: Air defence during operations, Exercise: Airspace surveillance,
6. Introduction to Exercise: Combat use of air defence platoon/battery, Exercise: Organization and work of Operation Centre of air defence battalion,
7. Introduction to Exercise: organization and conduct of air defence units during combat activities, Exercise: Combat air defence artillery systems
8. Introduction to Exercise: Communication system in air defence battery, Exercise: Shooting the targets on the ground with light ground base air defence artillery,
9. Introduction to Exercise: Teaching method of tactical training of air defence platoon/battery, Exercise: Shooting the targets in airspace with light ground base air defence artillery,

10. Introduction to Exercise: Military decision making process (place and role of the commander of platoon/battery in military decision making process),
Exercise: Air defence combat rocket systems
11. Introduction to Exercise: Airspace control,
Exercise: Shooting the targets in airspace with light ground base air defence artillery,
12. Introduction to Exercise: Theory and rules of the airspace target shooting,
Exercise: Shooting the targets on the ground with light ground base air defence artillery,
13. Introduction to Exercise: Combat use of air defence platoon/battery,
Exercise: Shooting the targets in airspace with light ground base air defence artillery,
14. Introduction to Exercise: Military decision making process (place and role of the commander of platoon/battery in military decision making process),
15. Exercise: Final exam,

Literature



GS OS RH, Pravilo topničko-raketni vod PZO, Zagreb, 1995.,



P. Galić, V. Krnić, Teorija i praksa gađanja – lekcije, UHRZ, 1997.,



V. Matišin: Radiolokacija i radarska tehnika, skripta brZMIN, Upoznajmo radar, skripta brZMIN,



Z HKoV, Zbirka orisa obuke i ocjenjivanja IŠG i BG postrojbi PZO, 2006.,



MORH, GS OS RH, Uputa i program gađanja iz lakoga topničko-raketnog oružja PZO, Zagreb, 2000.,

Similar Courses

- » Tactical Decision Making and Platoon Operations, West Point

Practical Military Training – Armour

129459

Lecturer



Mladen Janić,
pred.

Course Description

The aim of practical military training is to provide direct contact with the military environment for students in the final phase of their studies. The purpose of the subject is to enable quality teaching by means of a partnership between university teachers and military professionals. Through practical training the students will gain new knowledge and skills learning from professional experience which will complement the academic environment. This should be beneficial for students in the process of acquiring practical engineering and military knowledge. Also, they will be better prepared for the job they can expect after finishing the studies and they will be provided opportunities for better individual profiling in the process of gaining specialist knowledge in their final year of academic study. The course promotes closer cooperation between the military system and the academic community. At the same time, the teachers get feedback on the knowledge and skills the employers expect, which has a positive backwash effect on the teaching-learning process. Each student will have his/her own supervisor of the Practical Military Training, an officer or a military specialist from the branch or service of the student's speciality. The supervisor defines the training program and assigns tasks to the student in accordance with the plan. The student is obliged to follow instructions and meet obligations, recording this in his/her work diary. The work diary is the basis for producing the final student's report on the activities conducted. The supervisor will keep notes of the student's progress and records of the activities he/she has successfully completed in accordance with the plan, which should form the basis for suggesting the student's final grade. Upon finishing the practical military training the student has to prepare a report on his/her work and submit it to the supervisor. The report includes the information about the supervisor, the work plan and the specifications of the tasks carried out, the time frame and the work diary. The supervisor verifies the report and recommends the final grade for the student. The student's final thesis advisor is the teacher of the Practical Military Training, who is either a university professor or Vice Dean for teaching of the Faculty which provides practical military training for the particular branch or service. The advisor is obliged to read the student's report and, on the basis of the recommendation given by the supervisor, assign the final grade. Students should be able to successfully conduct combat in a variety of weather conditions in the role of AFV crew and the commander of the tank / armored-mechanized platoon.

Study Programmes

- » Armour -> Group of Courses Armour, Field Artillery, Engineers, Technical Support and Infantry (Course) (*required course, 8th semester, 4th year*)

ECTS Credits 15.0

English Level Lo

E-learning Level L1

Study Hours

Project laboratory 20

Laboratory exercises 108

Field exercises 52

Teaching Assistants

Mario Klun, mag. ing. mech.

Miroslav Kuhar, pred.

Dalibor Vujić, dipl. ing.

Grading

Grading: During the implementation of the teaching process, students will be monitored, tested and evaluated. The student takes the final exam solving tactical task. Obligations: Student must be present at 90% of classes.

Prerequisites

Armament and Ammunition in Armour

Armoured Fighting Vehicles



Learning Outcomes

On successful completion of the course, students will be able to:

1. Apply the steps of troop leading procedures
2. Explain the basic tactical operations of armor units
3. Repeat and describe the types of maneuvers and techniques of defence forces Armoured
4. Compare the forms of maneuver and techniques of defence of armor units
5. Analyze the tactical situation and make a timely decision
6. Produce a decision scheme
7. Explain ways of shooting from armored vehicles
8. Use combat armored vehicles weapons in solving fire tasks
9. Plan and prepare a preparatory for shooting from the combat armored vehicles weapons
10. .

Study Programme Learning Outcomes

Military Engineering

- 1 Basic competences of the military profession
 - 1.1 To communicate, organize and plan effectively the activities of a basic tactical unit
 - 1.2 To assess the situation and implement appropriate tactics for a basic tactical unit
 - 1.3 To make decisions independently and command a basic tactical unit
 - 1.4 To train, develop and assess the abilities of soldiers and a basic tactical unit
- 2 Special military competences
 - 2.1 To analyse the environment and to develop and apply tactics of the branch/service
 - 2.2 To manage maintenance of combat and non-combat assets, ammunitions and mines of the branch/service
 - 2.3 To use combat and non-combat assets of the branch/service in a professional way
 - 2.4. To apply International War and Humanitarian Law
4. Personal and professional skills and characteristics
 - 4.2 To model and resolve a problem and to interpret problem solution by using appropriate knowledge and methods
5. Social skills (team work and communication)
 - 5.1 To communicate effectively in the Croatian and English language applying modern presentation skills and techniques

Screening of student's work

3 ECTS Lectures attendance
 6 ECTS Written exam
 6 ECTS Practical work
 15 ECTS

Forms of Teaching

- » Exercises
 - » Through the introduction to the exercise, cadets will recognize the features of the particular exercises and knowledge required to successfully master the practical work in the exercises.
- » Field work

- » Field training takes place through the conduct of tank and armored mechanized platoon exercise as well as the shooting preparation with armament of armored mechanized units.

Week by Week Schedule

1. Introduction to Exercise 1: Introduction to armor tactics Introduction to Exercise 2: Battle command
2. Exercise 2: Battle command Exercise 3: War fighting function Introduction to Exercise 4: Offensive operations
3. Introduction to Exercise 5: Defensive operations Introduction to Exercise 6: Retrograde operations Introduction to Exercise 7: Tactical enabling operations
4. Introduction to Exercise 7: Tactical enabling operations Introduction to Exercise 8: AFV crew preparation for combat Introduction to Exercise 9: Basics protection against NBC weapons Introduction to Exercise 10: Armor platoon in stability and support operations
5. Introduction to Exercise 10: Armor platoon in stability and support operations Exercise 4: Tank platoon in the attack
6. Exercise 4: Tank platoon in attack Exercise 5: Armored mechanized platoon in attack
7. Exercise 5: Armored mechanized platoon in attack Exercise 6: Tank platoon in defence
8. Exercise 6: Tank platoon in the defence Exercise 7: Armored mechanized platoon in defence
9. Exercise 7: Armored mechanized platoon in the defence Exercise 8: Retrograde operations Exercise 9: Tactical enabling operations Exercise 10: AFV crew preparation for combat
10. Exercise 10: AFV crew preparation for combat Final exam: Solving tactical task
11. Introduction to Exercise 11: Preparation of AFV weapons firing Introduction to Exercise 12: Shooting stationary and moving targets from the place and stop Introduction to Exercise 13: Shooting stationary and moving targets from short stop Introduction to Exercise 14: Shooting stationary and moving targets on the move
12. Introduction to Exercise 15: Shooting targets in airspace Introduction to Exercise 16: Shooting at night and in low visibility Introduction to Exercise 17: Shooting through, across the gap and next to own troops Introduction to Exercise 18: Shooting at great distances Introduction to Exercise 19: Shooting on the hill and mountain, intersected and karst land
13. Exercise 11: Running gear.
14. Exercise 12: AFV driving.
15. Exercise 13: Shooting on ATR

Literature



APP 6A Vojni simboli kopnenih sustava



(2019). *DPK 30-12.1 Tenkovski vod*, MORH,



(2012). *ATP 3-20.15 (FM 3-20.15), Tank Platoon*, Headquarters, Department of the Army



(2010). *ATTP 3-21.71 (FM 3-21.71), Mechanized Infantry Platoon and Squad (Bradley)*, Headquarters, Department of the Army,



(2012). *Uputa i program gađanja naoružanjem OMP*, MORH

Similar Courses

» Platoon Operations, West Point

Practical Military Training – Chemical, Biological, Radiological, and Nuclear Defence

129612



Lecturer



dr. sc.
Valentina Ključarić

Course Description

The aim of practical military training is to provide direct contact with the military environment for students in the final phase of their studies. The purpose of the subject is to enable quality teaching by means of a partnership between university teachers and military professionals.

Aim is to show students how to comprehensively and accurately assess the tactical situation, and rational use CBRN units (up to the water) in support of combat operations.

Show and explain to students CBRN decontamination as part of the special measures for CBRN defence.

Study Programmes

- » Chemical, Biological, Radiological and Nuclear Defence -> Military Engineering (Course) (required course, 8th semester, 4th year)

Learning Outcomes

On successful completion of the course, students will be able to:

1. Explain the concept and importance of gender CBRN in combat and operating systems
2. Parse Allied (NATO) Joint Doctrine of CBRN
3. Show the structure CBRN units and command units CBRN for CBRN support
4. Present the process of decision and military intelligence preparation of the battlefield
5. Organize, demonstrate and operate the system CBRN notification and warning systems, and decontamination work stations
6. Create prediction and assessment of effects CBRN attacks
7. Define the term, division and features RBC decontamination
8. Identify and analyze the factors that affect the quality of the implementation of the RBC decontamination
9. Organize, demonstrate and manage the work with funds RBC decontamination

Study Programme Learning Outcomes

Military Engineering

- 1 Basic competences of the military profession

ECTS Credits 15.0

English Level Lo

E-learning Level L1

Study Hours

Field exercises 180

Teaching Assistants

Ivana Cetina, pred.

Vesna Pehar, pred.

dr. sc. Dragutin Tušek, pred.

Svetko Župan, dipl. ing.

Grading

Grading: The final grade is determined by evaluating exercises and partial exam, pass the written and oral exam if a student fails the exam or wants a better grade. Obligations: Regularly attend classes. Development of documents and be sure to participate in partial exams organized in semester for assessment.

Prerequisites

CBRN Protection

Environmental Protection

RBC Detection, Identification and Monitoring

Toxic Industrial Chemicals

- 1.1 To communicate, organize and plan effectively the activities of a basic tactical unit
- 1.2 To assess the situation and implement appropriate tactics for a basic tactical unit
- 1.3 To make decisions independently and command a basic tactical unit
- 1.4 To train, develop and assess the abilities of soldiers and a basic tactical unit
- 1.5 To develop personal and collective determination, courage, enthusiasm and initiative of subordinates
- 1.6 To nourish, channel and use creativity in accomplishing missions of a basic tactical unit
- 2 Special military competences
 - 2.1 To analyse the environment and to develop and apply tactics of the branch/service
 - 2.2 To manage maintenance of combat and non-combat assets, ammunitions and mines of the branch/service
 - 2.3 To use combat and non-combat assets of the branch/service in a professional way
 - 2.4. To apply International War and Humanitarian Law
- 3 Basic technical knowledge
 - 3.1. To identify, analyse, model and resolve military engineering problems by integrating basic knowledge of natural and technical sciences
 - 3.2. To apply complex methodology by integrating engineering knowledge and skills in military engineering practice
- 4. Personal and professional skills and characteristics
 - 4.1 To identify and analyze a problem in the military environment
 - 4.2 To model and resolve a problem and to interpret problem solution by using appropriate knowledge and methods
 - 4.3 To assume military, professional and ethical responsibility
- 5. Social skills (team work and communication)
 - 5.1 To communicate effectively in the Croatian and English language applying modern presentation skills and techniques
 - 5.3 To effectively present work results both orally and in writing to stakeholders in the military environment
- 6 Development, implementation and operation of technical systems in economic and social environment
 - 6.1. To analyse and evaluate the effect of engineering solutions on society and environment
 - 6.3. To apply and select knowledge and relevant facts from different areas, and to assume responsibility for assessing the impact of military technology in social environment

Forms of Teaching

- » Lectures
- » Exercises
- » Field work
- » Independent assignments

Week by Week Schedule

1. Lectures: Introduction to the subject (content, location and significance of subject in CBRN); General on nuclear - biological - chemical defence (place, role and importance of gender CBRN in combat and operating systems, the goals of CBRN in the fight, systematization, and general and specific tasks CBRN Defence)
Seminar: Application combat information systems CBRN (BIS CBRN application: simulation of nuclear, biological and chemical attack (stroke));
2. Lectures: Allied (NATO) Joint Doctrine of CBRN (AJP 3.8) (principles and components of CBRN, CBRN in operations, CBRN intelligence preparation of the battlefield, CBRN estimates and development plans, SOP in CBRN) CBRN units (types and features CBRN units, organization, purpose and how to use the unit for RBK reconnaissance and decontamination, and analytical laboratories RBK) command forces CBRN for CBRN support (combat documentation and orders troops CBRN, tactical insignia of NATO, combat information systems CBRN);
Seminar: Making CBRN reports (making CBRN reports (based on supposition) in accordance with the NATO publication
3. Lectures: Military decision process (the place and the role of support staff of CBRN, and the role of the platoon commander in the military decision process);
Seminar: CBRN platoon for RBC reconnaissance in supporting combat operations NOS Army in defence (CBRN defence planning in NOS Army in defence, making combat documents and orders for RBC reconnaissance, the use of CBRN warning and reporting system, production prognosis and estimates the effects of chemical attack on NOS Army in defence);
4. Lectures: Intelligence preparation of the battlefield, and CBRN defence (phase intelligence preparation of the battlefield, intelligence preparation of the impact on the use of CBRN units in support of combat operations);
Seminar: CBRN platoon for RBC decontamination at supporting combat NOS Army in defence (CBRN defence planning in NOS Army in defence, making combat documents, drafting and issuing orders for RBC decontamination)
5. Lectures: System CBRN warning and reporting (the place and the role of CBRN warning and reporting of operational actions, and command and control units on the battlefield, the elements of CBRN warning and reporting, types of CBRN reports;
Seminar: CBRN platoon for RBC reconnaissance in supporting combat operations NOS Army in the attack (CBRN defence planning in NOS Army in the attack, making combat documents and orders for RBC reconnaissance, the use of CBRN warning and reporting system, production prognosis and estimates the effects of chemical attack on NOS Army the attack)
6. Lectures: Prognosis and evaluation of effects CBRN attacks (meaning and impact prognosis and estimates the effects of CBRN attacks on military decision in combat conditions, production prognosis and estimates the effects of CBRN attacks);
Seminar: CBRN platoon for RBC decontamination at supporting combat NOS Army in the attack (CBRN defence planning in NOS Army in the attack, making combat documents, drafting and issuing orders for RBC decontamination)
7. Lectures: Commander management defensive measures against toxic industrial chemicals (ROTA events)
Seminar: The demonstration will use simulation to CBRN (the term of simulation, simulation type, scope and application of simulation system for prediction and assessment of CBRN)

8. Lectures: RBC decontamination as a principle of CBRN defence (elimination of consequences CBRN attack, conceptual definition and meaning of RBC decontamination); The purpose and types of RBC decontamination (RBC decontamination purposes, classification and principles of RBC decontamination); Substances for decontamination (general features for RBC decontamination materials, substances for chemical, radiological and biological decontamination)
Seminar: Personal RBC decontamination and self-help (practical view of personal NBC decontamination and self-help)
9. Lectures: Radiological decontamination (principles and methods of radiological decontamination);
Seminar: Road tankers for water (filling, use, maintenance; Road tankers for decontamination (filling, use at the RBC decontamination, maintenance)
10. Lectures: Chemical decontamination (principles and methods of chemical decontamination, chemical reactions of decontamination);
Seminar: Mobile systems for decontamination-MPD-100 (purpose, installation, maintenance);
11. Lectures: Biological decontamination (principles and methods of biological decontamination)
Seminar: Tent for decontamination (installation, packaging, maintenance)
12. Lectures: RBC decontamination (division of decontamination and definition according to the document),
Seminar: Work with the mobile system MPD-100 at RBC decontamination (filling and preparation systems, the preparation of the solution for decontamination); Use mobile systems MPD-100 at RBC decontamination of combat and non-combat vehicles and tactical and technical resources (TTS) (preparation mobile systems MPD-100 and space for decontamination, work in the implementation of decontamination, procedure after completion of decontamination)
13. Lectures: Personal and community resources for RBC decontamination (standard units resources of each member, jointly standard units resources.
Seminar: Using mobile systems MPD-100 at RBC decontamination of people (preparation mobile systems MPD-100 and space for decontamination, work in the implementation of decontamination, procedure after completion of decontamination)
14. Lectures: Resources for for RBC decontamination units CBRN (cistern for decontamination (ACD), road tankers for water (ACV), a mobile system for decontamination of MPD-100 and other resources of CBRN units: purpose, tactical and technical (TT) - features, description);
Seminar: Using mobile systems MPD-100 at RBC decontamination roads (preparation of MPD-100 and space for decontamination work in the implementation of decontamination procedure after completion of decontamination)
15. Lectures: Effect of meteorological conditions on the implementation RBC decontamination (effect of meteorological conditions on the contaminated unit and the implementation of the RBC decontamination); Definitions and Abbreviations (NATO CBRN dictionary of terms and definitions)
Seminar: Using a mobile system for decontamination for other purposes (fire, pumping water from flooded buildings)

Literature



S. Bokan, I. Jukić, Z. Orehovec, M. Radalj, B. Ilijaš, A. Čižmek: Oružja za masovno uništavanje: nuklearno, kemijsko, biološko i toksinsko oružje, Pučko otvoreno učilište, Zagreb, 2004.;



AJP-3.8 - ALIDE JOINT DOCTRINE FOR NBC DEFENCE (2003.), NATO Standardization Agency, Brussels, Belgium;



FM 3-5 NBC Decontamination



*TC 3-100 - Chemical
Operations, Principles and
Fundamentals*



*ntp. Z. Šprišić, Principi NBK
obrane-skripta - HVU Petar
Zrinski, 2001.*

Practical Military Training – Engineers

129484

Lecturer



izv. prof. dr. sc.
Mario Dobrilović

Course Description

The aim of practical military training is to provide direct contact with the military environment for students in the final phase of their studies. The purpose of the subject is to enable quality teaching by means of a partnership between university teachers and military professionals. Through practical training the students will gain new knowledge and skills learning from professional experience which will complement the academic environment. This should be beneficial for students in the process of acquiring practical engineering and military knowledge. Also, they will be better prepared for the job they can expect after finishing the studies and they will be provided the opportunities for better individual profiling in the process of gaining specialist knowledge in their final year of academic study. The course promotes closer cooperation between the military system and the academic community. At the same time, the teachers get feedback on the knowledge and skills the employers expect, which has a positive backwash effect on the teaching-learning process. Each student will have his/her own supervisor of the Practical Military Training, an officer or a military specialist from the branch or service of the student's speciality. The supervisor defines the training program and assigns tasks to the student in accordance with the plan. The student is obliged to follow instructions and meet obligations, recording this in his/her work diary. The work diary is the basis for producing the final student's report on the activities conducted. The supervisor will keep notes of the student's progress and records of the activities he/she has successfully completed in accordance with the plan, which should form the basis for suggesting the student's final grade. Upon finishing the practical military training the student has to prepare a report on his/her work and submit it to the supervisor. The report includes the information about the supervisor, the work plan and the specifications of the tasks carried out, the time frame and the work diary. The supervisor verifies the report and recommends the final grade for the student. The student's final thesis advisor is the teacher of the Practical Military Training, who is either a university professor or Vice Dean for teaching of the Faculty which provides practical military training for the particular branch or service. The advisor is obliged to read the student's report and, on the basis of the recommendation given by the supervisor, assign the final grade. Enable students to use engineer units for execution tasks in engineer combat support in all aspects and forms of combat actions in accordance with the doctrinal documents of NATO. Students should be able to work in a team during the development of documentation and task execution and organization, management and task execution control in engineer units.

Study Programmes

- » Engineers -> Group of Courses Armour, Field Artillery, Engineers, Technical Support and Infantry (Course) (*required course, 8th semester, 4th year*)

ECTS Credits	15.0
English Level	Lo
E-learning Level	L1
Study Hours	
Project laboratory	30
Laboratory exercises	90
Design exercises	6
Field exercises	54

Teaching Assistants

doc. dr. sc. Vječislav Bohanek
Dražen Brkić, struč. spec. cin.
Mladen Fusić, pred.
Marijan Gospočić, bacc. ing.
admin. chris.
Vladimir Horvat, pred.
Krešimir Sudarić, dipl.ing.polj.
Marko Šimić, pred.
doc. dr. sc. Vinko Škrlec

Grading

Grading: During the course spend 3 colloquiums and a final oral exam. Obligations: Regular admission to lectures. Development of documents and positive marks on colloquiums.

Prerequisites

Bridges
Fortifying and Camouflage
Geoengineering
Mine and Explosive Ordnance
River Crossing
Roads



Learning Outcomes

On successful completion of the course, students will be able to:

1. Explain the characteristics and principles of the use of engineer platoon in accordance with doctrine.
2. Explain features of engineer platoon in the implementation of engineer branch works and calculate the necessary elements for the use of engineer units
3. Classify, explain and specify use of engineer units in the implementation of engineer branch works
4. Identify and analyze the factors that influence on the decision making process of platoon commander
5. Working in a team during the development of the basic battalion and technical documentation from authority of platoon commander.
6. Organize, lead and manage the work of engineer units during the combat engineer support

Study Programme Learning Outcomes

Military Engineering

- 1 Basic competences of the military profession
 - 1.1 To communicate, organize and plan effectively the activities of a basic tactical unit
 - 1.2 To assess the situation and implement appropriate tactics for a basic tactical unit
 - 1.3 To make decisions independently and command a basic tactical unit
 - 1.4 To train, develop and assess the abilities of soldiers and a basic tactical unit
 - 1.5 To develop personal and collective determination, courage, enthusiasm and initiative of subordinates
 - 1.6 To nourish, channel and use creativity in accomplishing missions of a basic tactical unit
 - 1.8 To make geographic and topographic analysis of the area and to decide upon the tactics of a basic tactical unit
- 2 Special military competences
 - 2.1 To analyse the environment and to develop and apply tactics of the branch/service
 - 2.2 To manage maintenance of combat and non-combat assets, ammunitions and mines of the branch/service
 - 2.3 To use combat and non-combat assets of the branch/service in a professional way
 - 2.4. To apply International War and Humanitarian Law
- 3 Basic technical knowledge
 - 3.1. To identify, analyse, model and resolve military engineering problems by integrating basic knowledge of natural and technical sciences
 - 3.2. To apply complex methodology by integrating engineering knowledge and skills in military engineering practice
 - 3.3. To integrate and apply engineering principles and techniques in the operation of military system in unpredictable conditions
4. Personal and professional skills and characteristics
 - 4.2 To model and resolve a problem and to interpret problem solution by using appropriate knowledge and methods
 - 4.3 To assume military, professional and ethical responsibility
 - 4.4 To develop self-study abilities and the need for and methods of life-long learning in traditional and virtual environment
5. Social skills (team work and communication)

- 5.2 Organize and plan individual and team work in international and interdisciplinary work groups
- 5.3 To effectively present work results both orally and in writing to stakeholders in the military environment
- 6 Development, implementation and operation of technical systems in economic and social environment
 - 6.1. To analyse and evaluate the effect of engineering solutions on society and environment
 - 6.2. To apply and create engineering approaches in analysing and assessing products and processes in security environment
 - 6.3. To apply and select knowledge and relevant facts from different areas, and to assume responsibility for assessing the impact of military technology in social environment

Screening of student's work

2 ECTS Lectures attendance

6 ECTS Midterm exam

4 ECTS Oral exam

2 ECTS Project

1 ECTS Practical work

15 ECTS

Forms of Teaching

- » Exercises
 - » Execute exercises on specialized training area.
- » Field work
 - » Execute teren education in engineer units

Week by Week Schedule

1. Introduction to exercise: Definition, classification and sizing of explosive charges.
Exercise: Sizing explosive charges.
2. Introduction to exercise: Demolition theory of elements and materials.
Exercise: Calculations of the amount of explosives for demolishan of the elements and materials.
3. Introduction to exercise: Methods of mining with shallow and deep mining holes.
Exercise: Elements and materials demolition simulation.
4. Introduction to exercise: Underground mining methods. Special mining methods.
Exercise: Demolition of elements and materials (budgets, setting, lighting, technical protection measures).
5. Introduction to exercise: Demolition theory of objects (roads, bridges, tunnels, railways, buildings).
Exercise: Building-demolition simulation.
6. Introduction to exercise: Anti-tank and anti-personnel mines.
Exercise: Structural engineering-demolition simulation.
7. Introduction to exercise: Improvised explosive devices.
Exercise: Facilitie-demolition reconnaissance.
8. Introduction to exercise: Countering Improvised Explosive Devices C-IED (C-IED basics, place and role of engineer branch in C-IED)
Exercise: Project development for facilitie-demolition.
9. Introduction to exercise: Mine and explosive obstacles.
Exercise: Individual placement and removal of fake AP (anti-personnel) and AT (anti-tank) mines.

10. Introduction to exercise: Overcoming of mine and explosive obstacles.
Exercise: Placement and removal of fake improvised explosive devices.
11. Introduction to exercise: Engineers - branch of combat support (history of branch, branch organization, characteristics of engineer platoon)
Exercise: Individual placement and removal of combat anti-tank mines.
12. Introduction to exercise: Commanding in engineer platoon (principles, commitments, military decision making process, documentation and orders for engineer troops, tactical insignia of NATO)
Exercise: Creating and overcoming of mine and explosive obstacles (marking, manufacturing, overcoming, registration).
13. Introduction to exercise: Engineer combat support (countermotility, motility, survivability, general engineer support, military operations other than war).
Exercise: Visit of the demining-site of the demining unit (equipment, resources, organization, documentation).
14. Introduction to exercise: Dedicated engineer units (obstacle group-OG, mobile obstacle group-MOG, road maintenance group-RMG) (purpose, structure, operation procedures).
Exercise: Engineer platoon in the implementation of engineer branch support for combat maneuver units (decision-making process, making orders).
15. Introduction to exercise: Demonstration of capabilities in use of simulation in engineer branch (the notion of simulation, types of simulation capabilities and application of simulation systems in the engineer branch)
Exercise: Pioneer platoon in obstacle group-OG role (tasks, preparation, implementation procedures). Pioneer platoon in mobile obstacle group-MOG role (tasks, preparation, implementation procedures).

Literature



Dobrilović, Mario, Rušenje, interna skripta, 2009.



STANAG 2014 Formati zapovijedi i označavanje vremena, lokacija i granica.



STANAG 2017 Zapovijedi zapovjedniku zaštitne skupine i zapovjedniku skupine za rušenje-nenuklearno



AAP-19 Nato rječnik borbene inženjerije,



STANAG 2036 Postupci polaganja mina, označavanja, zapisivanja i procedure izvješćivanja,



Vladimir Horvat, Ivan Babić (2018). Uputa i program vježbi s bojnim MES, MORH

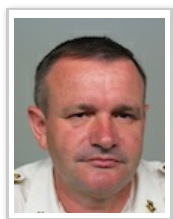
Similar Courses

» Engineer tactics, West Point

Practical Military Training – Field Artillery

129464

Lecturer



izv. prof. dr. sc.
Mirko Jakopčić

Course Description

The aim of practical military training is to provide direct contact with the military environment for students in the final phase of their studies. The purpose of the subject is to enable quality teaching by means of a partnership between university teachers and military professionals. Through practical training the students will gain new knowledge and skills learning from professional experience which will complement the academic environment. This should be beneficial for students in the process of acquiring practical engineering and military knowledge. Also, they will be better prepared for the job they can expect after finishing the studies and they will be provided opportunities for better individual profiling in the process of gaining specialist knowledge in their final year of academic study. The course promotes closer cooperation between the military system and the academic community. At the same time, the teachers get feedback on the knowledge and skills the employers expect, which has a positive backwash effect on the teaching-learning process. Each student will have his/her own supervisor of the Practical Military Training, an officer or a military specialist from the branch or service of the student's speciality. The supervisor defines the training program and assigns tasks to the student in accordance with the plan. The student is obliged to follow instructions and meet obligations, recording this in his/her work diary. The work diary is the basis for producing the final student's report on the activities conducted. The supervisor will keep notes of the student's progress and records of the activities he/she has successfully completed in accordance with the plan, which should form the basis for suggesting the student's final grade. Upon finishing the practical military training the student has to prepare a report on his/her work and submit it to the supervisor. The report includes the information about the supervisor, the work plan and the specifications of the tasks carried out, the time frame and the work diary. The supervisor verifies the report and recommends the final grade for the student. The student's final thesis advisor is the teacher of the Practical Military Training, who is either a university professor or Vice Dean for teaching of the Faculty which provides practical military training for the particular branch or service. The advisor is obliged to read the student's report and, on the basis of the recommendation given by the supervisor, assign the final grade. Enable students in combat use of commanding, artillery and mortar platoon in support of combat units. Enable students for planning, organization and conduct of training for commanding and fire platoons.

Study Programmes

- » Field Artillery -> Group of Courses Armour, Field Artillery, Engineers, Technical Support and Infantry (Course) (*required course, 8th semester, 4th year*)

ECTS Credits 15.0

English Level Lo

E-learning Level L1

Study Hours

Project laboratory 60

Laboratory exercises 60

Field exercises 60

Teaching Assistants

Leopold Gelemanović, mag. ing. mech.

Ivan Katalinić, ing.

Damir Petrović, struč. spec. ing. agr.

Branko Posarić, ing. stroj.

Grading

Grading: Evaluation of practical work, artillery live shooting and final exam that is conducted in written and oral form.

Obligations: Attending classes and participating actively during lectures, taking final exam. Practical exercises solving and live shooting.

Prerequisites

Artillery Survey

Artillery Weapons, Equipment and Ammunition

Field Artillery Gunnery

Field Artillery Tactical Doctrine



Learning Outcomes

On successful completion of the course, students will be able to:

1. Use commanding and fire platoons in the composition of the field artillery cannon battery in support of combat units.
2. Use weapons and equipment of the unit.
3. Plan and organize fire conduct system
4. Plan and organize Targeting System.
5. Recognize requirements of lower level units for peace keeping missions.
6. Plan logistic support for the field artillery cannon battery.
7. Apply knowledge in training of an individual, squad and platoon of artillery specialties.
8. Calculate initial elements for fire
9. Use a military weather newsletter
10. Calculate the initial repaired elements for fire

Study Programme Learning Outcomes

Military Engineering

- 1 Basic competences of the military profession
 - 1.1 To communicate, organize and plan effectively the activities of a basic tactical unit
 - 1.2 To assess the situation and implement appropriate tactics for a basic tactical unit
 - 1.3 To make decisions independently and command a basic tactical unit
 - 1.4 To train, develop and assess the abilities of soldiers and a basic tactical unit
 - 1.5 To develop personal and collective determination, courage, enthusiasm and initiative of subordinates
 - 1.6 To nourish, channel and use creativity in accomplishing missions of a basic tactical unit
 - 1.7 To be acquainted with and to respect historical, social and cultural diversities in the context of military activities
- 2 Special military competences
 - 2.1 To analyse the environment and to develop and apply tactics of the branch/service
 - 2.2 To manage maintenance of combat and non-combat assets, ammunitions and mines of the branch/service
 - 2.3 To use combat and non-combat assets of the branch/service in a professional way
 - 2.4 To apply International War and Humanitarian Law
- 3 Basic technical knowledge
 - 3.1. To identify, analyse, model and resolve military engineering problems by integrating basic knowledge of natural and technical sciences
 - 3.2. To apply complex methodology by integrating engineering knowledge and skills in military engineering practice
 - 3.3. To integrate and apply engineering principles and techniques in the operation of military system in unpredictable conditions
4. Personal and professional skills and characteristics
 - 4.2 To model and resolve a problem and to interpret problem solution by using appropriate knowledge and methods
 - 4.3 To assume military, professional and ethical responsibility
 - 4.4 To develop self-study abilities and the need for and methods of life-long learning in traditional and virtual environment
5. Social skills (team work and communication)

- 5.1 To communicate effectively in the Croatian and English language applying modern presentation skills and techniques
- 5.2 Organize and plan individual and team work in international and interdisciplinary work groups
- 5.3 To effectively present work results both orally and in writing to stakeholders in the military environment
- 6 Development, implementation and operation of technical systems in economic and social environment
 - 6.1. To analyse and evaluate the effect of engineering solutions on society and environment
 - 6.2. To apply and create engineering approaches in analysing and assessing products and processes in security environment
 - 6.3. To apply and select knowledge and relevant facts from different areas, and to assume responsibility for assessing the impact of military technology in social environment
 - 6.4. To plan, organise, create and implement engineering testing, and to analyse and interpret the results

Screening of student's work

- 4 ECTS Lectures attendance
- 5 ECTS Written exam
- 2 ECTS Oral exam
- 4 ECTS Practical work
- 15 ECTS

Forms of Teaching

- » Exercises
 - » Calculate initial shooting elements with a complete weather ballistic
- » Field work
 - » Prepare for artillery shooting
- » Other
 - » Artillery shooting

Week by Week Schedule

1. Introduction to exercise: Meteorology in artillery. Use of artillery radars.
Indirect artillery firing (general terms, activities before taking a military position, activities after taking a military position, activities and procedure during shooting, direct shooting of dotted, linear and surface fixed targets); Correction (general provisions on correction and corrections, surveillance, reports on surveillance and keeping a record of surveillance (scores), correction against the measured score deviation (at the target or a real registration point), target grid procedures (at the goal or a real registration point), defining the corrected shooting elements during the correction, correction in special cases of target position, arranging the sheaf by shooting).
Exercise: Collecting, processing and application of meteorological data in artillery. Meteorological platoon. Target acquisition by using artillery radar.
Indirect artillery firing (general terms, activities before taking a military position, activities after taking a military position activities and procedure during shooting, indirect shooting of dotted, linear and surface fixed targets,)activities before taking a military position, activities after taking a military position activities and procedure during shooting, indirect shooting of dotted, linear and surface moving targets); Correction (general provisions on correction and corrections, surveillance, reports on surveillance and keeping a record of surveillance (scores), correction against the measured score deviation (at the target or a real registration point), target grid procedures (at the goal or a real registration point), defining the corrected shooting elements during the correction.
2. Introduction to exercise: General rule on military decision making. Indirect artillery firing (general terms, activities before taking a military position, activities after taking a military position, activities and procedure during shooting, direct shooting of dotted, linear and surface fixed targets); Correction (general provisions on correction and corrections, surveillance, reports on surveillance and keeping a record of surveillance (scores), correction against the measured score deviation (at the target or a real registration point), target grid procedures (at the goal or a real registration point), defining the corrected shooting elements during the correction, correction in special cases of target position, arranging the sheaf by shooting).
Exercise: Fire support planning during the process of military decision making.
Indirect artillery firing (activities before taking a military position, activities after taking a military position activities and procedure during shooting, indirect shooting of dotted, linear and surface fixed targets. indirect shooting of dotted, linear and surface moving targets); Correction (general provisions on correction and corrections, surveillance, reports on surveillance and keeping a record of surveillance (scores), target grid procedures (at the target or a real registration point), correction by evaluating the meaning of scores (at the goal or a real registration point), defining the corrected shooting elements during the correction, correction in special cases of target position, arranging the sheaf by shooting).
3. Introduction to exercise: Fire support plan. Indirect artillery firing (general terms, activities before taking a military position, activities after taking a military position, activities and procedure during shooting, direct shooting of dotted, linear and surface fixed targets); Transfer of fire on topographic and geodetic basis (types of fire transfer, defining correction elements)
Exercise: Fire support plan. Target acquisition. Target list. Target overlay. Fire plan. Indirect artillery firing (general terms, activities before taking a military position, activities after taking a military position, activities and procedure during shooting, indirect shooting of dotted, linear and surface fixed targets, indirect shooting of dotted, linear and surface moving targets); Transfer of fire on topographic and geodetic basis (types of fire transfer, defining correction elements)

4. Introduction to exercise: Fire support in basic combat operations: role and tasks of each organizational compositions of fire support units (a squad, a platoon in the composition of a battery, a battery within the task force). Role and tasks of artillery in attack operations: platoon in the composition of a battery in support of manoeuvre attack units. Role and tasks of the artillery in defence operations: platoon in the composition of the battery in support of manoeuvre defence units. Direct artillery live shooting (general terms, direct shooting of dotted, linear and surface fixed targets, direct shooting of dotted, linear and surface moving targets).
Exercise: Direct artillery shooting (general terms, direct shooting of dotted, linear and surface fixed targets, direct shooting of dotted, linear and surface moving targets).
5. Introduction to exercise: Indirect artillery firing (general terms, indirect shooting of dotted targets)
Exercise: The firing battery in support of manoeuvre units in attack. The conduct of direct artillery firing.
6. Introduction to exercise: Direct artillery firing (general terms, direct shooting of dotted, linear and surface fixed targets, direct shooting of dotted, linear and surface moving targets); Joint battery shooting, (formation of fire unit against the target, types of fire, methods of fire target neutralization, artillery fire and planning the structure of fire)
Exercise: The firing battery in support of manoeuvre units in defence. The conduct of indirect artillery firing; Battery fire for effect (defining coordinates of the centres of parts of battery target more than 1.5 wide of normal sheaf and defining of fire echelon elements in depth, planning of fire structure).
7. Introduction to exercise: Role and tasks of artillery in peace support operations. Fire support in specific operations: transitional phases, advance to contact, link-up, withdrawal, relief of troops in combat, airmobile, surrounded forces. Semi indirect artillery firing (general terms, direct firing of fixed targets, direct firing of moving targets, Semi indirect artillery firing and a transition from direct to semi indirect and from semi indirect to direct firing); Specific forms of firing (vertical firing, general terms and firing data procedures and correction). Specific types of firing (time delivery of fire, smoke, illumination)
Exercise: The firing battery in support of manoeuvre units in attack. The firing battery in support of manoeuvre units in defence. Semi-indirect artillery firing (general terms, direct firing of fixed targets, direct firing of moving targets, semi indirect artillery firing and a transition from direct to semi- indirect and from semi-indirect to direct firing); Specific forms of firing (vertical firing, general terms and firing data procedures and correction). Specific types of firing (time delivery of fire, smoke, illumination)
8. Introduction to exercise: Specific types of firing (time delivery of fire, smoke, illumination)
Exercise: A study visit to the unit preparing for an international military mission. Direct artillery live shooting (general terms, direct shooting of dotted, linear and surface fixed targets, direct shooting of dotted, linear and surface moving targets)
9. Introduction to exercise: Specific conditions of the use of artillery: settlements, mountains, deserts, cold, tropical climate, defence of the coastal area. The survey of NATO documents that determine the conduct of field artillery in international military operations.
Exercise: Direct artillery firing (general terms, direct shooting of dotted, linear and surface fixed targets, direct shooting of dotted, linear and surface moving targets); Specific types of firing (time delivery of fire, smoke, illumination).

10. Introduction to exercise: A survey of NATO documents that determine the conduct of field artillery in international military operations.
Exercise: A study visit: Simulation Centre, functioning through departments and branches. Direct artillery live shooting (general terms, direct shooting of dotted, linear and surface fixed targets, direct shooting of dotted, linear and surface moving targets); Indirect artillery live shooting (general terms, activities before taking a military position, activities after taking a military position, activities and procedure during shooting, indirect shooting of dotted, linear and surface fixed targets, indirect shooting of dotted, linear and surface moving targets); Work with NATO documents that determine the conduct of field artillery in international military operations.
11. Exercise: Indirect artillery live shooting (general terms, activities before taking a military position, activities after taking a military position, activities and procedure during shooting, indirect shooting of dotted, linear and surface fixed targets, indirect shooting dotted, linear and surface fixed targets, indirect shooting of dotted, linear and surface moving targets);
12. Exercise: Indirect artillery live shooting (general terms, activities before taking a military position, activities after taking a military position, activities and procedure during shooting, indirect shooting of dotted, linear and surface fixed targets, indirect shooting dotted, linear and surface fixed targets, indirect shooting of dotted, linear and surface moving)
13. Exercise: Tactical task at the exam.
14. Exercise : Tactical task at the exam.
15. Exercise: Tactical task at the exam.

Literature



. (2009). *AArty P-1(C) Field Artillery Procedures*, .



. (2010). *AArty P-5(B) Taktička doktrina topništva*, .



. (1996). *Babić Damir (1998.) Priprema početnih elemenata (korekcija i prijenos paljbe) (skripta)*, UHKoV, Zagreb, .



. (2008). *STANAG 2014(9. izdanje)- Formati zapovijedi i označavanje vremena, lokacija i granica*, .

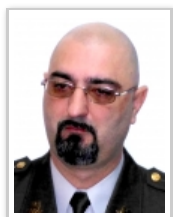
Similar Courses

» ., West Point

Practical military training – Infantry

130014

Lecturer



Darko Puklavec,
pred.

Course Description

The aim of practical military training is to provide direct contact with the military environment for students in the final phase of their studies. The purpose of the subject is to enable quality teaching by means of a partnership between university teachers and military professionals. Through practical training the students will gain new knowledge and skills learning from professional experience which will complement the academic environment. This should be beneficial for students in the process of acquiring practical engineering and military knowledge. Also, they will be better prepared for the job they can expect after finishing the studies and they will be provided opportunities for better individual profiling in the process of gaining specialist knowledge in their final year of academic study. The course promotes closer cooperation between the military system and the academic community. At the same time, the teachers get feedback on the knowledge and skills the employers expect, which has a positive backwash effect on the teaching-learning process. Each student will have his/her own supervisor of the Practical Military Training, an officer or a military specialist from the branch or service of the student's speciality. The supervisor defines the training program and assigns tasks to the student in accordance with the plan. The student is obliged to follow instructions and meet obligations, recording this in his/her work diary. The work diary is the basis for producing the final student's report on the activities conducted. The supervisor will keep notes of the student's progress and records of the activities he/she has successfully completed in accordance with the plan, which should form the basis for suggesting the student's final grade. Upon finishing the practical military training the student has to prepare a report on his/her work and submit it to the supervisor. The report includes the information about the supervisor, the work plan and the specifications of the tasks carried out, the time frame and the work diary. The supervisor verifies the report and recommends the final grade for the student. The student's final thesis advisor is the teacher of the Practical Military Training, who is either a university professor or Vice Dean for teaching of the Faculty which provides practical military training for the particular branch or service. The advisor is obliged to read the student's report and, on the basis of the recommendation given by the supervisor, assign the final grade.

Study Programmes

- » Infantry -> Military Leadership and Management (Course) (*elective course for the 8th semester mlm-infantry study, 8th semester, 4th year*)

ECTS Credits 15.0

English Level Lo

E-learning Level L1

Study Hours

Project laboratory 36

Laboratory exercises 108

Field exercises 36

Teaching Assistants

Ivan Milanović

Davor Popović, univ. spec. pol.

Grading

Grading: During their classes, the students will receive a mark from each written exam, oral exam, exercises, tactical task, seminar papers and live shooting. The mark from the exercises is based on: diligence, initiative, creativity and organization skills leadership. A positive final mark is given on the condition that all the elements of the evaluation are positive. Obligations: Students have obligation off regular class attendance, training exercises and live shooting. Overall education and training from the subject Infantry Tactics is conducted by means of the protection equipment of the CAF. During the education process, students are obligated and agree to obey and respect military relationships and hierarchy with the purpose of safe conduct of activities. Students agree on the organization of life and work within the CAF training range, shooting, exercise areas and follow a safety measures.

Prerequisites

Armoured Infantry Fighting Vehicles and Armament
Infantry Tactics (Social)
Infantry Weapons With Fire Conduct

Learning Outcomes

On successful completion of the course, students will be able to:

1. Handle and use correctly all infantry formation platoon weapons and support platoon as well as communication and information signal instruments as well as all material and technical means
2. Explain, differentiate and state the basics of the theory and shooting rules of infantry weapons
3. Objasniti i izreći dužnosti rukovatelja gađanja u pripremi, provedbi i raščlambi gađanja kao i cjelokupnim zaštitno sigurnosnim mjerama
4. Prepare, organize and conduct all types of shooting from formation small arms, mortar and anti-tank weapons of infantry platoon and company support platoon
5. Handling and conduct of fire from infantry formation platoon weapons and support platoon
6. Choose, connect and apply known tools of the branches doctrine, techniques and procedures / proceedings for autonomous conduct, command and use of infantry platoon and support platoon in the overall spectrum of tactical level operations.
7. Integrate, distribute, and use tactically all specialties of the infantry branch and pertaining formation unit weapons
8. Foresee and identify all threats at the battlefield and plan security measures and survival in all combat conditions
9. Prepare, organize and conduct infantry platoon and supply platoon training
10. Be ready to lead platoons in all situations.

Study Programme Learning Outcomes

Military Leadership and Management

- 1 Basic competences of the military profession
 - 1.1 To communicate, organize and plan effectively the activities of a basic tactical unit
 - 1.2 To assess the situation and implement appropriate tactics for a basic tactical unit
 - 1.3 To make decisions independently and command a basic tactical unit
 - 1.4 To train, develop and assess the abilities of soldiers and a basic tactical unit
- 2 Special military competences
 - 2.1 To analyse the environment and to develop and apply tactics of the branch/service
- 3 Basic competences in social and humanistic sciences
 - 3.6 To apply knowledge of the military history in resolving tactical and operational problems
 - 3.7 To apply knowledge of military psychology and sociology in leadership and command in predictable and unpredictable situations
 - 3.9 To make geographic and topographic analysis of the area and decide upon tactics of a basic tactical unit
4. Personal and professional skills and characteristics
 - 4.1 To identify and analyze a problem in the military environment

Screening of student's work

2 ECTS	Lectures attendance
4 ECTS	Written exam
2 ECTS	Seminar report
3 ECTS	Oral exam
4 ECTS	Practical work
15 ECTS	

Forms of Teaching

- » Seminars and workshops
 - » Infantry tactics and Infantry weapons with fire conduct
- » Exercises
 - » Auditory, Laboratory, Field exercises, Combat equipment exercises; Workshop and Work in Practicum
- » Field work
 - » Live shooting exercise; Tactical training; Combat equipment exercises
- » Other
 - » Introduction to Exercise and discussions, Tactical task

Week by Week Schedule

1. Exercises: Introduction - Planning and TLP, (command and control, Planning, TLP, decision making process, MTETTC, OAKOC and ASCOPE)
2. Exercises: Introduction - Planning and TLP, (combat commands - OPORD, key personnel responsibilities, graphics-sketches, TT, symbols)
Seminar: Planning and Troop Leading Procedures
3. Exercises: Introduction - Use of fire (elements - measures of fire control, use of direct and indirect fires, fire commands)
Auditory/Laboratory/Workshop: Tactical task - OPORD platoon/platoon team/company team in attack/defence (TLP, MTETTC I OAKOC, sketches of operations, sand box)
4. Exercises: Introduction - Use of fire (planning and sketch fire the platoon, fire coordination measures)
Laboratory/Workshop: Plann/Sketches of fire
Seminar: Use of fire
5. Exercises: Introduction - Tactical Task - Tactical use and integration of all infantry specialties branches and their weapons and equipment (small arms, light infantry weapons, mortars, ATGM, infantry fighting vehicle,...)
Auditory/Laboratory/Workshop/Practicum: Tactical task - OPORD platoon/platoon team/company team in attack/defence (TLP, MTETTC I OAKOC, sketches of operations, sand box)
6. Exercises: Introduction - Tactical Task - Tactical use and integration of all infantry specialties branches (small arms, light infantry weapons, mortars, ATGM, infantry fighting vehicle,...)
Laboratory/Workshop/Practicum: Tactical task - OPORD platoon/platoon team/company team in attack/defence (TLP, MTETTC I OAKOC, sketches of operations, sand box)

Exercises: Planning, preparation and execution Tactical training and Live shooting exercise and Live shooting; Platoon leader preparation for working in the unit.

Seminar: Infantry doctrine

7. Exercises: Introduction - Tactical Task - Tactical use and integration of all infantry specialties branches (small arms, light infantry weapons, mortars, ATGM, infantry fighting vehicle,...)
Laboratory/Workshop/Practicum: Tactical task - OPORD platoon/platoon team/company team in attack/defence (TLP, MTETTC I OAKOC, sketches of operations, sand box)
Seminar: Infantry doctrine
8. Exercises: Introduction - Kutovi i kutne mjere i temelji balistike MB 60 i 82 mm
9. Exercises: Introduction - Description and main parts of mortars 60 i 82 mm
Structural: Mortars 60 and 82 mm
10. Exercises: Introduction - Ammunition for mortars 60 i 82 mm
Structural: Mortars 60 and 82 mm
11. Exercises: Introduction - Crew mortars 60 i 82 mm
Structural: Mortars 60 and 82 mm
12. Exercises: Introduction - Accessories and instruments
Structural: Mortars 60 and 82 mm
13. Exercises: Introduction - Mortar 82 mm shooting
Seminar: Mortars 60 and 82 mm
14. Exercises:
Field - Live shooting; Preparing for live shooting and Live shooting from AP-JP VHS, PS, RPG-22/7, RBG-1; Live shooting from Browning 12, 7 mm; Preparation and execution of demo shooting from anti-tank guided missile system; Preparing for live shooting mortar 82 mm; Live shooting exercise - different targets squad mortar 82 mm and/or Live shooting support squad mortar 82 mm in attack.
15. Exercises: Field Exercises: - Planning, preparation and execution Tactical training and Live shooting exercise and Live shooting; Platoon leader preparation for working in the unit.

Literature



(2013). *US Army, FM 3-90 Taktika, prijevod GSOSRH, Zagreb; US Army FM 3-90-1 Offense and Defense; FM 3-90-2 Reconnaissance, Security and Tactical enabling tasks*



(2016). *GS OSRH, ZDP-1A, Doktrina OS RH, Zagreb, 2016*



(2016). *US Army, ATP 3-21.8 The Infantry Rifle Platoon and Squad*



(1982). *Pravilo MB 82 mm, Beograd, 1982., Tablice gađanja za minobacač 82 mm, Beograd, 1984*



FM 3-22.90 (7-90) taktička uporaba minobacača



(1995). *Pješačko oružje s nastavom gađanja*



(2015). *Uputa i programi za gađanje pješačkim oružjem*

Similar Courses

- » Maneuver Captain's Career Course (MCCC)- Infantry and armor school - Ford Benning, Oxford

Practical Military Training – Infantry

129468

Teaching Assistants



Krešimir
Kosanović,
bacc. crim.



Luka Vujadinović,

Course Description

The aim of practical military training is to provide direct contact with the military environment for students in the final phase of their studies. The purpose of the subject is to enable quality teaching by means of a partnership between university teachers and military professionals. Handle and use correctly all infantry formation weapons. Understand, connect and apply acquired knowledge and known tools in commanding and tactical use of infantry platoon in the overall spectrum of tactical level operations. Recognize and analyze the use and development of contemporary weapons, equipment and units.

Study Programmes

- » Infantry -> Group of Courses Armour, Field Artillery, Engineers, Technical Support and Infantry (Course) (*required course, 8th semester, 4th year*) (Note: course not offered in this academic year.)

Learning Outcomes

On successful completion of the course, students will be able to:

1. Handle and use correctly all infantry formation platoon weapons and support platoon as well as communication and information signal instruments as well as all material and technical means
2. Explain, differentiate and state the basics of the theory and shooting rules of infantry weapons
3. Objasniti i izreći dužnosti rukovatelja gađanja u pripremi, provedbi i raščlambi gađanja kao i cjelokupnim zaštitno sigurnosnim mjerama
4. Prepare, organize and conduct all types of shooting from formation small arms, mortar and anti-tank weapons of infantry platoon and company support platoon
5. Handling and conduct of fire from infantry formation platoon weapons and support platoon
6. Choose, connect and apply known tools of the branches doctrine, techniques and procedures / proceedings for autonomous conduct, command and use of infantry platoon and support platoon in the overall spectrum of tactical level operations.
7. Integrate, distribute, and use tactically all specialties of the infantry branch and pertaining formation unit weapons
8. Foresee and identify all threats at the battlefield and plan security measures and survival in all combat conditions
9. Prepare, organize and conduct infantry platoon and supply platoon training
10. Be ready to lead platoons in all situations.

ECTS Credits 15.0

English Level Lo

E-learning Level L1

Study Hours

Project laboratory 36

Laboratory exercises 108

Field exercises 36

Grading

Grading: During their classes, the students will receive a mark from each written exam, oral exam, exercises, tactical task, seminar papers and live shooting. The mark from the exercises is based on: diligence, initiative, creativity and organization skills leadership. A positive final mark is given on the condition that all the elements of the evaluation are positive. Obligations: Students have obligation of regular class attendance, training exercises and live shooting. Overall education and training from the subject Infantry Tactics is conducted by means of the protection equipment of the CAF. During the education process, students are obligated and agree to obey and respect military relationships and hierarchy with the purpose of safe conduct of activities. Students agree on the organization of life and work within the CAF training range, shooting, exercise areas and follow a safety measures.

Prerequisites

Infantry Tactics

Introduction to Infantry Tactics and Weapon

Study Programme Learning Outcomes

Military Engineering

- 1 Basic competences of the military profession
 - 1.1 To communicate, organize and plan effectively the activities of a basic tactical unit
 - 1.2 To assess the situation and implement appropriate tactics for a basic tactical unit
 - 1.3 To make decisions independently and command a basic tactical unit
 - 1.6 To nourish, channel and use creativity in accomplishing missions of a basic tactical unit
- 2 Special military competences
 - 2.1 To analyse the environment and to develop and apply tactics of the branch/service
 - 2.4. To apply International War and Humanitarian Law
- 3 Basic technical knowledge
 - 3.1. To identify, analyse, model and resolve military engineering problems by integrating basic knowledge of natural and technical sciences
4. Personal and professional skills and characteristics
 - 4.1 To identify and analyze a problem in the military environment
5. Social skills (team work and communication)
 - 5.2 Organize and plan individual and team work in international and interdisciplinary work groups

Screening of student's work

- 2 ECTS Lectures attendance
- 4 ECTS Written exam
- 2 ECTS Seminar report
- 3 ECTS Oral exam
- 4 ECTS Practical work
- 15 ECTS

Forms of Teaching

- » Seminars and workshops
 - » Infantry tactics and Infantry weapons with fire conduct
- » Exercises
 - » Auditory, Laboratory, Structural, Field
- » Field work
 - » Field exercises on Military training areas and Live shooting
- » Other
 - » Introduction to Exercise and discussions, Tactical task

Week by Week Schedule

1. Exercises: Introduction - Planning and TLP, (command and control, Planning, TLP, decision making process, MTECC and OAKOC)
2. Exercises: Introduction - Planning and TLP, (combat commands, key personnel responsibilities, graphics-skeches, symbols)
Seminar: Planning and Troop Leading Procedures
3. Exercises: Introduction - Use of fire (elements - measures of fire control, use of direct and indirect fires, fire commands)
Laboratory: Tactical task - OPORD platoon/platoon team/company team in attack/defence (TLP, MTETTC I OAKOC, sketches of operations, sand box).

4. Exercises: Introduction - Use of fire (planning and sketch fire the platoon, fire coordination measures)
Laboratory: Sketches of fire
Seminar: Use of fire
5. Exercises: Introduction - Tactical Task - Tactical use and integration of all infantry specialties branches and their weapons and equipment (small arms, light infantry weapons, mortars, anti-tank guided missiles, infantry fighting vehicle, ...)
Laboratory: Tactical task - OPORD platoon/platoon team/company team in attack/defence (TLP, MTETTC I OAKOC, sketches of operations, sand box).
6. Exercises: Introduction - Tactical Task - Tactical use and integration of all infantry specialties branches (small arms, light infantry weapons, mortars, anti-tank guided missiles, infantry fighting vehicle, ...)
Laboratory: Tactical task - OPORD platoon/platoon team/company team in attack/defence (TLP, MTETTC I OAKOC, sketches of operations, sand box)
Seminar: Infantry doctrine
7. Exercises: Introduction - Kutovi i kutne mjere i temelji balistike MB 60 i 82 mm
8. Exercises: Introduction - Description and main parts of mortars 60 i 82 mm
Structural: Mortars 60 and 82 mm
9. Exercises: Introduction - Ammunition for mortars 60 i 82 mm
Structural: Mortars 60 and 82 mm
10. Exercises: Introduction - Crew mortars 60 i 82 mm
Structural: Mortars 60 and 82 mm
11. Exercises: Introduction - Accessories and instruments
Structural: Mortars 60 and 82 mm
12. Exercises: Introduction - Mortar 82 mm shooting
Seminar: Mortars 60 and 82 mm
13. Exercises:
Field: Camping; Live shooting from AP-JP VHS, PS, RPG-22/7, RBG-1; Live shooting from Browning 12, 7 mm; Preparation and execution of demo shooting from anti-tank guided missile system.
14. Exercises: Introduction - Tactical use and integration of all infantry specialties branches (small arms, light infantry weapons, mortars, ATGM, infantry fighting vehicle and combined army teams)
Laboratory: Tactical task - OPORD platoon/platoon team/company team in attack/defence (TLP, MTETTC I OAKOC, sketches of operations, sand box)
15. Exercises: Introduction - Tactical use and integration of all infantry specialties branches (small arms, light infantry weapons, mortars, ATGM, infantry fighting vehicle and combined army teams)
Laboratory: Tactical task - OPORD platoon/platoon team/company team in attack/defence (TLP, MTETTC I OAKOC, sketches of operations, sand box)

Literature



(2013). *US Army, FM 3-90 Taktika, prijevod GSOSRH, Zagreb; FM 3-90-1 Offense and Defense; FM 3-90-2 Reconnaissance, Security and Tactical enabling tasks*



(2014). *GS OSRH, Doktrina OS RH, Zagreb, 2010 i 2014.*



(2016). *US Army, ATP 3-21.8 The Infantry Rifle Platoon and Squad*



(1982). *Pravilo MB 82 mm, Beograd, 1982., Tablice gađanja za minobacač 82 mm, Beograd, 1984*



FM 3-22.90 (7-90) taktička uporaba minobacača



(1995). *Pješačko oružje s nastavom gađanja*



(2015). *Uputa i programi za
gađanje pješачkim oružjem*

Similar Courses

- » Maneuver Captain's Career Course (MCCC)- Infantry and armor school - Ford Benning, The Citadel

Practical Military Training – Military Intelligence

171898

Lecturer



Mladen Trnski,
pred.

Course Description

The aim of practical military training is to provide direct contact with the military environment for students in the final phase of their studies. The purpose of the subject is to enable quality teaching by means of a partnership between university teachers and military professionals. Through practical training the students will gain new knowledge and skills learning from professional experience which will complement the academic environment. This should be beneficial for students in the process of acquiring practical engineering and military knowledge. Also, they will be better prepared for the job they can expect after finishing the studies and they will be provided opportunities for better individual profiling in the process of gaining specialist knowledge in their final year of academic study. The course promotes closer cooperation between the military system and the academic community. At the same time, the teachers get feedback on the knowledge and skills the employers expect, which has a positive backwash effect on the teaching-learning process. Each student will have his/her own supervisor of the Practical Military Training, an officer or a military specialist from the branch or service of the student's speciality. The supervisor defines the training program and assigns tasks to the student in accordance with the plan. The student is obliged to follow instructions and meet obligations, recording this in his/her work diary. The work diary is the basis for producing the final student's report on the activities conducted. The supervisor will keep notes of the student's progress and records of the activities he/she has successfully completed in accordance with the plan, which should form the basis for suggesting the student's final grade. Upon finishing the practical military training the student has to prepare a report on his/her work and submit it to the supervisor. The report includes the information about the supervisor, the work plan and the specifications of the tasks carried out, the time frame and the work diary. The supervisor verifies the report and recommends the final grade for the student. The student's final thesis advisor is the teacher of the Practical Military Training, who is either a university professor or Vice Dean for teaching of the Faculty which provides practical military training for the particular branch or service. The advisor is obliged to read the student's report and, on the basis of the recommendation given by the supervisor, assign the final grade.

Study Programmes

» Infantry -> Military Leadership and Management (Course) (*elective course for the 8th semester mlm-infantry study, 8th semester, 4th year*)

Learning Outcomes

On successful completion of the course, students will be able to:

1. Apply intelligence tactics and techniques
2. Apply counterintelligence tactics and techniques
3. Develop critical thinking through examples of plans and operations

ECTS Credits 15.0

English Level Lo

E-learning Level L1

Study Hours

Exercises 60

Laboratory exercises 60

Field exercises 60

Teaching Assistants

Mladen Jakobović, .

Davor Kiseljak, ing.

Ranko Svetić, mag. ing. admin. nav.

Grading

During their classes, the students will receive one mark from written test, practical and seminar work. A Student who fails the written test will repeat the exam. A student who is not satisfied with the mark from the written test or overall mark, takes an oral exam. The mark from the practical work is made of: diligence, initiatives, creativity and organizational skills. Total mark from the subject is made of arithmetic mean from the written exam, seminar and practical work.

4. Apply the tactics and procedures defined by the doctrinal documents
5. Use the results of (counter) intelligence activities in the management of military organization
6. Conclude based on intelligence analyses

Study Programme Learning Outcomes

Military Leadership and Management

- 1 Basic competences of the military profession
 - 1.1 To communicate, organize and plan effectively the activities of a basic tactical unit
 - 1.2 To assess the situation and implement appropriate tactics for a basic tactical unit
 - 1.3 To make decisions independently and command a basic tactical unit
- 2 Special military competences
 - 2.1 To analyse the environment and to develop and apply tactics of the branch/service
 - 2.2 To manage maintenance of combat and non-combat assets, ammunitions and mines of the branch/service
 - 2.3 To use combat and non-combat assets of the branch/service in a professional way
- 3 Basic competences in social and humanistic sciences
 - 3.6 To apply knowledge of the military history in resolving tactical and operational problems
 - 3.7 To apply knowledge of military psychology and sociology in leadership and command in predictable and unpredictable situations
 - 3.8 To apply results of intelligence and counter-intelligence activities in leadership and management of military units
 - 3.9 To make geographic and topographic analysis of the area and decide upon tactics of a basic tactical unit
4. Personal and professional skills and characteristics
 - 4.1 To identify and analyze a problem in the military environment

Screening of student's work

- 2 ECTS Lectures attendance
- 2 ECTS Written exam
- 3 ECTS Oral exam
- 8 ECTS Practical work
- 15 ECTS

Forms of Teaching

» Exercises

» Students are obligated to attend classes, training exercises and shooting. Overall education and training from the subject Infantry Tactics I is conducted by means of the protection equipment of the CAF. During the education process, students are entitled to obey military relationships and hierarchy with the purpose of safe conduct of activities. Each student should make a seminar paper from the field of infantry tactics exclusively. Students agree on the organization of life and work within the CAF training range, shooting and exercise areas.

» Field work

» Tactical exercises and training should be conducted after lecturing at training ranges and exercise areas of the CAF. The conduct of infantry weapons shooting is a pre-condition of attending practical forms of education and training.

Week by Week Schedule

1. Intelligence procedures
2. Intelligence preparation of the battlefield
3. Intelligence support counterterrorism
4. Intelligence techniques
5. Intelligence tactics
6. disciplines - HUMINT
7. disciplines - GEOINT
8. disciplines - IMINT
9. disciplines - SIGINT
10. disciplines - COMINT
11. disciplines - MASINT
12. disciplines - RADINT
13. disciplines - TELINT
14. disciplines - OSINT
15. conclusions developing

Literature



Lowenthal, M.M (2012).
Intelligence: From Secrets to Policy, 5th Edition,
Thousand Oak/London:
SAGE.



Johnson, R.W. (2009).
Thwarting Enemies at Home and Abroad: How to Be a Counterintelligence Officer,
Washington: Georgetown University Press

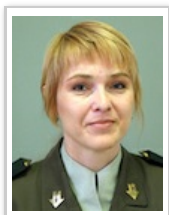
Similar Courses

» -, Oxford

Practical Military Training – Military Police

171897

Lecturer



Vesna Trut,
v. pred. mr. sc.

Course Description

The aim of practical military training is to provide direct contact with the military environment for students in the final phase of their studies. The purpose of the subject is to enable quality teaching by means of a partnership between university teachers and military professionals. Through practical training the students will gain new knowledge and skills learning from professional experience which will complement the academic environment. This should be beneficial for students in the process of acquiring practical engineering and military knowledge. Also, they will be better prepared for the job they can expect after finishing the studies and they will be provided opportunities for better individual profiling in the process of gaining specialist knowledge in their final year of academic study. The course promotes closer cooperation between the military system and the academic community. At the same time, the teachers get feedback on the knowledge and skills the employers expect, which has a positive backwash effect on the teaching-learning process. Each student will have his/her own supervisor of the Practical Military Training, an officer or a military specialist from the branch or service of the student's speciality. The supervisor defines the training program and assigns tasks to the student in accordance with the plan. The student is obliged to follow instructions and meet obligations, recording this in his/her work diary. The work diary is the basis for producing the final student's report on the activities conducted. The supervisor will keep notes of the student's progress and records of the activities he/she has successfully completed in accordance with the plan, which should form the basis for suggesting the student's final grade. Upon finishing the practical military training the student has to prepare a report on his/her work and submit it to the supervisor. The report includes the information about the supervisor, the work plan and the specifications of the tasks carried out, the time frame and the work diary. The supervisor verifies the report and recommends the final grade for the student. The student's final thesis advisor is the teacher of the Practical Military Training, who is either a university professor or Vice Dean for teaching of the Faculty which provides practical military training for the particular branch or service. The advisor is obliged to read the student's report and, on the basis of the recommendation given by the supervisor, assign the final grade.

Study Programmes

- » Infantry -> Military Leadership and Management (Course) (*elective course for the 8th semester mlm-infantry study, 8th semester, 4th year*)

ECTS Credits 15.0

English Level Lo

E-learning Level L1

Study Hours

Project laboratory 20

Laboratory exercises 50

Field exercises 110

Teaching Assistants

Dražen Keser, dipl.iur.

Luka Kovač, dipl. ing.

mr. sc. Vlado Kovačević

Zdravko Magdić, mr. sc.

Andrej Smolek, struč. spec. cin.

Tatjana Šolaja

Grading

During their classes, the students will receive one mark from written test, practical and seminar work. A Student who fails the written test will repeat the exam. A student who is not satisfied with the mark from the written test or overall mark, takes an oral exam. The mark from the practical work is made of: diligence, initiatives, creativity and organizational skills. Total mark from the subject is made of arithmetic mean from the written exam, seminar and practical work.

Learning Outcomes

On successful completion of the course, students will be able to:

1. Identify and classify criminal offences
2. Organise protection of people and property
3. Plan, organise and conduct the investigation of criminal offences within MP jurisdiction
4. Assess the degree of a criminal offence
5. Plan, organise and control traffic
6. Evaluate elements of guilt
7. Reconstruct a criminal offence

Study Programme Learning Outcomes

Military Leadership and Management

- 1 Basic competences of the military profession
 - 1.1 To communicate, organize and plan effectively the activities of a basic tactical unit
 - 1.2 To assess the situation and implement appropriate tactics for a basic tactical unit
 - 1.3 To make decisions independently and command a basic tactical unit
 - 1.4 To train, develop and assess the abilities of soldiers and a basic tactical unit
- 2 Special military competences
 - 2.1 To analyse the environment and to develop and apply tactics of the branch/service
 - 2.2 To manage maintenance of combat and non-combat assets, ammunitions and mines of the branch/service
 - 2.3 To use combat and non-combat assets of the branch/service in a professional way
- 3 Basic competences in social and humanistic sciences
 - 3.2 To comprehend civil-military relations and to act in accordance with democratic standards
 - 3.3 To apply International War and Humanitarian Law
 - 3.5 To apply knowledge of the structure and functioning of the political system, state and public administration in resolving unstructured problems
 - 3.7 To apply knowledge of military psychology and sociology in leadership and command in predictable and unpredictable situations
 - 3.9 To make geographic and topographic analysis of the area and decide upon tactics of a basic tactical unit
4. Personal and professional skills and characteristics
 - 4.2 To model and resolve a problem and to interpret problem solution by using appropriate knowledge and methods
5. Social skills (team work and communication)
 - 5.2 Organize and plan individual and team work in international and interdisciplinary work groups

Screening of student's work

2 ECTS Lectures attendance

2 ECTS Written exam

5 ECTS Oral exam

6 ECTS Practical work

15 ECTS

Forms of Teaching

» Exercises

» Students are obligated to attend classes, training exercises and shooting. Overall education and training from the subject Infantry Tactics I is conducted by means of the protection equipment of the CAF. During the education process, students are entitled to obey military relationships and hierarchy with the purpose of safe conduct of activities. Each student should make a seminar paper from the field of infantry tactics exclusively. Students agree on the organization of life and work within the CAF training range, shooting and exercise areas.

» Field work

» Tactical exercises and training should be conducted after lecturing at training ranges and exercise areas of the CAF. The conduct of infantry weapons shooting is a pre-condition of attending practical forms of education and training.

Week by Week Schedule

1. Introduction to Exercise: Legal Basis for the Operation of Military Police

Exercise: Lessons Learned

2. Introduction to Exercise: Role, Mission and Function of Military Police.

Exercise: The procedures of leading the Military Police unit

3. Introduction to Exercise: Planning and organization of the system of protection of persons and property

Exercise: Creating a plan for securing a protected object

Exercise: Visit to the Protected Facility of MORH.

4. Introduction to Exercise: Organization and Implementation of Military Political Authorities during bringing and arresting.

Exercise: Organization and implementation of military-police regulations and authority of bringing and arresting.

Exercise: Completion of the printed matter of bringing and arresting.

5. Introduction to Exercise: Supervision of the Military Police affairs and traffic management.

Exercise: The procedure of members of the Military Police towards CAF members,

Exercise: Completion of the printed matter.

6. Introduction to Exercise: Military Police Affairs of Crime Prevention and Criminal Investigation:

Exercise: Securing of a CS with an investigation.

Exercise: Criminal identification and recognition, taking fingerprints and other parts of the body.

Exercise: Visit to the Criminal Investigation Center of the MIA "Ivan Vučetić"

7. Introduction to Exercise: Military police record keeping and reporting.

Exercise: Organization and Implementation of Military Police Operational Responsibilities

8. Introduction to Exercise: Military police jobs in special and dedicated units

Exercise: Use of tactical teams

Exercise: Implementation of ADP

9. Introduction to Exercise: MP tactical measures and activities, and physical security when protecting people, property and emergency situations

Exercise: Securing in the movement and in the place

10. Introduction to Exercise: Organising security systems of large events at public places and within military facilities

Exercise: Organization and implementation of public security assurances and riots

11. Introduction to Exercise: Use of the Military Police Authorities

Exercise: Verification and identification of persons and objects identity.

Exercise: Overview of persons, objects and means of transport.

Exercise: Overview of rooms, space, objects and documentation

12. Introduction to Exercise: Application of means of coercion.

Exercise: The use of bodypower

Exercise: The use of the baton

Exercise: The use of binders.

Exercise: The use of firearms.

13. Introduction to Exercise: Extraordinary Traffic Events

Exercise: Securing the scene of traffic accidents

Exercise: Visit to the Traffic Police of the MIA of the Republic of Croatia "Lucko",

14. Introduction to Exercise: Organization of the Traffic Security System

Exercise: Organization and implementation of the movement of the column of military motor vehicles

Exercise: Organization and Implementation of Military Police Blockade,

15. Introduction to Exercise: Organization and implementation of training of guides and official dogs

Exercise: The use of official dogs to detect explosive devices,

Exercise: Use of official dogs to detect narcotics.

Literature



Novoselec, P. (2009). *Posebni dio kaznenog prava. Udžbenici Sveučilišta u Zagrebu*, Sveučilište u Zagrebu



Luka Kovač (2009). *Sigurnost prometa, Udžbenik*, MORH - GS OS RH - HVU - "Petar Zrinjski"



Luka Kovač (2010). *Organizacija vojno cestovnog prometa, Udžbenik*, MORH - GS OS RH - HVU - "Petar Zrinjski"



Luka Kovač (2010). *"Upravljanje i nadzor vojnog cestovnog prometa", Udžbenik*, MORH - GS OS RH - HVU - "Petar Zrinjski"

Additional Literature



Đurđević, Z., Gluščić, S. (2010). *Kazneno procesno pravo: Primjerovnik*, Narodne novine Zagreb

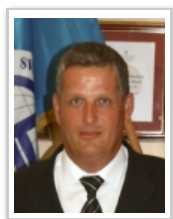
Similar Courses

- » Tactical Decision Making and Platoon Operations, West Point

Practical Military Training – Monitoring and Guidance

129632

Lecturer



doc. dr. sc.
Luka Mihanović

Course Description

The aim of practical military training is to provide direct contact with the military environment for students in the final phase of their studies. The purpose of the subject is to enable quality teaching by means of a partnership between university teachers and military professionals. Through practical training the students will gain new knowledge and skills learning from professional experience which will complement the academic environment. This should be beneficial for students in the process of acquiring practical engineering and military knowledge. Also, they will be better prepared for the job they can expect after finishing the studies and they will be provided opportunities for better individual profiling in the process of gaining specialist knowledge in their final year of academic study. The course promotes closer cooperation between the military system and the academic community. At the same time, the teachers get feedback on the knowledge and skills the employers expect, which has a positive backwash effect on the teaching-learning process. Each student will have his/her own supervisor of the Practical Military Training, an officer or a military specialist from the branch or service of the student's speciality. The supervisor defines the training program and assigns tasks to the student in accordance with the plan. The student is obliged to follow instructions and meet obligations, recording this in his/her work diary. The work diary is the basis for producing the final student's report on the activities conducted. The supervisor will keep notes of the student's progress and records of the activities he/she has successfully completed in accordance with the plan, which should form the basis for suggesting the student's final grade. Upon finishing the practical military training the student has to prepare a report on his/her work and submit it to the supervisor. The report includes the information about the supervisor, the work plan and the specifications of the tasks carried out, the time frame and the work diary. The supervisor verifies the report and recommends the final grade for the student. The student's final thesis advisor is the teacher of the Practical Military Training, who is either a university professor or Vice Dean for teaching of the Faculty which provides practical military training for the particular branch or service. The advisor is obliged to read the student's report and, on the basis of the recommendation given by the supervisor, assign the final grade.

Study Programmes

- » Monitoring and Guidance -> Group of Courses Signals, Monitoring and Guidance and Air Defence (Course) (required course, 8th semester, 4th year) (Note: course not offered in this academic year.)

ECTS Credits 15.0

English Level Lo

E-learning Level L1

Study Hours

Project laboratory 50

Laboratory exercises 60

Field exercises 70

Teaching Assistants

Boris Čaleta-Car, mag.ing.el.

dr. sc. Hrvoje Karna

Petar Martinović, mag. ing. aeronaut.

Grading

Grading: During lectures conduct 2 colloquiums and a written and oral exam. Grades from colleges, written and oral exams make the final grade. Obligations: Regular attendance and participation at exercise.

Prerequisites

Computer and Telecommunication Devices, Systems and Networks
Energy and Drive Systems
Network System
Radar Systems and Air Traffic Management
Radio Location



Learning Outcomes

On successful completion of the course, students will be able to:

1. Use platoons MIN within the company/battalion MIN in support of combat units during the execution of an operation.
2. Use weapons and equipment of an unit.
3. Plan and organize monitoring and control of air space
4. Plan and organize targeting processing system.
5. Apply the knowledge during the training of an individual, squad and platoon specialties of the air defence.
6. Organize, demonstrate and manage the work with the means to monitor the airspace

Study Programme Learning Outcomes

Military Engineering

- 1 Basic competences of the military profession
 - 1.1 To communicate, organize and plan effectively the activities of a basic tactical unit
 - 1.2 To assess the situation and implement appropriate tactics for a basic tactical unit
 - 1.3 To make decisions independently and command a basic tactical unit
 - 1.4 To train, develop and assess the abilities of soldiers and a basic tactical unit
 - 1.5 To develop personal and collective determination, courage, enthusiasm and initiative of subordinates
 - 1.6 To nourish, channel and use creativity in accomplishing missions of a basic tactical unit
 - 1.7 To be acquainted with and to respect historical, social and cultural diversities in the context of military activities
 - 1.8 To make geographic and topographic analysis of the area and to decide upon the tactics of a basic tactical unit
- 2 Special military competences
 - 2.1 To analyse the environment and to develop and apply tactics of the branch/service
 - 2.2 To manage maintenance of combat and non-combat assets, ammunitions and mines of the branch/service
 - 2.3 To use combat and non-combat assets of the branch/service in a professional way
 - 2.4. To apply International War and Humanitarian Law
- 3 Basic technical knowledge
 - 3.1. To identify, analyse, model and resolve military engineering problems by integrating basic knowledge of natural and technical sciences
 - 3.2. To apply complex methodology by integrating engineering knowledge and skills in military engineering practice
 - 3.3. To integrate and apply engineering principles and techniques in the operation of military system in unpredictable conditions
4. Personal and professional skills and characteristics
 - 4.2 To model and resolve a problem and to interpret problem solution by using appropriate knowledge and methods
 - 4.3 To assume military, professional and ethical responsibility
 - 4.4 To develop self-study abilities and the need for and methods of life-long learning in traditional and virtual environment
5. Social skills (team work and communication)
 - 5.1 To communicate effectively in the Croatian and English language applying modern presentation skills and techniques

5.2 Organize and plan individual and team work in international and interdisciplinary work groups

5.5 To apply knowledge of military psychology and sociology in leadership and command in predictable and unpredictable situations

6 Development, implementation and operation of technical systems in economic and social environment

6.1. To analyse and evaluate the effect of engineering solutions on society and environment

6.2. To apply and create engineering approaches in analysing and assessing products and processes in security environment

6.3. To apply and select knowledge and relevant facts from different areas, and to assume responsibility for assessing the impact of military technology in social environment

6.4. To plan, organise, create and implement engineering testing, and to analyse and interpret the results

Screening of student's work

3 ECTS Lectures attendance

5 ECTS Written exam

2 ECTS Oral exam

5 ECTS Practical work

15 ECTS

Forms of Teaching

» Exercises

» Construction exercises will be conducted on combat equipment while laboratory exercises will be conducted in the sense of tactical use of the Aerospace surveillance and guidance unit.

» Field work

» Field exercises will be a visit to the units of Aerospace surveillance and guidance unit and Operative centers.

Week by Week Schedule

1. Introduction to Exercise: Tactics HRZ i PZO
Exercise: View all types of storage ZTMS, (storage p / d, storage of fuels and lubricants storage ZUBS-a), 4 NS
2. Introduction to Exercise: Tactics HRZ i PZO
Exercise: Showing leadership material books and records
3. Introduction to Exercise: Air Force logistics and Regulations
Exercise: Display organization and operation of airport services, handling, flight control;
4. Introduction to Exercise: Air Force logistics and Regulations
Exercise: Procedures keeping units (individual study and preparation of orders by the participants);
5. Introduction to Exercise: Tactics MIN
Exercise: Command Battalion battalion and company of the ZT maintenance, supply and training (structure, organization and arrangement of elements of Battalion battalion and company for ZT maintenance, supply and training)
6. Introduction to Exercise: Tactics MIN
Exercise: Radar posts troop battalion, 4, (layouts radar station, the organization of life and work of the radar station, just physical protection radar position);

7. Introduction to Exercise: Tactics MIN
Exercise: Operating center battalion, (layouts battalion operations center, process functions in the operating center battalion, mutual interaction of radar stations and operational centers ZMIN and superior operational centers, the system links the operational center);
8. Introduction to Exercise: Console modern radar system
Exercise: Croatia Control Air Navigation, (purpose, mission, organization of labor, equipment and jobs CCL, cooperation and coordination between civil and military air traffic control);
9. Introduction to Exercise: Console modern radar system
Exercise: Radar posts troops MIN, an organization of life and work in units MIN and RP;
10. Introduction to Exercise: Console modern radar system
Exercise: Airspace management
11. Introduction to Exercise: The system of „MASE“
Exercise: Console modern radar system
12. Introduction to Exercise: The system of „MASE“
Exercise: The system of „MASE“
13. Introduction to Exercise: Maintenance FPS-117
Exercise: The system of „MASE“
14. Introduction to Exercise: Maintenance FPS-117
Exercise: Maintenance FPS-117
15. Introduction to Exercise: Maintenance FPS-117
Exercise: Maintenance FPS-117

Literature



Ž. Vučković, „Taktika HRZ i PZO“ - skripta, ZIO „Rudolf Perešin“, 2001.



Pravilnik o načinu materijalnog zbrinjavanja OS RH, MORH, Zagreb, 2004. (NN 179/2004.); Naputak o provedbi logističke i zdravstvene potpore OS RH, GS OS Zagreb, 2004. ; Naputak o održavanju TMS u OS RH, GS OS, Zagreb, 2004. ; Naputak o materijalnom poslovanju u MO i OS RH, MORH Zagreb, 2004; ALP – 4.3 Doktrina i procedure logistike zračnih snaga



B. Lemač, „Taktika ZMIN“ – lekcije, UHRZ Zadar, 1998.



Tehnička dokumentacija radara: Croatia Operations Training Course, Book 1 Book 2; Ante Guzobad, Operator radarskog sustava FPS-117 (knjiga 1.), Zagreb, 2009.

Similar Courses

» Tactical Decision Making and Platoon Operations, West Point

Practical military training – Signals

129486

Lecturer



doc. dr. sc.
Igor Štambuk

ECTS Credits 15.0

English Level Lo

E-learning Level L1

Study Hours

Laboratory exercises 140

Field exercises 40

Teaching Assistants

Dejan Barešić, pred.

Dražen Čovran, dipl. ing.

Tomislav Kravaica

dr. sc. Darko Možnik, doc.

mr. sc. Vinko Zebić, pred.

Grading

The evaluation consists of several elements: a colloquium, a rating of tactical work on topics, field work evaluation and final exam. The oral exam consists of a theoretical part and a practical part (eg drawing a scheme of linking the basic tactical units. Obligations: Regular presence in lectures and exercises. Active participation in the implementation of exercises and preparation of concrete practical tasks.

Prerequisites

Computer and
Telecommunication Devices,
Systems and Networks

Process Modelling and Design
of IS

Radio Devices and Systems

Safety and Protection of
Communication Information
Systems



ME

ME-M

ARM

ART

ENG

TS

IN-E

ME-E

SIG

MG

AD

CBR

MLM

IN-L

Course Description

University subject Military Professional Practice - Signal represents the final specialist training in the KIS area (communication information systems).

The objective of the course is to enable students in the final stage of the graduate study a direct contact with the military professional environment and a better education thanks to the cooperation of university teachers and military experts. Practitioners acquire knowledge and skills, professional experience, and academic knowledge acquired with military education. This experience will be useful for students in the application of practical engineering and military knowledge, they will better prepare them for the jobs that they expect after the completion of their studies and enable them to have better individual proficiency in acquiring specialist knowledge at the final year of study.

During the course, students will be able to acquire knowledge about the principles of electromagnetism, propagation and expansion of electromagnetic waves in free space and in the earth's atmosphere through training for exercises and exercises that take place in the most realistic conditions.

They will also learn about the command and control system (C2S), the integration of combat functions, the integration of communication and information systems and command posts through cooperation with key people in the KIS segment of the OS RH. It will train the creation of situational awareness, that is, a common operational picture of the situation in the area of military operations. They will get acquainted with concepts and find out what are communication and information systems (concept, types, structure and elements), communication channels (types and purposes), what is the functional area of the KIS with its authorizations, and what is planned and implementing parts of the KIS of the Croatian Armed Forces (organizational structure, tasks and responsibilities by levels).

Special attention during the course will focus on getting to know the types and elements of the KIS center and command posts. The organization of the tactical KIS center will be practiced at the command post, set up computer information systems and will be introduced to the technical capabilities of the computer information systems and the application of security and protection measures in the computer network.

During the study visits, students will see the special features of the branches of the Croatian Armed Forces and the airborne units of the Croatian Armed Forces, will be familiar with the organization of the communications and information system in the land forces, in signal battalion as well as in the signal platoon in the Brigade. Students will be introduced to the organization of the communication and information system in the Croatian Air Force, the main operational center in Podvornica and the Croatian Navy, the N-6 Z HRM unit, and the OSMiO battalion.

In addition to the organization of KIS OSRH, students will also be introduced to the tactics of using signal platoon as the basic unit of KIS, the elements of the communication system in the battalion and brigade, and the KIS planning processes.

Maintenance of technical systems (system life, reliability and sustainability, maintenance as part of logistics support) is also an important segment of the competence of KIS officers. Also they will visit the Repairing Institute of OS RH, where students will have the opportunity to see the installation of the KIS system on combat platforms, as well as the processes of repairing communication devices. Students will be familiarized with maintenance planning (basic guidelines, principles), and with preventive and corrective maintenance (periodic examinations / checks - daily, weekly examinations, overhauls, regular servicing and replacement of critical elements).

Study Programmes

- » Signals -> Group of Courses Signals, Monitoring and Guidance and Air Defence (Course) *(required course, 8th semester, 4th year)* (Note: course not offered in this academic year.)

Learning Outcomes

On successful completion of the course, students will be able to:

1. Analyze the features and principles of the use of the signal platoon in Croatian Army
2. Analyze the tactical situation and argue the potential of the signal platoon.
3. Prepare and apply the KIS support documentation.
4. Prepare and implement basic maintenance activities in the link unit.
5. Prepare and conduct tactical training and signal platoon exercises.

Study Programme Learning Outcomes

Military Engineering

1 Basic competences of the military profession

- 1.1 To communicate, organize and plan effectively the activities of a basic tactical unit
- 1.2 To assess the situation and implement appropriate tactics for a basic tactical unit
- 1.3 To make decisions independently and command a basic tactical unit
- 1.6 To nourish, channel and use creativity in accomplishing missions of a basic tactical unit
- 1.7 To be acquainted with and to respect historical, social and cultural diversities in the context of military activities
- 1.8 To make geographic and topographic analysis of the area and to decide upon the tactics of a basic tactical unit

2 Special military competences

- 2.1 To analyse the environment and to develop and apply tactics of the branch/service
- 2.2 To manage maintenance of combat and non-combat assets, ammunitions and mines of the branch/service
- 2.3 To use combat and non-combat assets of the branch/service in a professional way
- 2.4. To apply International War and Humanitarian Law
- 2.5 To apply knowledge of the military history in resolving tactical and operational problems

3 Basic technical knowledge

- 3.1. To identify, analyse, model and resolve military engineering problems by integrating basic knowledge of natural and technical sciences
- 3.3. To integrate and apply engineering principles and techniques in the operation of military system in unpredictable conditions

4. Personal and professional skills and characteristics

- 4.1 To identify and analyze a problem in the military environment
- 4.2 To model and resolve a problem and to interpret problem solution by using appropriate knowledge and methods

5. Social skills (team work and communication)

- 5.1 To communicate effectively in the Croatian and English language applying modern presentation skills and techniques
- 5.2 Organize and plan individual and team work in international and interdisciplinary work groups

5.5 To apply knowledge of military psychology and sociology in leadership and command in predictable and unpredictable situations

6 Development, implementation and operation of technical systems in economic and social environment

6.2. To apply and create engineering approaches in analysing and assessing products and processes in security environment

Screening of student's work

5 ECTS Lectures attendance

3 ECTS Midterm exam

3 ECTS Written exam

2 ECTS Oral exam

2 ECTS Practical work

15 ECTS

Forms of Teaching

» Lectures

» Exercises

» Field work

» Other

» studentski posjeti postojbi

Literature



(1984). *NATO STANAG 5042 - Military Telecommunications - Diagram Symbols (prijevod)*, NATO, Vojna agencija za standardizaciju



Ryan J. Michael - Frater R. Michael (2002). *Tactical Communications for the Digitized Battlefield*, Artech House Boston - London



(2009). *Signal Soldier's Guide (FM 6-02.43)*, Headquarters, Department of the Army U.S.A.



(2008). *NATO STANAG 2014 - Format i zapovijedi i označavanje vremena, lokacija i granica (prijevod)*, NATO, Vojna agencija za standardizaciju

Practical Military Training – Technical Services

129592

Lecturer



Mirko Ljevar,
pred.

Course Description

The aim of practical military training is to provide direct contact with the military environment for students in the final phase of their studies. The purpose of the subject is to enable quality teaching by means of a partnership between university teachers and military professionals. Through practical training the students will gain new knowledge and skills learning from professional experience which will complement the academic environment. This should be beneficial for students in the process of acquiring practical engineering and military knowledge. Also, they will be better prepared for the job they can expect after finishing the studies and they will be provided opportunities for better individual profiling in the process of gaining specialist knowledge in their final year of academic study. The course promotes closer cooperation between the military system and the academic community. At the same time, the teachers get feedback on the knowledge and skills the employers expect, which has a positive backwash effect on the teaching-learning process. Each student will have his/her own supervisor of the Practical Military Training, an officer or a military specialist from the branch or service of the student's speciality. The supervisor defines the training program and assigns tasks to the student in accordance with the plan. The student is obliged to follow instructions and meet obligations, recording this in his/her work diary. The work diary is the basis for producing the final student's report on the activities conducted. The supervisor will keep notes of the student's progress and records of the activities he/she has successfully completed in accordance with the plan, which should form the basis for suggesting the student's final grade. Upon finishing the practical military training the student has to prepare a report on his/her work and submit it to the supervisor. The report includes the information about the supervisor, the work plan and the specifications of the tasks carried out, the time frame and the work diary. The supervisor verifies the report and recommends the final grade for the student. The student's final thesis advisor is the teacher of the Practical Military Training, who is either a university professor or Vice Dean for teaching of the Faculty which provides practical military training for the particular branch or service. The advisor is obliged to read the student's report and, on the basis of the recommendation given by the supervisor, assign the final grade. The aim of the course is to acquire practical knowledge in the implementation and organization of maintenance, deactivation, caring, implementation measures when working with ordnance.

Study Programmes

- » Technical Support -> Group of Courses Armour, Field Artillery, Engineers, Technical Support and Infantry (Course) (*required course, 8th semester, 4th year*)

ECTS Credits 15.0

English Level Lo

E-learning Level L1

Study Hours

Exercises 60

Laboratory exercises 120

Teaching Assistants

Ivan Damiani, dipl. ing.

Deni Dumanić, dipl. ing.

Ivica Kodžoman, dipl. ing.

Miroslav Kuhar, pred.

mr. sc. Predrag Mikulić

Đuro Pažin

Jadranko Tuta, pred.

Grading

Grading: Mandatory presence on exercises and completion of seminar papers. Obligations: Positive grades from term papers and tests, for students who did not pass the mid-term exams, conduct a written exam.

Learning Outcomes

On successful completion of the course, students will be able to:

1. Acquire knowledge in the description, labeling, packaging and storage of ammunition and mines
2. Acquire knowledge in organizing and carrying out maintenance of ammunition and mines
3. Harmonize records of ammunition and mines to the current legislation
4. Adopt, explain and apply the engineering and physical protection during operation and storage of ammunition and mines
5. Acquire knowledge in implementing and making documents of pyrotechnic safety measures in the storage facilities of ammunition and mines
6. Distinguish the specific maintenance of combat and non-combat vehicles
7. Apply the standard of maintenance of technical material resources in the CAF
8. Apply the latest technology for maintenance, research and conservation of the CAF classic and rocket weapons

Study Programme Learning Outcomes

Military Engineering

- 1 Basic competences of the military profession
 - 1.1 To communicate, organize and plan effectively the activities of a basic tactical unit
 - 1.3 To make decisions independently and command a basic tactical unit
 - 1.4 To train, develop and assess the abilities of soldiers and a basic tactical unit
 - 1.5 To develop personal and collective determination, courage, enthusiasm and initiative of subordinates
 - 1.6 To nourish, channel and use creativity in accomplishing missions of a basic tactical unit
- 2 Special military competences
 - 2.2 To manage maintenance of combat and non-combat assets, ammunitions and mines of the branch/service
 - 2.3 To use combat and non-combat assets of the branch/service in a professional way
 - 2.4 To apply International War and Humanitarian Law
- 3 Basic technical knowledge
 - 3.1. To identify, analyse, model and resolve military engineering problems by integrating basic knowledge of natural and technical sciences
 - 3.2. To apply complex methodology by integrating engineering knowledge and skills in military engineering practice
 - 3.3. To integrate and apply engineering principles and techniques in the operation of military system in unpredictable conditions
4. Personal and professional skills and characteristics
 - 4.1 To identify and analyze a problem in the military environment
 - 4.2 To model and resolve a problem and to interpret problem solution by using appropriate knowledge and methods
 - 4.3 To assume military, professional and ethical responsibility
 - 4.4 To develop self-study abilities and the need for and methods of life-long learning in traditional and virtual environment
5. Social skills (team work and communication)
 - 5.2 Organize and plan individual and team work in international and interdisciplinary work groups
 - 5.3 To effectively present work results both orally and in writing to stakeholders in the military environment
- 6 Development, implementation and operation of technical systems in economic

and social environment

- 6.1. To analyse and evaluate the effect of engineering solutions on society and environment
- 6.2. To apply and create engineering approaches in analysing and assessing products and processes in security environment
- 6.3. To apply and select knowledge and relevant facts from different areas, and to assume responsibility for assessing the impact of military technology in social environment
- 6.4. To plan, organise, create and implement engineering testing, and to analyse and interpret the results

Forms of Teaching

- » Lectures
- » Exercises
- » Field work
- » Independent assignments

Week by Week Schedule

1. Lectures: Maintenance of ammunition and mines 3
Seminar: First level maintenance of ammunition and mines 6
2. Lectures: Overhaul of ammunition and mines 2
Seminar: Second level maintenance of ammunition and mines 6
3. Lectures: Periodic monitoring of the quality of ammunition and mines 6
Seminar: Disassembling of ammunition and mines 6
4. Lectures: Means for igniting explosive charges 1; Write-off and disposal of ammunition and mines 3
Seminar: Deliberate explosion of ammunition and mines 6
5. Lectures: Maintenance of M-84 tank
Seminar: Calculate pyrotechnic safety distances 6
6. Lectures: Maintenance of AIFV M80A
Seminar: Maintenance of M-84 tank
7. Lectures: Maintenance of AFV Patria
Seminar: Maintenance of AIFV M80A
8. Lectures: Maintenance of multipurpose wheeled vehicles Iveco LMV i HUMMWV
Seminar: Maintenance of AFV Patria
9. Lectures: Maintenance of trucks in use in the CAF
Seminar: Maintenance of multipurpose wheeled vehicles Iveco LMV i HUMMWV
10. Lectures: Maintenance of classical and missile weapons 2
Seminar: Maintenance of trucks in use in the CAF
11. Lectures: Conventional weapons maintenance technology of the Croatia Army, Navy, Air Force and Air Defence 6
Seminar: 1. Elimination of the general failure on the classic weapons 1; 2. Repair parts, bearings and universal joints of classic weapons 6; 3. Determining the technical condition of classic weapons pipes 3
12. Lectures: Missile maintenance technology of the Croatia Army 2
Seminar: 4. Repair bolt of infantry and artillery weapons 2; 5. Hydropneumatic devices of artillery weapons 6; 6. Measuring the functional dimensions of hydro unit artillery weapons 18;
13. Lectures: Missile maintenance technology of the Croatia Navy, Air Force and Air Defence 3
Seminar: 7. Elimination of the general failure to missile weapons 1; 8. Technical inspection of rocket launchers and launch mechanisms 3;

14. Lectures: Conservation conventional and missile weapons of the Croatia Army, Navy, Air Force and Air Defence 1
Seminar: 9. Check and adjust the aiming devices on earth artillery, air defence weapons, specific maintenance aiming devices to ship and aircraft artillery 12
15. Lectures: Inspection, testing and control of the repaired and assembled weapons 1
Seminar: 10. Conservation of conventional and missile weapons of the Croatia Army, Navy, Air Force and Air Defence 4; 11. Testing of the classic weapons and rocket launchers of the Croatia Army, Navy, Air Force and Air Defence 4

Literature



Pleše, M: Fizika i kemija eksplozivnih tvari – I. dio, II. dio, III. Dio,



Todorovski, D.: Skladištenje, čuvanje i održavanje ubojnih sredstava,



Todorovski, D.: Elaborat za specijalistički NTP topničkog streljiva,



Todorovski, D.: Elaborat za delaboraciju pješačkog streljiva,

Probability and Statistics

129378

Lecturer



prof. dr. sc.
Ilko Brnetić

Course Description

We introduce and investigate the probability spaces, discrete and continuous random variables and discrete random vectors. Main discrete and continuous random variables are studied. We introduce the basics of sampling theory and learn how to implement some statistical tests.

Study Programmes

- » Group of Courses Signals, Monitoring and Guidance and Air Defence -> Military Engineering (Course) (*required course, 3rd semester, 2nd year*)
- » Chemical, Biological, Radiological and Nuclear Defence -> Military Engineering (Course) (*required course, 3rd semester, 2nd year*) (**Note: course not offered in this academic year.**)

Learning Outcomes

On successful completion of the course, students will be able to:

1. Explain and interpret basic concepts from the course (probability, random variable, numerical characteristic of random variable).
2. Outline basic definitions and statements of main theorems.
3. Illustrate problem by mathematical model and apply appropriate mathematical method
4. Apply fundamental statistic tests in practical problems in statistics.
5. Demonstrate fundamental skills contained in the course.
6. Apply mathematical reasoning adequately.

Study Programme Learning Outcomes

Military Engineering

- 1 Basic competences of the military profession
 - 1.6 To nourish, channel and use creativity in accomplishing missions of a basic tactical unit
- 2 Special military competences
 - 2.1 To analyse the environment and to develop and apply tactics of the branch/service
- 3 Basic technical knowledge
 - 3.1. To identify, analyse, model and resolve military engineering problems by integrating basic knowledge of natural and technical sciences
 - 3.3. To integrate and apply engineering principles and techniques in the operation of military system in unpredictable conditions

ECTS Credits	5.0
English Level	Lo
E-learning Level	L1
Study Hours	
Lectures	30
Exercises	30

Grading

Grading: Grading scheme contains the following: grading of work during semester (homeworks and short exams) (80 points), grading written exam (60 points) (possibly divided to midterm written exam (20 points) and final written exam (40 points)) and grading oral exam (60 points). The threshold for a passing grade is a 45% score of written exam both in probability part of course and statistics part of course and 45% score on oral exam. For the grade higher than satisfactory (2) the following conditions are necessary and sufficient: -for grade good (3) - at least 33 points for the oral exam and at least 90 points in total, -for grade very good (4) - at least 42 points for the oral exam and at least 120 points in total, - for grade excellent (5) - at least 51 points for oral exam and at least 150 points in total. In the case of online exams (due to possible extraordinary circumstances), rules can be slightly modified, but the oral part of the exam would be obligatory. Obligations: The student is required to attend lectures and actively participate in class. The student is also required to individually fulfill homework assignments and to take exams.

- 4. Personal and professional skills and characteristics
 - 4.2 To model and resolve a problem and to interpret problem solution by using appropriate knowledge and methods
 - 4.4 To develop self-study abilities and the need for and methods of life-long learning in traditional and virtual environment
- 6 Development, implementation and operation of technical systems in economic and social environment
 - 6.4. To plan, organise, create and implement engineering testing, and to analyse and interpret the results

Screening of student's work

- 2 ECTS Lectures attendance
- 0.1 ECTS Midterm exam
- 0.1 ECTS Written exam
- 0.1 ECTS Oral exam
- 2.7 ECTS Learning and preparing for exam
- 5 ECTS

Forms of Teaching

- » Lectures
 - » Lectures with a large number of example and problems
- » Exercises
 - » More examples for students work
- » Independent assignments
 - » From workbook

Week by Week Schedule

1. Lectures: Probability Space. Finite Probability space. Fundamentals of Combinatorics.
Exercises: Finite Probability Space. Fundamentals of Combinatorics.
2. Lectures: Discrete Infinite Probability Space. Geometrical Probability.
Exercises: Fundamentals of Combinatorics. Discrete Infinite Probability Space. Geometrical Probability.
3. Lectures: Conditional Probability. Independence.
Exercises: Conditional Probability. Independence.
4. Lectures: Discrete Random Variables. Probability Distribution. Mathematical Expectation and Variance.
Exercises: Discrete Random Variables. Probability Distribution. Mathematical Expectation and Variance.
5. Lectures: Discrete Random Vectors. Covariance and Correlation.
Exercises: Discrete Random Vectors. Covariance and Correlation.
6. Lectures: Binomial, Geometric and Poisson Distribution.
Exercises: Binomial, Geometric and Poisson Distribution.
7. Lectures: Continuous Random Variables. Probability Density.
Exercises: Continuous Random Variables. Probability Density.
8. Lectures: Exponential and Normal Distribution. Normal Approximation to the Binomial and Poisson Distribution.
Exercises: Exponential and Normal Distribution. Normal Approximation to the Binomial and Poisson Distribution.
9. Lectures: The Laws of Large Numbers. The Central Limit Theorem.
Exercises: The Laws of Large Numbers. The Central Limit Theorem.
10. Lectures: Descriptive Statistic.
Exercises: Descriptive Statistic.
11. Lectures: Point Estimations. Linear Regression.
Exercises: Point Estimations. Linear Regression.

12. Lectures: Estimations by Confidence Intervals.
Exercises: Estimations by Confidence Intervals.
13. Lectures: Tests of Hypotheses for a Single Sample.
Exercises: Tests of Hypotheses for a Single Sample.
14. Lectures: Statistical Inference for Two Samples.
Exercises: Statistical Inference for Two Samples.
15. Lectures: Chi-Square Goodness-of-Fit Test.
Exercises: Chi-Square Goodness-of-Fit Test.

Literature



Neven Elezović (2008).
Diskretna vjerojatnost,
Element



Neven Elezović (2008).
Slučajne varijable, Element



Neven Elezović *Statistika i procesi*, Element



Slavka Pfaff (2012). *Osnove statistike*, Element



Iva Franjić, Ana Vukelić
nastavni materijali na webu (
http://www.pbf.unizg.hr/hr/zavodi/zavod_za_procesno_inzenjerstvo/kabinet_za_matematiku/biostatistika_studij_nutricionizam/nastavni_materijali/predavanja_i_seminari)

Similar Courses

» Statistics, West Point

Process Modelling and Design of IS

130146

Lecturer



prof. dr. sc.
Neven Vrček

Course Description

Students should note that each complex organizational (or object) system has its own information (sub)system that allows its efficient operation, system management, and growth and development in changing conditions. The requirements for the new IS must be made based on the analysis of organization's business processes. During the course student should acquire knowledge about structural and objective methods for planning, analysis, design and implementation of IS and methodologies for IT engineering. Based on the acquired theoretical knowledge, students must be able to realize, by applying new information technologies, all phases of the life cycle of each IS using CASE tools. For the designed IS, students should be able to evaluate the quality and the expected effects of the proposed IS, as well as to plan the maintenance and further development of the new IS.

Study Programmes

- » Signals -> Group of Courses Signals, Monitoring and Guidance and Air Defence (Course) (required course, 7th semester, 4th year) (Note: course not offered in this academic year.)

Learning Outcomes

On successful completion of the course, students will be able to:

1. Create a normalized data model
2. Choose a suitable methodology for the development of a specific IS
3. Determine the optimal architecture of the information system
4. Modeling applications that form an integral information system
5. Educate users to the functionality of the new information system
6. Select the optimal ICT for specific IS
7. Identify and model the business processes in an organization
8. Propose business processes reengineering with the use of modern ICT
9. Explain the organization and functioning of the organizational system
10. Develop applications using modern CASE-tools

Study Programme Learning Outcomes

Military Engineering

- 1 Basic competences of the military profession
 - 1.1 To communicate, organize and plan effectively the activities of a basic tactical unit
 - 1.2 To assess the situation and implement appropriate tactics for a basic tactical unit

ECTS Credits	5.0
English Level	Lo
E-learning Level	L3
Study Hours	
Lectures	45
Seminar	15
Laboratory exercises	15

Associate Lecturers

dr. sc. Darko Galinec, prof. v. š.
doc. dr. sc. Katarina Tomičić-Pupek

Grading

Grading: Evaluation of project presentations at the seminar sessions, stages of projects submitted into the system for e-learning and evaluation of the theoretical knowledge. Obligations: Develop a case study in the form of a project on a selected organization. The project includes models made in the selected CASE tool. The project will be presented at the seminar sessions continued in stages. Each stage represents a phase and each phase must be submitted for verification into the system for e-learning in the form of documentation. Reviewed and accepted project is a prerequisite for the verification of theoretical knowledge.

Prerequisites for

Practical military training - Signals

- 3 Basic technical knowledge
 - 3.3. To integrate and apply engineering principles and techniques in the operation of military system in unpredictable conditions
4. Personal and professional skills and characteristics
 - 4.1 To identify and analyze a problem in the military environment
 - 4.2 To model and resolve a problem and to interpret problem solution by using appropriate knowledge and methods
 - 4.3 To assume military, professional and ethical responsibility
 - 4.4 To develop self-study abilities and the need for and methods of life-long learning in traditional and virtual environment
5. Social skills (team work and communication)
 - 5.2 Organize and plan individual and team work in international and interdisciplinary work groups
 - 5.3 To effectively present work results both orally and in writing to stakeholders in the military environment
- 6 Development, implementation and operation of technical systems in economic and social environment
 - 6.2. To apply and create engineering approaches in analysing and assessing products and processes in security environment
 - 6.3. To apply and select knowledge and relevant facts from different areas, and to assume responsibility for assessing the impact of military technology in social environment

Forms of Teaching

- » Lectures
- » Seminars and workshops
- » Exercises
- » Laboratory

Week by Week Schedule

1. Lectures: Business system and its information system
Seminar: decomposition

Exercises: The scope of the project and examples
2. Lectures: Life and development cycle of an information system
Seminar: Matrix modeling

Exercises: Determination of project teams and project themes
3. Lectures: Business technology analysis of an object system
Seminar: Process models and workflow modeling

Exercises: Project presentations
4. Lectures: Optimum organization and architecture of the information system
Seminar: Organizational Flow modeling

Exercises: Project presentations
5. Lectures: Review of modern methodologies and methods for IS design
Seminar: Activity flow modeling

Exercises: Project presentations
6. Lectures: Computer support for the design of information systems
Seminar: Data Flow modeling

Exercises: Project presentations

7. Lectures: Basic techniques of process modeling
Seminar: Graphical data models

Exercises: Project presentations
8. Lectures: Basic techniques of data modeling
Seminar: Relational data model

Exercises: Project presentations
9. Lectures: Specific methods and standards for data modeling
Seminar: Generating the basic structure of data dictionary

Exercises: Project presentations
10. Lectures: The semantics of the data model
Seminar: Generating the basic procedure of application

Exercises: Project presentations
11. Lectures: Relational data model
Seminar: Templates and menus

Exercises: Project presentations
12. Lectures: Object-oriented approach to the development of the IS
Seminar: Adding source code into Browse procedures

Exercises: Project presentations
13. Lectures: IS resource modeling
Seminar: Adding source code into Form procedures

Exercises: Project presentations
14. Lectures: System synthesis
Seminar: Declaration of variables and formulas

Exercises: Questions and light review of project documentation
15. Lectures: IS implementation project management
Seminar: Adding source code into Report procedures

Exercises: Final review of project documentation

Literature



Materijali dostupni na sustavu za e-učenje



Dumas, M., La Rosa, M., Mendling, J., Reijers, H. (2013). *Fundamentals of Business Process Management*, Springer

Additional Literature

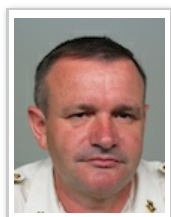


Hoffer J. A., George J. F., Valacich J. S. (2007). *Modern Systems Analysis and Design*. 5th ed. Prentice-Hall, Upper Saddle River, 2007., Prentice-Hall, Upper Saddle River, 2007.

Production Technologies

129380

Lecturers



izv. prof. dr. sc.
Mirko Jakopčić



izv. prof. dr. sc.
Ivica Garašić

Course Description

Familiarizing the students with production technologies of casting, polymer and composite processing, metal forming, material removal processes, welding and assembly.

Study Programmes

- » Armour -> Group of Courses Armour, Field Artillery, Engineers, Technical Support and Infantry (Course) (required course, 6th semester, 3rd year) (Note: course not offered in this academic year.)
- » Field Artillery -> Group of Courses Armour, Field Artillery, Engineers, Technical Support and Infantry (Course) (required course, 6th semester, 3rd year)
- » Engineers -> Group of Courses Armour, Field Artillery, Engineers, Technical Support and Infantry (Course) (required course, 6th semester, 3rd year) (Note: course not offered in this academic year.)
- » Technical Support -> Group of Courses Armour, Field Artillery, Engineers, Technical Support and Infantry (Course) (required course, 6th semester, 3rd year)
- » Infantry -> Group of Courses Armour, Field Artillery, Engineers, Technical Support and Infantry (Course) (required course, 6th semester, 3rd year) (Note: course not offered in this academic year.)
- » Signals -> Group of Courses Signals, Monitoring and Guidance and Air Defence (Course) (required course, 6th semester, 3rd year)
- » Monitoring and Guidance -> Group of Courses Signals, Monitoring and Guidance and Air Defence (Course) (required course, 6th semester, 3rd year) (Note: course not offered in this academic year.)
- » Air Defence -> Group of Courses Signals, Monitoring and Guidance and Air Defence (Course) (required course, 6th semester, 3rd year) (Note: course not offered in this academic year.)
- » Chemical, Biological, Radiological and Nuclear Defence -> Military Engineering (Course) (required course, 6th semester, 3rd year) (Note: course not offered in this academic year.)

Learning Outcomes

On successful completion of the course, students will be able to:

1. Apply the principles and fundamental knowledge of the natural sciences and engineering in order to recognize and describe simple mechanical engineering problem.
2. Analyze problems into simpler tasks and propose actions to address them.
3. Identify the effects and understand the interactions between the elements of the technical systems and processes.

ECTS Credits 5.0

English Level Lo

E-learning Level L1

Study Hours

Lectures 30

Laboratory exercises 30

Associate Lecturers

izv. prof. dr. sc. Branko Bauer

doc. dr. sc. Zdenka Keran

prof. dr. sc. Zoran Kunica

doc. dr. sc. Ana Pilipović

prof. dr. sc. Toma Udiljak

Teaching Assistant

dr. sc. Marko Švaco

Grading

Grading: The final grade is determined by evaluating written midterm exams and possible oral exam. Obligations: Regular attendance. Accessing the midterm exams and possible oral exam.

4. Assemble groups of materials and technology and their application with respect to the requirements of technical systems and restrictions arising from the quality and cost effectiveness.
5. Assess current world trends of development and application of technology in the technical field of mechanical engineering.
6. Combine knowledge about materials, technologies and technical systems in relation to business and social context and environment.

Study Programme Learning Outcomes

Military Engineering

- 2 Special military competences
 - 2.2 To manage maintenance of combat and non-combat assets, ammunitions and mines of the branch/service
- 3 Basic technical knowledge
 - 3.1. To identify, analyse, model and resolve military engineering problems by integrating basic knowledge of natural and technical sciences
5. Social skills (team work and communication)
 - 5.3 To effectively present work results both orally and in writing to stakeholders in the military environment
- 6 Development, implementation and operation of technical systems in economic and social environment
 - 6.1. To analyse and evaluate the effect of engineering solutions on society and environment
 - 6.2. To apply and create engineering approaches in analysing and assessing products and processes in security environment

Screening of student's work

- 0.5 ECTS Lectures attendance
 4 ECTS Midterm exam
 0.5 ECTS Oral exam

 5 ECTS

Forms of Teaching

- » Lectures
 - » Lectures in the classroom.
- » Exercises
 - » Laboratory exercises.
- » Field work
 - » Visit to manufacturing company.

Week by Week Schedule

1. Lectures:

Metal Casting-An Introduction. Expendable Mold Casting Processes (Sand Casting, Shell Molding, Investment Casting, Lost Foam Casting). Coremaking.

2

Permanent Mold Processes (Permanent Mold Casting, High-Pressure Die Casting, Low-Pressure Die Casting, Centrifugal Casting). Melting and Solidification. Casting Defects. 2

Exercises: 0

2. Lectures:
Polymer materials and properties. 1
Primary shaping and forming of polymers. 1
Composite materials and hand-layup. 1
Additive manufacturing of polymer products. 1

Exercises: 0
3. Lectures:
Introduction into metal forming technology, physical basics, material formability and friction in metal forming processes. 2
Metal forming procedures. Sheet metal forming, forging, advanced metal forming procedures. 2

Exercises: 0
4. Lectures: 0
Exercises: FSB
Casting. 2
Polymer and composite processing. 2
Metal forming. 2
5. Lectures: 0

Exercises: Field work - visit to manufacturing company
Casting. 2
Polymer and composite processing. 2
Metal forming. 2
6. Lectures: 0
Exercises: 0
7. Midterm exam. 4
8. Lectures:
Importance, development and classification of material removal processes.
Cutting tool geometry, kinematics and basics of cutting theory. 2
Material removal processes with defined geometry of cutting edge. Material removal processes with undefined geometry of cutting edge. 2
Exercises: 0
9. Lectures:
Non-conventional machining. New machining processes. 2
Introduction. Gas welding and cutting. 2
Exercises: 0

Seminar: Machine tools, cutting tools and attachments for shaping, drilling, turning, milling and grinding.
10. Lectures:
REL, MIG/MAG, TIG. 2
SAW, Laser welding and cutting, Practical examples. 2
Exercises: 0
11. Lectures:
Assembly: Basic concepts: basic terms and characteristics. Product structure (hierarchy) for assembly and BOMs. 2
Assembly process. Types of assembly systems. Assembly system planning. 2

Exercises: 0
12. Lectures: 0
Exercises: FSB
Metal cutting. 2
Welding. 2
Assembly. 2
13. Lectures: 0

Exercises: Field work - visit to manufacturing company
Metal cutting. 4
Welding. 2

14. Lectures: 0

Exercises: Field work - visit to production company

Welding. 2

Assembly. 2

15. Lectures: 0

Exercises: 0

Literature



Math, Miljenko. Uvod u tehnologiju oblikovanja deformiranjem / Tomislav Filetin (ur.). Zagreb : AJA Palme 37, Zagreb, 1999.



Rogić, Ana; Čatić, Igor; Godec, Damir. Polimeri i polimerne tvorevine, Društvo za plasiku i gumu, Zagreb, 2008.



Jerbić, Bojan; Nikolić, Gojko; Vranješ, Božo; Kunica, Zoran. Projektiranje automatskih montažnih sustava .Zagreb :Kigen, 2009.

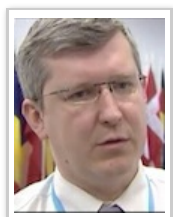
Similar Courses

» Manufacturing and Machine Component Design, West Point

Public Administration

129974

Lecturer



izv. prof. dr. sc.
Vedran Đulabić

ECTS Credits 4.0

English Level L1

E-learning Level L1

Study Hours

Lectures 30

Seminar 30

Associate Lecturers

doc. dr. sc. Teo Giljević

doc. dr. sc. Mihovil Škarica

Grading

Grading: activity and regular attendance (10%), presentation (15%), pisani ispit (50%), oral exam (25%). The mark is formulated on the basis of the 1-100 points scale. Obligations: Regular attendance and activity (70%). Written and Oral exam.

Course Description

The students will be introduced with the basic concepts in public administration and the developmental trends, position of the public administration in political system, basic functions and organisation, including state administration, local administration and public services.

Study Programmes

» Military Leadership and Management (Study) (*required course, 6th semester, 3rd year*)

Learning Outcomes

On successful completion of the course, students will be able to:

1. Define basic issues in public administration
2. Describe characteristics of public governance and analyse the elements of organisation
3. Identify and explain developments in contemporary public administration
4. Describe and explain politics and administration relations and analyse control mechanisms
5. Describe and compare the public servants' statuses and analyse the issue of professionalism
6. Describe and analyse the system of state administration
7. Describe and analyse the system of local self-government
8. Describe and analyse the public services
9. Describe types and goals of administrative reform, modernization and europeanisation trends in public administration
10. Describe and analyse organisational aspects of military, police and security services

Study Programme Learning Outcomes

Military Leadership and Management

- 3 Basic competences in social and humanistic sciences
 - 3.5 To apply knowledge of the structure and functioning of the political system, state and public administration in resolving unstructured problems
4. Personal and professional skills and characteristics
 - 4.1 To identify and analyze a problem in the military environment
 - 4.4 To develop self-study abilities and the need for and methods of life-long learning in traditional and virtual environment
5. Social skills (team work and communication)

- 5.1 To communicate effectively in the Croatian and English language applying modern presentation skills and techniques
- 5.3 To effectively present work results both orally and in writing to stakeholders in the military environment

Screening of student's work

- 1 ECTS Lectures attendance
- 1 ECTS Midterm exam
- 1 ECTS Written exam
- 1 ECTS Oral exam
- 4 ECTS

Forms of Teaching

- » Lectures
 - » Lectures are held through 15 weeks, 2 hours per week
- » Seminars and workshops
 - » Seminars are held through 15 weeks, 2 hours per week
- » Partial e-learning
 - » Presentations and tasks accessible online
- » Independent assignments
 - » Presentation on selected topic, optional

Week by Week Schedule

1. Lectures: Introduction to public administration
Seminar: Introduction to public administration
2. Lectures: Public governance and organization I
Seminar: Public governance and organization I
3. Lectures: Public governance and organisation II
Seminar: Public governance and organization II
4. Lectures: The context of public administration - globalisation and society
Seminar: The context of public administration - globalisation and society
5. Lectures: Politics and public administration - (de)politicisation and political control
Seminar: Politics and public administration - (de)politicisation and political control
6. Lectures: Public servants and professionalism
Seminar: Public servants and professionalism
7. Lectures: State administration
Seminar: State administration
8. Lectures: Administrative reform and modernization
Seminar: Administrative reform and modernization
9. Lectures: Local self-government
Seminar: Local self-government
10. Lectures: Public services
Seminar: Public services
11. Lectures: Europeanisation of public administration
Seminar: Europeanisation of public administration
12. Lectures: The Structure and functions of public administration in Croatia
Seminar: The Structure and functions of public administration in Croatia
13. Lectures: Military, police and security services - organizational aspect
Seminar: Military, police and security services - organizational aspect
14. Lectures: Comparative administrative systems - selected issues
Seminar: Comparative administrative systems - selected issues
15. Lectures: Closing lecture - repetitions
Seminar: Closing seminar

Literature



Koprić, I., Marčetić, G., Musa, A., Đulabić, V., Lalić Novak, G. (2014). *Upravna znanost. Javna uprava u suvremenom europskom kontekstu.*, Pravni fakultet u Zagrebu

Similar Courses

» The Organization and Practice of Government, Oxford

Radar Systems and Air Traffic Management

129444

Lecturers



prof. dr. sc.
Davor Bonefačić



izv. prof. dr. sc.
Biljana Juričić

Course Description

Understanding of radar system operation, types of radar systems and their applications (civil and military). Basic understanding of radar signal processing. Knowledge about electronic counter measures and counter-counter measures. Basic knowledge of air traffic control and management. Understanding of air traffic services, airspace and aeronautical information.

Study Programmes

- » Monitoring and Guidance -> Group of Courses Signals, Monitoring and Guidance and Air Defence (Course) (*required course, 6th semester, 3rd year*) (Note: course not offered in this academic year.)
- » Air Defence -> Group of Courses Signals, Monitoring and Guidance and Air Defence (Course) (*required course, 6th semester, 3rd year*) (Note: course not offered in this academic year.)

Learning Outcomes

On successful completion of the course, students will be able to:

1. Explain operation principles of radar system
2. Define radar cross section
3. Demonstrate methods for target coordinate determination
4. Explain radar waveforms and signal processing
5. Explain military radar applications
6. Explain electronic counter measures and counter-counter measures
7. Define basic terminology of air traffic management, rules of the air.
8. State and explain air traffic services and air traffic control services units.
9. Classify and explain airspace types and relation to rules of the air and air traffic services.
10. Differentiate types of air traffic control and aircraft separation, state separation minima

Study Programme Learning Outcomes

Military Engineering

2 Special military competences

2.2 To manage maintenance of combat and non-combat assets, ammunitions and mines of the branch/service

2.3 To use combat and non-combat assets of the branch/service in a professional way

3 Basic technical knowledge

ECTS Credits 6.0

English Level Lo

E-learning Level L1

Study Hours

Lectures 60

Exercises 30

Teaching Assistant

Boris Čaleta-Car, mag.ing.el.

Grading

Grading: It is necessary to achieve 55% of the total number of points to pass the exam.

Obligations: Active participation in lectures, exercises and technical visits. Exams.

Prerequisites for

Practical Military Training - Air Defence

Practical Military Training - Monitoring and Guidance



- 3.1. To identify, analyse, model and resolve military engineering problems by integrating basic knowledge of natural and technical sciences
- 3.2. To apply complex methodology by integrating engineering knowledge and skills in military engineering practice
- 3.3. To integrate and apply engineering principles and techniques in the operation of military system in unpredictable conditions
- 4. Personal and professional skills and characteristics
 - 4.2 To model and resolve a problem and to interpret problem solution by using appropriate knowledge and methods
 - 4.4 To develop self-study abilities and the need for and methods of life-long learning in traditional and virtual environment
- 6 Development, implementation and operation of technical systems in economic and social environment
 - 6.2. To apply and create engineering approaches in analysing and assessing products and processes in security environment
 - 6.4. To plan, organise, create and implement engineering testing, and to analyse and interpret the results

Screening of student's work

- 1 ECTS Lectures attendance
- 2 ECTS Written exam
- 2 ECTS Oral exam
- 1 ECTS Practical work
- 6 ECTS

Forms of Teaching

- » Lectures
 - » Interactive work with students
- » Exercises
 - » Exercises are organized in 5 turns as fieldwork
- » Laboratory
 - » Exercises in the Laboratory for air traffic control - FPZ
- » Other
 - » stručni posjeti

Week by Week Schedule

1. Lectures: historical development of radar systems, applications, frequency bands
Seminar: Examples and exercises related to the 1st lecture
2. Lectures: monostatic pulsed radar, distance measurement, azimuth, elevation and height measurement, radar displays
Seminar: Examples and exercises related to the 2nd lecture
3. Lectures: radar cross section, target detection, probability of detection and false alarm
Seminar: Examples and exercises related to the 3rd lecture
4. Lectures: analog and digital pulse integration, pulse compression
Seminar: Examples and exercises related to the 4th lecture
5. Lectures: MTI-radar, tracking radar systems
Seminar: Examples and exercises related to the 5th lecture
6. Lectures: secondary surveillance radar, automatic air traffic surveillance, multistatic and bistatic radar
Seminar: Examples and exercises related to the 6th lecture
7. Lectures: over-the-horizon radar, synthetic aperture radar
Seminar: Examples and exercises related to the 7th lecture

8. Lectures: electronic counter measures, electronic counter-counter measures
Seminar: Examples and exercises related to the 8th lecture
9. Lectures: Air Navigation Services. Designated international legislation and regulations. ICAO. OAT and GAT airspace users.
Exercises: Examples related to the 9th lecture
10. Lectures: Aeronautical information service. ICAO location indicators. AFTN. e-AIP. NOTAM.
Exercises: Examples of coding and decoding aeronautical information
11. Lectures: Rules of the Air. IFR.VFR. Air traffic services (ATS). Airspace and ATS routes. .
Exercises: Examples and exercises related to the 11th lecture
12. Lectures: Aeronautical charts. Level in aviation. Vertical separation. Radiotelephony communication.
Exercises: Examples of aeronautical charts, pressure altitude, calculation of level
13. Lectures: Horizontal separation. Radar control and radar separation minima. SSR codes.
Exercises: Practical exercises on BEST Radar ATC Simulator in the Laboratory for Control of Air Navigation at the Department of Aeronautics, Faculty of Transport and Traffic Sciences.
14. Lectures: Unusual and emergency situation in aviation. Alerting service. Search and rescue (SAR). Aircraft incidents and accidents.
Exercises: Practical exercises on BEST Radar ATC Simulator in the Laboratory for Control of Air Navigation at the Department of Aeronautics, Faculty of Transport and Traffic Sciences.
15. Lectures: Air traffic flow management. Airspace management. EUROCONTROL - network management. SES. FAB.
Exercises: Practical exercises on BEST Radar ATC Simulator in the Laboratory for Control of Air Navigation at the Department of Aeronautics, Faculty of Transport and Traffic Sciences.

Literature



Bonefačić, D., Radarski sustavi (interna skripta u elektroničkom obliku)



Zentner, E.: Antene i radiosustavi, Graphis, 2001.



Air Law and ATC Procedures, Air Transport Pilot's Licence JAR-FCL, Nordan AS, Sandefjord, Norway, 2006

Similar Courses

- » EE 355 Imaging Radar and Applications, Stanford University

Radio Devices and Systems

130154



Lecturer



prof. dr. sc.
Davor Bonefačić

Course Description

Understanding of radio-frequency systems and their applications. Comprehension of radio-frequency system elements and their influence on the overall system performance. Tactical and technical characteristics, operation and basic maintenance of formation radio and accompanying equipment used in THE Croatian Armed Forces. Technological / technical standards for radio systems used by the Croatian Armed Forces and its allies (NATO standards).

Study Programmes

- » Signals -> Group of Courses Signals, Monitoring and Guidance and Air Defence (Course) (required course, 7th semester, 4th year) (Note: course not offered in this academic year.)

Learning Outcomes

On successful completion of the course, students will be able to:

1. Describe types, applications and frequency bands of RF systems
2. Explain the purpose and principles of operation of each sub-system in a RF system
3. Calculate parameters of a RF link
4. Select appropriate antenna system location and set up
5. Prepare the radio communication system for operation and connect it with other systems
6. Analyze and troubleshoot problems in the operation RF systems
7. Plan maintenance of RF devices and systems

Study Programme Learning Outcomes

Military Engineering

- 1 Basic competences of the military profession
 - 1.8 To make geographic and topographic analysis of the area and to decide upon the tactics of a basic tactical unit
- 2 Special military competences
 - 2.2 To manage maintenance of combat and non-combat assets, ammunitions and mines of the branch/service
 - 2.3 To use combat and non-combat assets of the branch/service in a professional way
- 3 Basic technical knowledge
 - 3.1. To identify, analyse, model and resolve military engineering problems by integrating basic knowledge of natural and technical sciences

ECTS Credits	6.0
English Level	Lo
E-learning Level	L1
Study Hours	
Lectures	45
Laboratory exercises	45

Associate Lecturer
dr. sc. Silvio Hrabar, prof.

Teaching Assistants
Tomislav Kravaica
mr. sc. Jasenko Krovinović,
pred.

Grading
Grading: Knowledge evaluation by mid-term and final writing exam, and the evaluation during the practical work. It is necessary to achieve 55% of the total number of points for the exam. Obligations: Attendance in class and practicum, learning subject matter, homework, exams.

Prerequisites for
Practical military training - Signals

- 3.2. To apply complex methodology by integrating engineering knowledge and skills in military engineering practice
- 3.3. To integrate and apply engineering principles and techniques in the operation of military system in unpredictable conditions
- 4. Personal and professional skills and characteristics
 - 4.1 To identify and analyze a problem in the military environment
 - 4.2 To model and resolve a problem and to interpret problem solution by using appropriate knowledge and methods
 - 4.4 To develop self-study abilities and the need for and methods of life-long learning in traditional and virtual environment
- 5. Social skills (team work and communication)
 - 5.3 To effectively present work results both orally and in writing to stakeholders in the military environment
- 6 Development, implementation and operation of technical systems in economic and social environment
 - 6.2. To apply and create engineering approaches in analysing and assessing products and processes in security environment
 - 6.4. To plan, organise, create and implement engineering testing, and to analyse and interpret the results

Screening of student's work

- 0.6 ECTS Lectures attendance
- 2 ECTS Written exam
- 1.2 ECTS Seminar report
- 1 ECTS Oral exam
- 1.2 ECTS Practical work

- 6 ECTS

Forms of Teaching

- » Lectures
 - » Lectures accompanied by slides and whiteboard
- » Exercises
 - » Numerical examples and experimental demonstration
- » Field work
 - » Getting acquainted with the operation of tactical communication systems in the field
- » Laboratory
 - » Introduction to the basic phenomena of electromagnetic wave propagation.
- » Other
 - » stručni posjeti

Week by Week Schedule

1. Lectures: frequency bands, types of radiofrequency systems, main parts and parameters of a RF system
Seminar: HF radio systems - preparing the device, setting up the antenna and power supply
2. Lectures: transmission lines and microwave networks basics
Seminar: HF radio systems - adjusting frequency, power, and modes of operation
3. Lectures: oscillators, frequency synthesizers, phase noise, RF amplifiers, power amplifiers, intermodulation distortion
Seminar: HF radio systems - open and closed loop operation

4. Lectures: mixing, mixers, image frequency, superheterodyne receiver
Seminar: HF radio systems - transport and conditioning
5. Lectures: thermal noise, noise figure, equivalent noise temperature
Seminar: VHF radio systems - preparing the device, setting up the selected antenna and power supply
6. Lectures: antennas and arrays basics, link budget
Seminar: VHF radio systems - selecting the mode of operation, adjusting frequency and output power
7. Lectures: mid-term exam
Seminar: VHF radio systems - open and closed loop operation, transport and conditioning
8. Lectures: HF radio devices TRC 20H, TRC 3740 and TRC 3730
Seminar: VHF radio systems - working with all types of radio systems, systems used in the Army, Air Force and Navy
9. Lectures: VHF radio devices Sincgars (PRC, VRC, Handheld)
Seminar: Radio link - inspection of the system before use, preparing the system and its elements for setting up, preparing and installation of power supply
10. Lectures: VHF/UHF radio devices NTDR, MBTR and HCDR
Seminar: Radio link - preparing and setting up the antenna system
11. Lectures: RRU TRC 4000, design, survey, and maintenance of microwave equipment
Seminar: Radio link - setting up the radio link and connecting the antenna system and power supply
12. Lectures: mobile communication systems (GSM, UMTS, LTE), Terrestrial Trunked Radio – TETRA; software defined radio
Seminar: Radio link - adjusting the system for operation and connecting with other systems
13. Lectures: satellite communications, GEO and LEO systems
Seminar: Radio link - transport and conditioning, maintenance of microwave equipment
14. Lectures: communications intelligence, communications jamming, countermeasures
Seminar: Satellite equipment - adjusting for operation and working with the equipment, protection during operation, basic maintenance
15. Lectures: final exam
Seminar: Documents - making radio documents, diagrams, operating plans of radio stations, auxiliary documents, merge documents with other documents and other connections linking the study as an annex H

Literature



*Skripta predmetnog
nastavnika*



STANAG (NATO NORME)

Similar Courses

- » EE482 WIRELESS COMM SYS ENGINEERING, West Point
- » EE 359 Wireless Communications, Stanford University

Radio Location

130174

Lecturer



prof. dr. sc.
Tomislav Kos

Course Description

The subject gives an overview of direction-finding and radio navigation systems, and the knowledge of positioning methods. It analyses safety critical aspects in using navigation systems and the applications of user position-fix data in navigation and communication systems.

Study Programmes

- » Monitoring and Guidance -> Group of Courses Signals, Monitoring and Guidance and Air Defence (Course) (*required course, 7th semester, 4th year*) (Note: course not offered in this academic year.)

Learning Outcomes

On successful completion of the course, students will be able to:

1. Define positioning methods
2. Identify measuring procedure of radio signal parameters
3. Define and analyse performance of navigation systems
4. Describe safety criteria in navigation
5. Relate knowledge about positioning systems errors
6. Define and recognise imperfections of satellite navigation systems
7. Relate and understand the need for combining more navigation systems

Study Programme Learning Outcomes

Military Engineering

- 2 Special military competences
 - 2.1 To analyse the environment and to develop and apply tactics of the branch/service
- 3 Basic technical knowledge
 - 3.1. To identify, analyse, model and resolve military engineering problems by integrating basic knowledge of natural and technical sciences
4. Personal and professional skills and characteristics
 - 4.2 To model and resolve a problem and to interpret problem solution by using appropriate knowledge and methods
5. Social skills (team work and communication)
 - 5.3 To effectively present work results both orally and in writing to stakeholders in the military environment
- 6 Development, implementation and operation of technical systems in economic and social environment

ECTS Credits 6.0

English Level Lo

E-learning Level L1

Study Hours

Lectures 45

Laboratory exercises 45

Teaching Assistants

dr. sc. Mladen Viher, pred.

dr. sc. Josip Vuković

Grading

Grading: Student activity, work on laboratory exercises, exams (necessary to achieve 50% of the total number of points on the final exam) Obligations: Attend the lectures and laboratory exercises, actively participate discussions on lectures and exercises, exams.

Prerequisites for

Practical Military Training - Monitoring and Guidance



- 6.4. To plan, organise, create and implement engineering testing, and to analyse and interpret the results

Screening of student's work

2 ECTS Lectures attendance
 2 ECTS Written exam
 2 ECTS Practical work
 6 ECTS

Forms of Teaching

- » Lectures
 - » lectures
- » Laboratory
 - » laboratory excersises

Week by Week Schedule

1. Lectures: Navigation history, geographic coordinates, cartography, inertial navigation systems, dead reckoning
 Exercises: Preparation for radio direction finding exercises, positioning methods
2. Lectures: Propagation of radio signals, types of radio navigation systems, positioning methods, radio direction finding and radio location
 Exercises: Radio direction finder, antenna effect and antena directivity pattern measurement
3. Lectures: Safety requirements for navigation systems, Hyperbolic navigation systems Loran A, Loran C, eLoran, DECCA, DECTRA, OMEGA
 Exercises: STANAG standards
4. Lectures: Avionics navigation systems: NDB, VAR, VOR, DME, TACAN, ILS
 Exercises: Simulation of NDB and VOR/DME navigation and approach
5. Lectures: Avionics navigation systems: landing categories, MLS, PAR, GNSS procedures, air traffic control, TCAS/ACAS, ADS-B
 Exercises: Simulation of VOR/DME approach and ILS landing
6. Lectures: Satelitska navigacija: Introduction, Transit, Tsikada
 Exercises: Software defined ADS-B receiver
7. Midterm exam
8. Lectures: Satellite navigation: GNSS systems in general, GPS, GPS modernisation
 Exercises: Geometrical errors - dilution of precision (DOP) in positioning
9. Lectures: Satellite navigation: GLONASS, Galileo
 Exercises: Availability of GNSS signals in urban environment
10. Lectures: Satellite navigation: BeiDou (Compass), GNSS augmentation systems
 Exercises: Time to the first fix (TTFF) of GNSS receivers (cold, warm and hot start)
11. Lectures: Satellite navigation: Differential GNSS, WAAS, EGNOS, GNSS errors
 Exercises: Standards for navigation data exchange
12. Lectures: Satellite navigation: GNSS vulnerability, jamming, spoofing, space weather impact on GNSS performance
 Exercises: Navigation data post-processing
13. Lectures: Location Based Services, positioning in public mobile networks, indoor positioning
 Exercises: NATO Master Navigation Plan (ANP-1)
14. Visit to CROCONTROL
15. Final exam

Literature



B. Hofmann-Wellenhof, K. Legat, M. Wieser (2003). *Navigation, Principles of Positioning and Guidance*, Springer-Verlag



M.S Grewal, L.R. Weill, A.P. Andrews (2001). *Global Positioning Systems, Inertial Navigation and Integration*, John WileySons, Inc.



M. Kayton, W.R. Fried (1997). *Avionics Navigation Systems*, John WileySons, Inc.

Similar Courses

» Satellite Navigation, Terrestrial Navigation, West Point

RBC Detection, Identification and Monitoring

132734

Lecturer



doc. dr. sc.
Vilko Mandić

Course Description

Teach students to apply theoretical and practical knowledge of CBR detection, identification, and for independent and team work with the means CBRN detection and identification. Prepare students for the organization, preparation and execution of tasks CBR detection and identification, as well as dedicated task of CBRN reconnaissance teams.

Study Programmes

» Chemical, Biological, Radiological and Nuclear Defence -> Military Engineering (Course) (required course, 7th semester, 4th year)

Learning Outcomes

On successful completion of the course, students will be able to:

1. Analyze characteristics of RBC detection, identification and monitoring
2. Classify and distinguish RBC detection, identification and dosimetry technics, methods, and means
3. Recognize and analyze factors that influence quality of RBC detection and identification
4. Arrange, demonstrate and manage the work with the resources RBC detection, identification and dosimetry
5. Arrange RBC reconnaissance and classify resources to implement RBC reconnaissance
6. Assess of RBC contamination and plan marking of RBC contaminated areas

Study Programme Learning Outcomes

Military Engineering

- 1 Basic competences of the military profession
 - 1.1 To communicate, organize and plan effectively the activities of a basic tactical unit
 - 1.2 To assess the situation and implement appropriate tactics for a basic tactical unit
 - 1.3 To make decisions independently and command a basic tactical unit
 - 1.4 To train, develop and assess the abilities of soldiers and a basic tactical unit
- 2 Special military competences
 - 2.1 To analyse the environment and to develop and apply tactics of the branch/service
 - 2.2 To manage maintenance of combat and non-combat assets, ammunitions and mines of the branch/service

ECTS Credits 6.0

English Level Lo

E-learning Level L1

Study Hours

Lectures 45

Laboratory exercises 45

Associate Lecturer

dr. sc. Valentina Ključarić, pred.

Teaching Assistant

Ivana Cetina, pred.

Grading

Grading: The final grade is determined by evaluating exercises and partial exam, pass the written and oral exam if a student fails the exam or wants a better grade. Obligations: Regularly attend classes. Be sure to participate in partial exams organized in semester for assessment.

Prerequisites for

Practical Military Training - Chemical, Biological, Radiological, and Nuclear Defence



3 Basic technical knowledge

- 3.1. To identify, analyse, model and resolve military engineering problems by integrating basic knowledge of natural and technical sciences
- 3.2. To apply complex methodology by integrating engineering knowledge and skills in military engineering practice

4. Personal and professional skills and characteristics

- 4.1 To identify and analyze a problem in the military environment

5. Social skills (team work and communication)

- 5.3 To effectively present work results both orally and in writing to stakeholders in the military environment

6 Development, implementation and operation of technical systems in economic and social environment

- 6.1. To analyse and evaluate the effect of engineering solutions on society and environment
- 6.3. To apply and select knowledge and relevant facts from different areas, and to assume responsibility for assessing the impact of military technology in social environment

Screening of student's work

2 ECTS Experimental work

4 ECTS Midterm exam

6 ECTS

Forms of Teaching

» Lectures

- » The lectures will provide theoretical insight in RBC detection, identification and monitoring

» Field work

- » Field education includes sampling and in situ gathering of the informations.

» Laboratory

- » The laboratory exercises are practical part of the course performed under supervision of the lecturers.

Week by Week Schedule

1. Lectures: Introduction to the subject (content, location and significance of subject in CBRN) RBC detection and identification as well as the principle of CBRN defence (conceptual definition, passive and active measures), Detection of RBC contamination and its control (techniques and methods of detection and identification)
Seminar: Sampling RBC contaminated material (use of equipment for sampling, sampling of contaminated materials, storage and archiving of samples)
2. Lectures: Resources for detection and identification of warfare agents and toxic chemicals (classification means, methods and instruments, purpose and possibilities)
Seminar: Sampling RBC contaminated material (use of equipment for sampling, sampling of contaminated materials, storage and archiving of samples)
3. Lectures: Resources for detection and identification of warfare agents and toxic chemicals (classification means, methods and instruments, purpose and possibilities)
Seminar: Sampling RBC contaminated material (use of equipment for sampling, sampling of contaminated materials, storage and archiving of samples)

4. Lectures: Sampling: sampling and sample preparation
Seminar: Sampling RBC contaminated material (use of equipment for sampling, sampling of contaminated materials, storage and archiving of samples)
5. Lectures: Chemical laboratories: stationary and mobile chemical laboratory-tasks and opportunities
Seminar: Sampling RBC contaminated material (use of equipment for sampling, sampling of contaminated materials, storage and archiving of samples)
6. Lectures: Detection and dosimetry of radiation: defining terms, radioactive radiation, methods for measuring of radiation ,dosimetry standards (measuring speed and dose rate, peacetime and wartime standards, dosimetry monitoring)
Seminar: Chemical Detectors (preparation for the operation, use, maintenance and storage)
7. Lectures: Resources for detection of radiation: detector types, methods, functions and capabilities, development trends); Methods for measuring of radiation ,dosimetry standards (measuring speed and dose rate, peacetime and wartime standards, dosimetry monitoring)
Seminar: Chemical Detectors (preparation for the operation, use, maintenance and storage)
8. Lectures: Resources dosimetry: classification dosimeters, purpose and principle of operation, development trends
Seminar: Radiological detectors (preparation for the operation, use, maintenance and storage); Dosimeters (reading personal dosimeters and command, charge command dosimeters, care and maintenance)
9. Lectures: Resources for detection and identification of biological war agents: classification resources, methods, purpose and possibilities
Seminar: Radiological detectors (preparation for the operation, use, maintenance and storage); Dosimeters (reading personal dosimeters and command, charge command dosimeters, care and maintenance)
10. Lectures: Radiological Laboratory: stationary and mobile radiological laboratories - the tasks and opportunities
Seminar: Biological detectors (preparation for the operation, use, maintenance and storage)
11. Lectures: Biological Laboratories: stationary and mobile biological laboratories - the tasks and opportunities
Seminar: The use of detection equipment at NBC reconnaissance (receiving tasks and implementation (methodical demonstration, analysis))
12. Lectures: Resources for the implementation of the RBC reconnaissance: RBC reconnaissance vehicles
Seminar: The use of detection equipment at NBC reconnaissance (receiving tasks and implementation (methodical demonstration, analysis))
13. Lectures: Contamination assessment and marking RBC contaminated areas (marking and assessment of the size of the contaminated area, measures for biological contamination
Seminar: RBC laboratory work to identify warfare agents (reception and sample preparation, work on the identification of warfare agents, instrumental analysis (GC-MS, HPLC and other techniques), data processing and results)
14. Lectures: Safety measures: safety measures when working with the following substances: imitate warfare agents, warfare agents and toxic chemicals, radioactive materials, biologically contaminated material
Seminar: RBC laboratory work to identify warfare agents (reception and sample preparation, work on the identification of warfare agents, instrumental analysis (GC-MS, HPLC and other techniques), data processing and results)
15. Lectures: Definitions and Abbreviations: NATO CBRN dictionary of terms and definitions
Seminar: Biological Laboratory (layout and organization of laboratories, reception and processing of samples, methods and safety measures when working in a biological laboratory)

Literature



Slavko Bokan, Ankica Čižmek, Boris Ilijaš, Ivan Jukić, Zvonko Orehovec, Željko Radalj (2004). *Oružje za masovno uništavanje: nuklearno, kemijsko, biološko i toksinsko oružje*, Pučko otvoreno učilište, Zagreb



- (2003). *AJP-3.8-ALIDE JOINT DOCTRINE FOR NBC*, NATO Standardization Agency, Brussels, Belgium



AEP-10 Handbook for SIBCRA



(1996). *Upute i pravila za rad i zaštitu na radu u laboratoriju za RBK zaštitu*, MORH

Similar Courses

» Radiological Engineering Design, West Point

River Crossing

129391

Lecturer



doc. dr. sc.
Kristina Potočki

Course Description

Enable students to use vessel resources, select modes, means and types of river crossing areas. Furthermore, train students to work in teams during the project and during establishment of the river crossing area, and for the organization and management of the work at the crossing area with the use of technical protection measures.

Study Programmes

» Engineers -> Group of Courses Armour, Field Artillery, Engineers, Technical Support and Infantry (Course) (*required course, 6th semester, 3rd year*) (Note: course not offered in this academic year.)

Learning Outcomes

On successful completion of the course, students will be able to:

1. Explain the concept, types and characteristics of water barriers, and their impact on the implementation of tasks
2. Apply basic principles of hydrology and hydraulics watercourses
3. Classify streams according to hydro-morphological characteristics
4. Apply means and ways for reconnaissance of the water barriers
5. Classify, explain and use the floating means for river crossing
6. Identify and analyze the factors that influence the development of the bridge and ferry project
7. Develop construction project of the ferry and bridge
8. Organize and lead the work of the crew while sailing boats
9. Manage establishment of river crossing area

Study Programme Learning Outcomes

Military Engineering

1 Basic competences of the military profession

- 1.1 To communicate, organize and plan effectively the activities of a basic tactical unit
- 1.3 To make decisions independently and command a basic tactical unit
- 1.5 To develop personal and collective determination, courage, enthusiasm and initiative of subordinates
- 1.8 To make geographic and topographic analysis of the area and to decide upon the tactics of a basic tactical unit

2 Special military competences

ECTS Credits 3.0

English Level Lo

E-learning Level L1

Study Hours

Lectures 30

Exercises 15

Associate Lecturer

Dragutin Remenar, pred.

Teaching Assistants

Mladen Fusić, pred.

Vladimir Horvat, pred.

Marko Šimić, pred.

Grading

Grading: During the course realize 2 colloquium, and final oral exam Obligations: Regular attendance at lectures and seminars. Project development and positive marks on exams.

Prerequisites for

Practical Military Training - Engineers



ME

ME-M

ARM

ART

ENG

TS

IN-E

ME-E

SIG

MG

AD

CBR

MLM

IN-L

- 2.1 To analyse the environment and to develop and apply tactics of the branch/service
- 2.2 To manage maintenance of combat and non-combat assets, ammunitions and mines of the branch/service
- 2.3 To use combat and non-combat assets of the branch/service in a professional way
- 3 Basic technical knowledge
 - 3.1. To identify, analyse, model and resolve military engineering problems by integrating basic knowledge of natural and technical sciences
- 4. Personal and professional skills and characteristics
 - 4.1 To identify and analyze a problem in the military environment
 - 4.2 To model and resolve a problem and to interpret problem solution by using appropriate knowledge and methods
- 5. Social skills (team work and communication)
 - 5.2 Organize and plan individual and team work in international and interdisciplinary work groups
 - 5.3 To effectively present work results both orally and in writing to stakeholders in the military environment
- 6 Development, implementation and operation of technical systems in economic and social environment
 - 6.1. To analyse and evaluate the effect of engineering solutions on society and environment
 - 6.3. To apply and select knowledge and relevant facts from different areas, and to assume responsibility for assessing the impact of military technology in social environment
 - 6.4. To plan, organise, create and implement engineering testing, and to analyse and interpret the results

Forms of Teaching

- » Lectures
- » Exercises

Week by Week Schedule

1. Lectures: Introduction to object (target, tasks, content objects).
2. Lectures: Basic principles of hydrology and hydraulics watercourses (tributaries, water levels).
3. Lectures: Hydro-morphological characteristics of the watercourse (reaches, features, sediments, stability).
4. Lectures: Basic hydrologic and hydraulic calculations (discharge, flow velocity, water depth).
Exercise: Calculation of flow hydrograph.
5. Lectures: Fundamentals of hydrometric (flow velocity, discharge, water depth).
Exercise: Calculation of flow hydrograph.
6. Lectures: Hydraulic structures and bridges (dikes, dams, river structures).
Exercise: Calculation of water levels and flow velocities.
7. Lectures: Waterbeds instability problem around barriers (scour).
Exercise: Calculation of water levels and flow velocities.
8. Lectures: First colloquium
9. Lectures: Water barriers (type, features, impact).
10. Lectures: Water barriers reconnaissance (reconnaissance party, equipment, scouting).
11. Lectures: Vessel resources (classification, features, navigation, ferries, bridges).
12. Lectures: Types of river crossing areas.
13. Lectures: Establishment of river crossing areas.

14. Lectures: Technical protection measures during river crossing-RC (general, shipping, handling kit).
Exercise: Boat sailing and reconnaissance of water barriers (preparation, shipping commanding, reconnaissance , reporting).
15. Lectures: Project development of ferry and bridge (calculations, project).
Exercise: Organization of ferry crossings area (commanding, ferry folding, sailing, ferry dismantling).

Literature



Osnove hidrotehnike, I. dio, Prva knjiga, Živko Vuković, Akvamarine, Zagreb, 1994 (I. izdanje), 1996 (II. izdanje),



Ranko Žugaj (2000).
Hidrologija



Dragutin Remenar (2008).
Operacije prijelaza preko vodenih zapreka - Priručnik,
Ministarstvo obrane Republike
Hrvatske, Glavni stožer
Oružanih snaga Republike
Hrvatske, Hrvatsko vojno
učilište Petar Zrinski, Zagreb

Roads

130140



Lecturer



prof. dr. sc.
Vesna Dragčević

ECTS Credits 4.0

English Level Lo

E-learning Level L1

Study Hours

Lectures 30

Laboratory exercises 15

Associate Lecturer

Tihomir Tandarić, dipl. inž. sig.

Teaching Assistants

doc. dr. sc. Ivica Stančerić

Marko Šimić, pred.

Grading

Grading: During lectures two pre-exams and final oral exam to be taken. Obligations: Regular attendance at lectures and exercises. Creation of a project and pass grades in pre-exams.

Prerequisites for

Practical Military Training - Engineers

Course Description

The course aims to teach students how to create a road construction project. It aims to enable students to work in teams during the project development, to organise, lead and manage the works on road construction.

Study Programmes

- » Engineers -> Group of Courses Armour, Field Artillery, Engineers, Technical Support and Infantry (Course) (*required course, 7th semester, 4th year*)

Learning Outcomes

On successful completion of the course, students will be able to:

1. Explain the concept, types and properties of roads.
2. Recognize and analyse the factors affecting the development of a road project.
3. Compute necessary elements for road construction.
4. Create project of road construction.
5. Assemble necessary knowledge and work in a team during the development of a road project.
6. Explain the project to the professional public.

Study Programme Learning Outcomes

Military Engineering

1 Basic competences of the military profession

- 1.1 To communicate, organize and plan effectively the activities of a basic tactical unit
- 1.6 To nourish, channel and use creativity in accomplishing missions of a basic tactical unit

2 Special military competences

- 2.1 To analyse the environment and to develop and apply tactics of the branch/service

3 Basic technical knowledge

- 3.2. To apply complex methodology by integrating engineering knowledge and skills in military engineering practice
- 3.3. To integrate and apply engineering principles and techniques in the operation of military system in unpredictable conditions

4. Personal and professional skills and characteristics

- 4.1 To identify and analyze a problem in the military environment
- 4.2 To model and resolve a problem and to interpret problem solution by using

- appropriate knowledge and methods
- 5. Social skills (team work and communication)
 - 5.3 To effectively present work results both orally and in writing to stakeholders in the military environment
- 6 Development, implementation and operation of technical systems in economic and social environment
 - 6.1. To analyse and evaluate the effect of engineering solutions on society and environment

Screening of student's work

- 0.2 ECTS Lectures attendance
- 0.8 ECTS Midterm exam
 - 1 ECTS Written exam
 - 1 ECTS Oral exam
 - 1 ECTS Project
- 4 ECTS

Forms of Teaching

- » Lectures
 - » Lectures according plan
- » Exercises
 - » Road project design

Week by Week Schedule

1. Lectures: Road traffic and road network. Categorization of roads and road vehicles. Fundamental rules and regulations on roads.
Seminar: Distribution of project task. Auditory exercises.
2. Lectures: Design elements of a road, situation, vertical profile, cross-sections (normal, characteristic), vertical clearance.
Seminar: Tracing the road and ground plan.
3. Lectures: Driving and dynamic characteristics of the vehicle (speed, acceleration, deceleration, longitudinal and lateral shock, stopping sight distance), driver
Seminar: Laying the tangents of horizontal curves, defining deflection angles.
4. Lectures: Horizontal alignment elements (straight, circular arc, transient curve).
Seminar: Selection of the radius of circular arcs and transition of horizontal curves.
5. Lectures: Horizontal alignment guidance. Tracing the road axis in a ground plan, execution of situation.
Seminar: Calculation of horizontal curve elements.
6. Lectures: Vertical alignment guidance (longitudinal gradient, vertical curves), execution of longitudinal profile.
Seminar: Drawing axis horizontal alignment.
7. Lectures: Road cross-section elements (element dimensions, width, road widening, cross slopes).
Seminar: Chainage calculation.
8. Lectures: 1 st PRE-EXAM – course content in lectures 1 – 7.
Seminar: Drawing the terrain line in vertical profile.
9. Lectures: Road construction materials (soil, stone, bonding agents).
Seminar: Vertical alignment.
10. Lectures: Earthworks. Investigative and preparatory work. Methods of making cuts and embankments, machinery, means of transport.
Seminar: Calculating the elevation.

11. Lectures: Earthworks. Determining the cut and embankment slope and methods of protection. Retaining and revetment walls.
Seminar: Developing the superelevation diagrams of road.
12. Lectures: Earthworks. Quality insurance, control testing. Calculation and mass balancing.
Seminar: Developing a normal cross-section profile.
13. Lectures: Pavement structure. Types of pavement structures. Creating base and surfacing. Control testing.
Seminar: Developing characteristic cross-section profiles.
14. Lectures: Road drainage. Drainage devices (protection and drainage ditches, side ditches, drainage, culverts),
Seminar: Technical description.
15. Lectures: 2nd PRE-EXAM – subject matter in lectures 9 – 14.
Seminar: Completion and delivery of the project.

Literature



*Dragčević V., Korlaet Ž.,
Osnove projektiranja cesta*



*Korlaet Ž., Uvod u
projektiranje i građenje cesta*



*Dragčević V., Rukavina T., Donji
ustroj prometnica*

Similar Courses

» TRANSPORTATION ENGINEERING, West Point

Rocket Air Defence Systems

130171

Lecturer



prof. dr. sc.
Ivica Smojver

Course Description

Introduce students to the basics of rocket technology, fundamental terms, laws of aerodynamics and flight mechanics defining the flight behaviour of rocket, as well as design of rockets and their subsystems. Instruct students to analyze technical characteristics of modern rocket air-defence systems, and educate them for work with those in the Croatian Army.

Study Programmes

» Air Defence -> Group of Courses Signals, Monitoring and Guidance and Air Defence (Course) (required course, 7th semester, 4th year) (Note: course not offered in this academic year.)

Learning Outcomes

On successful completion of the course, students will be able to:

1. Analyze the basic laws of physics and laws of aerodynamics describing rocket flight
2. Analyze flight dynamics expressions which describe rocket flight properties
3. Evaluate basic design properties of rocket engine with solid and liquid propellant
4. Describe and explain rocket engine with solid and liquid propellant and model basic design parameters
5. Describe and explain guidance systems as well as thrust vector control
6. Analyze design and exploitation properties of modern air defence rocket system
7. Assess the battle efficiency of modern air defence rocket systems
8. Analyze, explain and efficiently use air defence system within Croatian Army
9. Organize efficient use of available air defence rocket systems in basic tactical unit
10. --

Study Programme Learning Outcomes

Military Engineering

- 1 Basic competences of the military profession
 - 1.1 To communicate, organize and plan effectively the activities of a basic tactical unit
 - 1.2 To assess the situation and implement appropriate tactics for a basic tactical unit
 - 1.3 To make decisions independently and command a basic tactical unit

ECTS Credits 6.0

English Level Lo

E-learning Level L1

Study Hours

Lectures 45

Laboratory exercises 45

Associate Lecturer

doc. dr. sc. Darko Ivančević

Teaching Assistants

Boris Čaleta-Car, mag.ing.el.

Jozo Mešić

Grading

Grading: The final grade is determined by evaluating written preliminary exams and after demonstrating sufficient knowledge at written and oral exam. Obligations: Regularly attend classes. Participate in written preliminary exams during semester for periodic assessment of acquired knowledge.

Prerequisites for

Practical Military Training - Air Defence



- 1.6 To nourish, channel and use creativity in accomplishing missions of a basic tactical unit
- 2 Special military competences
 - 2.2 To manage maintenance of combat and non-combat assets, ammunitions and mines of the branch/service
 - 2.3 To use combat and non-combat assets of the branch/service in a professional way
- 3 Basic technical knowledge
 - 3.2. To apply complex methodology by integrating engineering knowledge and skills in military engineering practice
 - 3.3. To integrate and apply engineering principles and techniques in the operation of military system in unpredictable conditions
- 4. Personal and professional skills and characteristics
 - 4.2 To model and resolve a problem and to interpret problem solution by using appropriate knowledge and methods
- 5. Social skills (team work and communication)
 - 5.1 To communicate effectively in the Croatian and English language applying modern presentation skills and techniques
- 6 Development, implementation and operation of technical systems in economic and social environment
 - 6.2. To apply and create engineering approaches in analysing and assessing products and processes in security environment
 - 6.3. To apply and select knowledge and relevant facts from different areas, and to assume responsibility for assessing the impact of military technology in social environment

Forms of Teaching

- » Lectures
- » Seminars and workshops
- » Exercises
- » Field work
- » Other
 - » rad na PZO sustavu

Week by Week Schedule

1. Lectures: Introduction to the subject. Historical overview of the rocket technology. Definitions and basics. Conservation of momentum. Total impulse. Specific impulse. Specific velocity of exhaust. Thrust. Energy and efficiency.
Seminar: Determining required specific impulse, thrust and total impulse.
2. Lectures: Rocket aerodynamics. Rocket flight dynamics.
Seminar: Determining specific aerodynamics characteristics for the rocket of the predefined configuration.
3. Lectures: Rocket propellants. Types and shapes of propellants - advantages and shortcomings. Liquid propellants – fuels and oxidizers. Main characteristics of liquid propellants – advantages and shortcomings; environmental protection.
Seminar: Determining stability for the rocket of the predefined configuration.
4. Lectures: Solid propellants – main properties and physics of the solid propellants combustion. Burning surface and parameters of influence – shape of the propellant, temperature, pressure. Stresses and strains in the propellant. Hybrid propellants – main properties.
Seminar: Calculation of the main design parameters in the solid propellant combustion.

5. Lectures: Main design properties of the liquid propellant rocket engine. Main structural elements. Design of the combustion chamber and nozzle. Initial ignition. Variable thrust. Nozzle sizing – dependence on the mass flow rate. Combustion of the liquid propellant – instabilities.
Seminar: Calculation of particular design parameters for the liquid propellant rocket engine
6. Lectures: Main design properties for the solid propellant rocket engine. Main structural elements. Main relations describing engine performance. Ramjet and scramjet as alternative propulsion of rocket missiles – integration with booster motor. Materials and insulators.
Seminar: Calculation of particular design parameters for solid propellant rocket engine.
7. Lectures: Thrust vector control systems – design and dynamics. Load and control surfaces – configurations and efficiency analysis. Control of pitch, yaw and roll.
Seminar: Calculation of particular design parameters for hybrid propellant rocket engine.
8. Lectures: Guidance systems. Circular error probable – CEP. Head and seeker design
Seminar: Calculation of particular parameters describing the lethality of rocket missile.
9. Lectures: Sizing of rocket structural elements
Seminar: Sizing of rocket structural elements.
10. Lectures: Fon–significance, characteristics, limitations and estimation. Optical sensors. Control stations. Typical frequencies used in the air defence radars and their influence on the hitting probability.
Seminar: Sizing of particular rocket structural elements (continuation).
11. Lectures: Rocket missile warhead – design and lethality
Seminar: Practical exercise on air defence system.
12. Lectures: Historical development of air defence rocket systems. Classification of rocket air defence systems by range, altitude and rocket mass. Mobile and stationary air defence rocket systems. NATO, Russian and other countries' classification of main air defence components - missile and radar subsystems
Seminar: Practical exercise on air defence system.
13. Lectures: Integration within the system – air defence rocket battery, radars and other support systems.
Seminar: Practical exercise on air defence system.
14. Lectures: Electronic warfare countermeasures of rocket air defence systems.
Seminar: Practical exercise on air defence system.
15. Lectures: Hitting probability of rocket air defence system.
Seminar: Practical exercise on air defence system.

Literature



LSRS S-10- upute proizvođača i lekcije nastavnika, Pravilo Raketni sustav PZO S-10, prijevod,



T. Bašić, dipl. ing., LPRS– 9K32M Strijela 2M – lekcije



UHRZ, 1997., T. Šimurina, ing. el. teh., Lprk PZO – 9K310 IGLA – lekcije



UHRZ, 1997., LPRK PZO – 9K32M Strijela 2M - knjiga I (opis, rukovanje i održavanje), Split, 1978



GS OS RH, Desetina prijenosnih raketnih sustava PZO, Zagreb, 2002.



Ivica Smojver (2018). Nastavni materijal iz područja Raketna naoružanje

Additional Literature



Travis S. Taylor (2017). *Introduction to Rocket Science and Engineering*, CRC Press



Rober E. Ball (2003). *The Fundamentals of Aircraft Combat Survivability Analysis and Design*, AIAA Education Series



Donald E. Carlucci, Sidney S. Jacobson (2013). *Ballistics - Theory and Design of Guns and Ammunition*, CRC Press



George P. Sutton, Oscar Biblarz (2017). *Rocket Propulsion Elements*, Wiley

Rocket Technology

129381

Lecturer



prof. dr. sc.
Ivica Smojver

Course Description

Introduce students to the basics of rocket technology, fundamental terms, laws of aerodynamics and flight mechanics defining the flight behaviour of rocket, as well as design of rockets and their subsystems. To instruct students to analyze technical characteristics of modern rocket systems, and educate them for work with anti-tank system on APC.

Study Programmes

- » Armour -> Group of Courses Armour, Field Artillery, Engineers, Technical Support and Infantry (Course) (*required course, 6th semester, 3rd year*) (Note: course not offered in this academic year.)

Learning Outcomes

On successful completion of the course, students will be able to:

1. Analyze the basic laws of physics and laws of aerodynamics describing rocket flight
2. Analyze flight dynamics expressions which describe rocket flight properties
3. Evaluate basic design properties of rocket engine with solid and liquid propellant
4. Describe and explain rocket engine with solid propellant and model basic design parameters
5. Describe and explain guidance systems as well as thrust vector control
6. Analyze design and exploitation properties of modern ant-tank rocket system
7. Assess the battle efficiency of modern anti-tank rocket systems
8. Analyze, explain and efficiently use ant-tank rocket system 9K11
9. Organize efficient use of available anti-tank rocket system in basic tactical unit
10. ---

Study Programme Learning Outcomes

Military Engineering

- 1 Basic competences of the military profession
 - 1.1 To communicate, organize and plan effectively the activities of a basic tactical unit
 - 1.2 To assess the situation and implement appropriate tactics for a basic tactical unit
 - 1.3 To make decisions independently and command a basic tactical unit
 - 1.6 To nourish, channel and use creativity in accomplishing missions of a basic tactical unit

ECTS Credits 4.0

English Level Lo

E-learning Level L1

Study Hours

Lectures 30

Exercises 15

Associate Lecturers

doc. dr. sc. Darko Ivančević
Mladen Janić, pred.
Miroslav Kuhar, pred.

Grading

Grading: The final grade is determined by evaluating written preliminary exams and after demonstrating sufficient knowledge at written and oral exam. Obligations: Regularly attend classes. Participate in written preliminary exams during semester for periodic assessment of acquired knowledge.



- 2 Special military competences
 - 2.2 To manage maintenance of combat and non-combat assets, ammunitions and mines of the branch/service
 - 2.3 To use combat and non-combat assets of the branch/service in a professional way
- 3 Basic technical knowledge
 - 3.2. To apply complex methodology by integrating engineering knowledge and skills in military engineering practice
 - 3.3. To integrate and apply engineering principles and techniques in the operation of military system in unpredictable conditions
- 4. Personal and professional skills and characteristics
 - 4.2 To model and resolve a problem and to interpret problem solution by using appropriate knowledge and methods
- 5. Social skills (team work and communication)
 - 5.1 To communicate effectively in the Croatian and English language applying modern presentation skills and techniques
- 6 Development, implementation and operation of technical systems in economic and social environment
 - 6.2. To apply and create engineering approaches in analysing and assessing products and processes in security environment
 - 6.3. To apply and select knowledge and relevant facts from different areas, and to assume responsibility for assessing the impact of military technology in social environment

Forms of Teaching

- » Lectures
- » Seminars and workshops
- » Exercises
- » Field work
- » Other
 - » rad na simulatoru protuoklopnog raketnog sustava

Week by Week Schedule

1. Lectures: Introduction to the subject. Historical overview of the rocket technology. Definitions and basics. Conservation of momentum. Total impulse. Specific impulse. Specific velocity of exhaust. Thrust. Energy and efficiency.
Seminar: Determining required specific impulse, thrust and total impulse.
2. Lectures: Rocket aerodynamics.
Seminar: Determining specific aerodynamics characteristics for the rocket of the predefined configuration.
3. Lectures: Rocket flight dynamics.
Seminar: Determining specific aerodynamics characteristics for the rocket of the predefined configuration. (continuation)
4. Lectures: Rocket flight dynamics. (continuation)
Seminar: Determining stability for the rocket of the predefined configuration.
5. Lectures: Rocket propellants. Types and shapes of propellants - advantages and shortcomings. Liquid and hybrid propellants – main characteristics.
Seminar: Determining stability for the rocket of the predefined configuration. (continuation)
6. Lectures: Solid propellants – main properties and physics of the solid propellants combustion. Burning surface and parameters of influence – shape of the propellant, temperature, pressure.
Seminar: Calculation of the main design parameters in the solid propellant combustion.

7. Lectures: Stresses and strains in the propellant. Main design properties of the liquid propellant rocket engine.
Seminar: Calculation of the main design parameters in the solid propellant combustion (continuation).
8. Lectures: Main design properties of the solid propellant rocket engine. Main structural elements. Main relations relating engine performance. Ramjet engine. Materials and insulators.
Seminar: Practical exercise on antitank guided missile 9K11M (Malyutka).
9. Lectures: Thrust vector control systems – design and dynamics.
Seminar: Practical exercise on antitank guided missile 9K11M (Malyutka).
10. Lectures: Load and control surfaces – configurations and efficiency analysis. Control of pitch, yaw and roll.
Seminar: Practical exercise on antitank guided missile 9K11M (Malyutka).
11. Lectures: Guidance systems. Circular error probable – CEP. Head and seeker design. Optical, laser and radar beam riding, infrared guidance systems.
Seminar: Practical exercise on antitank guided missile 9K11M (Malyutka).
12. Lectures: Rocket missile warheads – design and lethality. HEAT and tandem charge warhead.
Seminar: Practical exercise on antitank guided missile 9K11M (Malyutka).
13. Lectures: Sizing of rocket structural elements.
Seminar: Practical exercise on antitank guided missile 9K11M (Malyutka).
14. Lectures: Historical development of the army rocket systems. Classification of ant-tank rockets by range, rocket mass. NATO, Russian and other countries' classification of anti-tank rocket systems.
Seminar: Practical exercise on antitank guided missile 9K11M (Malyutka).
15. Lectures: Anti-tank rocket systems protection in the countermeasures environment. Probability of hitting and destroying – influence parameters.
Seminar: Practical exercise on antitank guided missile 9K11M (Malyutka).

Literature



Ivica Smojver (2018). *Nastavni materijal iz predmeta Raketna tehnika.*

Additional Literature



Kuzmanović Dragiša, *Raketno oružje sa aerodinamikom, Split 1982*



Tom Berisha, *Raketni pogon, TŠC KoV, Zagreb 1970*



Travis S. Taylor (2017). *Introduction to Rocket Science and Engineering*, CRC Press



Rober E. Ball (2003). *The Fundamentals of Aircraft Combat Survivability Analysis and Design*, AIAA Education Series



Donald E. Carlucci, Sidney S. Jacobson (2013). *Ballistics - Theory and Design of Guns and Ammunition*, CRC Press



Joseph Corleone (1993). *Tactical Missile Warheads*, AIAA



George P. Sutton, Oscar Biblarz (2017). *Rocket Propulsion Elements*, Wiley

Safety and Protection of Communication Information Systems

129414



Lecturer



prof. dr. sc.
Krešimir Malarić

ECTS Credits 2.0

English Level L1

E-learning Level L1

Study Hours

Lectures 30

Exercises 15

Teaching Assistants

dr. sc. Darko Možnik, doc.

dr. sc. Igor Štambuk, doc.

Grading

Grading: Monitoring the activities and efforts of the lectures and exercises, as well as success in the final written and oral exam. It is necessary to achieve 50% of total number of points to pass the subject. Obligations: Compulsory school attendance, fulfillment of preconditions and taking final written and oral exams.

Prerequisites for

Practical military training - Signals

Course Description

Raise level of safety culture of military communications and information systems (CIS included). Learn parameters of communication information systems. Familiarize students with the legislation in the field of safety and communication information system (CIS). Learn how to physically protect communication information equipment.

Study Programmes

» Signals -> Group of Courses Signals, Monitoring and Guidance and Air Defence (Course) (required course, 6th semester, 3rd year)

Learning Outcomes

On successful completion of the course, students will be able to:

1. Explain the elements of safety and security KIS system
2. Describe catalog KIS services
3. Estimate parameters of communication information systems
4. Describe legislation this area
5. Estimate measures, activities, and safety as well as protection standards of KIS
6. Explain and apply elements of physical security
7. Explain and apply the elements of data security
8. Explain and apply the elements of information systems security

Study Programme Learning Outcomes

Military Engineering

1 Basic competences of the military profession

- 1.1 To communicate, organize and plan effectively the activities of a basic tactical unit
- 1.2 To assess the situation and implement appropriate tactics for a basic tactical unit
- 1.3 To make decisions independently and command a basic tactical unit
- 1.4 To train, develop and assess the abilities of soldiers and a basic tactical unit
- 1.8 To make geographic and topographic analysis of the area and to decide upon the tactics of a basic tactical unit

2 Special military competences

- 2.1 To analyse the environment and to develop and apply tactics of the

- branch/service
 - 2.2 To manage maintenance of combat and non-combat assets, ammunitions and mines of the branch/service
 - 2.3 To use combat and non-combat assets of the branch/service in a professional way
 - 2.4. To apply International War and Humanitarian Law
- 3 Basic technical knowledge
 - 3.1. To identify, analyse, model and resolve military engineering problems by integrating basic knowledge of natural and technical sciences
- 4. Personal and professional skills and characteristics
 - 4.1 To identify and analyze a problem in the military environment
 - 4.4 To develop self-study abilities and the need for and methods of life-long learning in traditional and virtual environment
- 5. Social skills (team work and communication)
 - 5.2 Organize and plan individual and team work in international and interdisciplinary work groups
 - 5.4 To apply knowledge of the structure and functioning of the political system, state and public administration in resolving unstructured problems
- 6 Development, implementation and operation of technical systems in economic and social environment
 - 6.1. To analyse and evaluate the effect of engineering solutions on society and environment
 - 6.2. To apply and create engineering approaches in analysing and assessing products and processes in security environment

Screening of student's work

- 1 ECTS Lectures attendance
- 1 ECTS Written exam
- 2 ECTS

Forms of Teaching

- » Lectures
 - » Lectures are given with the use of powerpoint presentations. The lectures are given in total of 15 weeks, two hours per week.
- » Exercises
 - » Auditory exercises and sample laboratory.
- » Other
 - » studijska posjeta postrojb

Week by Week Schedule

1. Lectures: Introduction to the subject (objectives, outcomes, content, implementation of the exam)
Seminar: The application of the measures and standards and safety communication of information (KI) infrastructure
2. Lectures: Legislation in the field of safety and CIS
Seminar: The application of the measures and standards of security and protection of CI systems and networks
3. Lectures: Catalogue KI Service
Seminar: Antivirus and backup protection, and uninterruptible power supplies (UPS)
4. Lectures: Security threats and threats KIS
Seminar: Safety and security in the work on the Internet

5. Lectures: Parameters of communication information systems
Seminar: Implementation of measures, activities and standards of work at KI systems and networks
6. Lectures: Measures aktivnoisti and safety standards CIS
Seminar: Filters for interference reduction
7. Lectures: Implementation of measures, activities and standards of safety and CIS
Seminar: Signal detection
8. Lectures: Physical security as an element of information security
Seminar: EM field coupling with electronic equipment
9. Lectures: Data security as an element of information security
Seminar: Cable shielding
10. Lectures: Security of information systems as an element of information security
Seminar: Grounding and bonding
11. Lectures: Examples of security threats and threats
Seminar: Electric field shielding
12. Lectures: Networks and communications and information infrastructure
Seminar: Magnetic field shielding
13. Lectures: Protection of critical network and communications and information infrastructure
Seminar: Conducted interference testing
14. Lectures: Safety and protection of communications and network and information systems and networks
Seminar: Radiated interference testing
15. Lectures: Final exam
Seminar: Computer radiation model

Literature



(2007). *Zakon o tajnosti podataka*, Narodne novine



Pravilnik o radu na informacijskom sustavu



Roger Sutton (2002). *Secure Communication: Application and Management*, John WileySons



Krešimir Malarić (2010). *EMI Protection for Communication Systems*, Artech House



Krešimir Malarić (2005). *Zaštita radiokomunikacijskih sustava*, FER skripta

Similar Courses

- » High-speed digital engineering and EMC, Oxford

State and Constitution

129386

Lecturer



doc. dr. sc.
Hrvoje Špehar

ECTS Credits 4.0

English Level Lo

E-learning Level L1

Study Hours

Lectures 30

Seminar 30

Associate Lecturer

doc. dr. sc. Domagoj Vujeva

Grading

Grading: Evaluation of seminar presentations, essays, written and oral exams. Obligations: Students are required to attend lectures and seminar sessions according with the usual college and university regulations, and academic traditions.

Course Description

The Course has a system approach to the history of the relationship of the state and constitution, as well as the transformation processes of Europeanization and globalization. Course encompasses the problems of definition and historical development of the state, the modern state as the political form, comparison of modern state with post-modern political forms, various ways of legitimatng etc.

Study Programmes

» Military Leadership and Management (Study) (*required course, 1st semester, 1st year*)

Learning Outcomes

On successful completion of the course, students will be able to:

1. Introduction to the complex relationship between the state and the constitution
2. Critical observation of the specificities of the modern state
3. Introduction to the political history of the state and constitution
4. Introduction to the main constitutional categories
5. Introduction to the figuration of the constitutionality of the Republic of Croatia
6. Critical observation of the specificities of the europeanization and globalization processes

Study Programme Learning Outcomes

Military Leadership and Management

- 1 Basic competences of the military profession
 - 1.7 To be acquainted with and to respect historical, social and cultural diversities in the context of military activities
- 3 Basic competences in social and humanistic sciences
 - 3.1 To analyze and interpret processes in international environment, and to act within international alliances and organizations in which the Republic of Croatia participates
 - 3.2 To comprehend civil-military relations and to act in accordance with democratic standards
 - 3.3 To apply International War and Humanitarian Law
 - 3.5 To apply knowledge of the structure and functioning of the political system, state and public administration in resolving unstructured problems

Forms of Teaching

- » Lectures
- » Seminars and workshops

Week by Week Schedule

1. Lectures: Introduction: description of the course
Exercises: Introduction
2. Lectures: Authority and state: historical metamorphosis
Exercises: Authority and state: historical metamorphosis
3. Lectures: Premodern political forms and their justification
Exercises: Premodern political forms and their justification
4. Lectures: Political communities from ancient times to the modern state, I
Exercises: Political communities from ancient times to the modern state, I
5. Lectures: Political communities from ancient times to the modern state, II
Exercises: Political communities from ancient times to the modern state, II
6. Lectures: Affirmation of the state: Religious wars 1517-1748 and absolutism
Exercises: Affirmation of the state: Religious wars 1517-1748 and absolutism
7. Lectures: Formation of the modern state - processes of modernization
Exercises: Formation of the modern state - processes of modernization
8. Lectures: Formation of the modern state - liberal and totalitarian state
Exercises: Formation of the modern state - liberal and totalitarian state
9. Lectures: Key theories of the state
Exercises: Key theories of the state
10. Lectures: Constitutional institutions
Exercises: Constitutional institutions
11. Lectures: Principle of secularism in the historical perspective
Exercises: Principle of secularism in the historical perspective
12. Lectures: Constitution and state in the processes of europeanization
Exercises: Constitution and state in the processes of europeanization
13. Lectures: Historical development of the figuration of constitutionality of the Republic of Croatia
Exercises: Historical development of the figuration of constitutionality of the Republic of Croatia
14. Lectures: Processes of the globalization and contemporary state
Exercises: Processes of the globalization and contemporary state
15. Lectures: Conclusions
Exercises: Conclusions

Literature



Jean PICQ, *Povijest države u Europi*, Biblioteka Politička misao, 2013.



Šefko Kurtović (1990). *Opća historija države i prava I i II*



Josef Isensee, Kiril Miladinov, Zvonko Posavec (2004). *Država, ustav, demokracija*, Politička kultura



Peter Häberle (2002). *Ustavna država*, Politička kultura

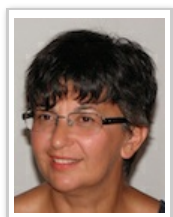


Smiljko SOKOL i Branko SMERDEL, *Ustavno pravo. Zagreb: Informator, 2009., str. 1-146.*

Statistics

129895

Lecturer



prof. dr. sc.
Diana Šimić

Course Description

Students will acquire competences for performing descriptive and exploratory statistical analysis using a computer and program R. They will understand concepts of probability and randomness and their application in data based decision making. They will be able to apply z-test, t-test, chi-square test for contingency tables, and linear regression.

Study Programmes

- » Military Leadership and Management (Study) (*required course, 2nd semester, 1st year*)

Learning Outcomes

On successful completion of the course, students will be able to:

1. Define basic statistical concepts (population, sample, variable, observation, distribution, sampling distribution, error of the first and second type, power of a statistical test)
2. Distinguish nominal, ordinal, interval and ration variables.
3. Apply appropriate descriptive methods on a data set.
4. Analyze statistical association between variables using appropriate methods.
5. Evaluate validity of assumptions of statistical methods.
6. Interpret results of a statistical data analysis.
7. Appraise suitability of the learned statistical techniques for solving problems in their profession.

Study Programme Learning Outcomes

Military Leadership and Management

- 1 Basic competences of the military profession
 - 1.3 To make decisions independently and command a basic tactical unit
4. Personal and professional skills and characteristics
 - 4.1 To identify and analyze a problem in the military environment
 - 4.2 To model and resolve a problem and to interpret problem solution by using appropriate knowledge and methods
5. Social skills (team work and communication)
 - 5.3 To effectively present work results both orally and in writing to stakeholders in the military environment

ECTS Credits 5.0

English Level L3

E-learning Level L3
(10%)

Study Hours

Lectures 30

Exercises 30

Associate Lecturer

prof. dr. sc. Jasminka Dobša

Teaching Assistant

Jelena Gusić, mag. math.

Grading

Condition for a signature: All lab assignments must be submitted on time in the Merlin system, at least 4 points achieved on lab assignments. Continuous assessment: Continuous assessment includes assessment of: results of graded online tests (10 points), lab assignments (10 points); two homeworks (10 points); interim assessment (written assessment in 90 minutes, 30 points); and final assessment (written assessment in 90 minutes, 30 points + oral assessment, 10 points). Two randomly selected lab assignments are graded. It is possible to exempt from grading one lab assignment student did missed with an acceptable excuse. Student will be assigned a new deadline for submitting the missed lab assignment in the Merlin system. A student must pass a threshold of 5 points for lab assignments, 5 points for homework and 10 points for midterm and final exams, and have at least 50 points total to earn a passing grade in continuous assessment. Grade for 50 to 59 points is adequate (2), for 60 to 74 is good (3), for 75 to 87 very good (4), and for 88 to 100 excellent (5). Exams: Exams include written and oral assessment. Written assessment takes 120 minutes and provides

Screening of student's work

2 ECTS Lectures attendance
2 ECTS Midterm exam
0.5 ECTS Homework
0.5 ECTS Online test
<u>5 ECTS</u>

up to 60 points, oral assessment provides up to 30 points. Points for lab assignments from the continuous assessment are added to the final score. The final grade is defined according to the grading scale for the continuous assessment.

Forms of Teaching

» Lectures

» Lectures accompanied by computer presentation introduce students to new concepts through relevant examples and teach theoretical basis of the course.

» Exercises

» In computer labs students use statistical environments R and RStudio. By solving concrete problems students reinforce theoretical concepts and models, link them to applications and practice independent problem solving.

» Partial e-learning

» Course descriptions, the literature list, lecture handouts and presentations, online tests and examples of solved problems, and links to other statistical resources are available through the Learning Management System Merlin.

Downloading and uploading of lab and home assignments are implemented in Merlin. Solving of a graded online test on current course content is a prerequisite for downloading lab assignments and uploading their solutions. Online self-assessment test is available, formed as a random selection of 20 questions from covered course content.

There is a forum with official information and a forum for questions and answers in Merlin. Results of all grades awarded through the continuous assessment are published on Merlin.

» Independent assignments

» Through homework and online tests students practice independent problem solving through application of theoretical concepts and methods.

Week by Week Schedule

1. Lectures: What is statistics? Data table, variable, observation, population and sample, measurement scale.
Computer lab: Demonstration of R and R-Studio systems and Rmarkdown package. Practice – writing, reading and saving R markdown documents, reading data from an excel file and a plain text file, computation with R.
2. Lectures: Graphical and numerical summary of one or two qualitative variables, bar chart, pie chart, mosaic graph, frequency tables.
Computer lab: Practice – analysis of qualitative variable – graphical and numerical summaries in R.
3. Lectures: Graphical and numerical summary of a quantitative variable, histogram, distribution (shape, center and spread), 5 number summary, box-plot, outliers, comparison of distributions.
Computer lab: Practice – analysis of quantitative variable – graphical and numerical summaries in R.

4. Lectures: Standardization, shift and scale, normal distribution model, percentile, quantile, qq plot, association and correlation, scatterplot, correlation coefficient.
Computer lab: Standardization of a quantitative variable, graphical and correlation analysis of association between quantitative variables in R.
5. Lectures: Linear regression - descriptive, linear model, residuals, prediction, least squares, regression coefficients, assumptions, diagnostics.
Computer lab: Practice – linear regression and its diagnostics using R.
6. Lectures: Probability and randomness, random event, outcome, trial, law of large numbers, probability of a complement and a complex event, conditional probability, Bayes rule, discrete and continuous random variable, distribution function, variance, standard deviation, covariance.
Computer lab: Demonstration of the law of large numbers through simulation in R, application of rules for calculating probability of events.
7. Mid-term exam
8. Lectures: Data collection, population, sample, randomization, bias, sample size, population parameter, sample statistics, simple random sample, sampling frame, sampling variability, types of samples.
Computer lab: Demonstration – simulation of random variables for standard distributions in R, sampling variability through simulation.
9. Lectures: Sampling distribution, sampling variability, sampling distribution of a proportion, sampling distribution of a mean, central limit theorem. Interval and numerical estimate of a proportion.
Computer lab: Demonstration of the central limit theorem and confidence intervals through simulation in R.
10. Lectures: Hypotheses testing, hypotheses on proportions, null-hypothesis, alternative hypothesis, one-sided and two-sided test, p-value, z-test, errors type I and II, power of a test.
Computer lab: Demonstration of hypotheses testing, the I. and the II. Type errors and power through simulation in R. Practice – estimation and testing hypotheses about proportions in R.
11. Lectures: Comparing two proportions, sampling distribution of a difference between two proportions, variance of a difference between two independent random variables, confidence interval of a difference, z-test
Computer lab: Practice – testing hypotheses on difference between two proportions in R.
12. Lectures: Inference about a mean, Student's t-distribution, degrees of freedom, confidence interval based on t-distribution, testing hypotheses on mean. Comparing means on independent and paired samples, box-plots, t-test, confidence intervals for the mean
Computer lab: Practice – Demonstration of sampling distribution and confidence interval in R. Testing hypothesis about means in R, interpretation of results.
13. Lectures: Inference on frequencies contingency table, cell, chi-square model, chi-square distribution,
Computer lab: Practice – analysis of frequencies and contingency tables in R, interpretation of results
14. Lectures: Inference on linear regression, assumptions, t-test for regression coefficients, confidence interval for predicted mean and individual observation
Computer lab: Practice – application of linear regression to data analysis with testing of hypotheses on regression coefficients and model diagnostics, interpretation of results.
15. Final exam

Literature



Diez DM, Çetinkaya-Rundel M, Barr CD (2019). *OpenIntro Statistics 4th ed.*, dostupno na <http://www.openintro.org/stat/index.php>

Additional Literature



Kero K, Dobša J, Bojanić-Glavica B (2008). *Statistika – deskriptivna i inferencijalna i vjerojatnost*, Fakultet organizacije i informatike



De Veaux RD, Velleman PF, Bock DE (2013). *Intro Stats*, Pearson/Addison Wesley (Boston, USA)



Ivan Šošić (2004). *Primijenjena statistika*, Školska knjiga

Similar Courses

- » MA376 Applied Statistics, West Point
- » STATS 60: Introduction to Statistical Methods: Precalculus, Stanford University
- » STAT 160 Statistical Methods, The Citadel

Theories and Politics of Peace and War

129897

Lecturer



doc. dr. sc.
Robert Mikac

Course Description

The students who have successfully completed the course would be introduced to different theories of peace and the history, development and the approaches to peace research and its advocacy. They will be introduced to ways of conflict transformation and to the requirements for lasting peace including transitional justice and dealing with the past.

Study Programmes

» Military Leadership and Management (Study) (*required course, 5th semester, 3rd year*)

Learning Outcomes

On successful completion of the course, students will be able to:

1. Identify and compare different approaches in peace studies and peace building
2. Explain the main concepts used in peace research and peacebuilding practice
3. Compare conflicts and propose ways to transform them through peaceful means
4. Plan and organize cooperation with NGO
5. Explain issues of postconflict and transitional justice
6. Apply strategies of non-violent communication in diverse circumstances

Study Programme Learning Outcomes

Military Leadership and Management

- 1 Basic competences of the military profession
 - 1.5 To develop personal and collective determination, courage, enthusiasm and initiative of subordinates
 - 1.6 To nourish, channel and use creativity in accomplishing missions of a basic tactical unit
 - 1.7 To be acquainted with and to respect historical, social and cultural diversities in the context of military activities
- 3 Basic competences in social and humanistic sciences
 - 3.2 To comprehend civil-military relations and to act in accordance with democratic standards
 - 3.3 To apply International War and Humanitarian Law
4. Personal and professional skills and characteristics
 - 4.3 To assume military, professional and ethical responsibility
 - 4.4 To develop self-study abilities and the need for and methods of life-long

ECTS Credits 5.0

English Level Lo

E-learning Level L1

Study Hours

Lectures 30

Seminar 30

Associate Lecturer

doc. dr. sc. Boško Picula

Teaching Assistant

mr. sc. Boženko Đevoić, pred.

Grading

Grading: Attendance (10 percent rating), two compulsory written colloquium (60 percent rating), group research project (30 percent rating). Obligations: Class attendance, seminars, preparation and presentation of the group research project.



learning in traditional and virtual environment

5. Social skills (team work and communication)

5.1 To communicate effectively in the Croatian and English language applying modern presentation skills and techniques

5.2 Organize and plan individual and team work in international and interdisciplinary work groups

5.3 To effectively present work results both orally and in writing to stakeholders in the military environment

Screening of student's work

0.5 ECTS Lectures attendance

3 ECTS Midterm exam

1.5 ECTS Project

5 ECTS

Forms of Teaching

» Lectures

» Teacher's presentation with the active participation of students

» Seminars and workshops

» Independent student's work under the mentorship of teacher

Week by Week Schedule

1. Introduction to the course: review of the literature, requirements and coursework methods

Lectures: The transformation of the Western understanding of the concept, structure and ways of waging a war and achieving peace

Exercises: Introduction: presentation of the seminar literature (Fisher, Ury, Patton, Getting to Yes: negotiating agreement without giving in; Sun Tzu, The Art of War; Waltz, Kenneth, Man, the State and War; Mirbagheri, Farid, War and Peace in Islam) and the requirements for the research projects

2. Lectures: The idea of war in philosophy and religion

Exercises:

The concept of war and peace in the West and in Islam

What is Jihad?

The Art of War (pages 17-54)

The Art of War (pages 57-93)

3. Lectures: The idea of peace in philosophy and religion

Exercises:

The Art of War (pages 94-135)

The Art of War (pages 136-168)

The Art of War (pages 169-215)

The Art of War (pages 2016-260)

4. Lectures: Basic concepts in peace studies: positive and negative peace; the conflict triangle; direct and structural violence

Exercises:

Man, the State and War

The first image

Some implications of the first image

The second image

Some implications of the second image

5. Lectures: Contemporary conflict resolution

Exercises:

Third image

Some implications of the third image

How to conceptualize a negotiating position?

How to separate people from the problem?

How to focus on interests and needs?

6. Lectures: The democratic peace thesis and its critiques

Exercises:

How to create options for mutual gain?

How to find objective criteria?

How to use the power of the other side to achieve a successful negotiated?

How to tame the hard bargainer?

7. Lectures: I Exam

8. Lectures: Negotiation and conflict resolution

Exercises: Film

9. Lectures: The role of civil society in peacebuilding: potential cooperators and spoilers

Exercises:

Presentation of the group research projects

10. Lectures: Peacebuilding through local communities in conflict and postconflict environments

Exercises: Presentation of the group research projects

11. Lectures: Conflict resolution, the media and the communication revolution

Exercises: Presentation of the group research projects

12. Lectures: Peace education: life long learning for peace

Exercises: Presentation of the group research projects

13. Lectures: The privatization of security: benefits, challenges and consequences

Exercises: Presentation of the group research projects

14. Lectures: Examples and case studies to stopping the conflict and achieving peace

Exercises: Presentation of the group research projects

15. Lectures: II Exam

Literature



G. M. Reichberg, H. Syse, E. Begby (2006). *The Ethics of War: Classics and Contemporary Readings*, odabrana poglavlja, Oxford



Kenneth N. Waltz (1998). *Čovjek, država i rat*, BARBAT, Zagreb



Ramsbotham, O., Woodhouse, T., Miall, H., *Contemporary Conflict Resolution*, Polity, 2011, odabrana poglavlja



Fisher, Roger, Ury, William, Patton, Bruce, *Kako do DA: do dogovora pregovorima, a ne predajom*, Neretva, Zagreb, 2003



Mirbagheri, Farid S. M.
(2012). *War and Peace in
Islam, odabrana poglavlja*,
Basingstoke i New York:
Palgrave Macmillan



Sun Tzu (2001). *Umijeće
ratovanja*, Zagreb: MISL



Milan Galović (2001). *Rat u
transformaciji*, Jesenski i
Turk

Similar Courses

» The Transition from War to Peace: Peacebuilding Strategies, Stanford University

Thermodynamics

129337



Lecturer



prof. dr. sc.
Ivanka Boras

ECTS Credits 5.0

English Level Lo

E-learning Level L1

Study Hours

Lectures 30

Laboratory exercises 30

Teaching Assistants

dr. sc. Luka Boban

doc. dr. sc. Saša Mudrinić

Grading

Grading: The total grade of students is composed of: actively participating in lectures and exercises, practical work, written and oral exam. Obligations: Regularly attendance of lectures and exercises. Participating actively in solving problems at lectures and regular completed homework.

Course Description

Characteristics of technical systems and the interactions between the system and the environment. Acquiring the knowledge about the characteristics and behavior of real and ideal matter in technical processes. Introduction with ways and laws of heat transfer and the basics of infrared thermography. Introduction to fuels and processes of fuel combustion.

Study Programmes

- » Group of Courses Armour, Field Artillery, Engineers, Technical Support and Infantry -> Military Engineering (Course) (*required course, 3rd semester, 2nd year*)

Learning Outcomes

On successful completion of the course, students will be able to:

1. Student can recognize and identify the basic characteristic of thermodynamic processes, identify type of system and matter.
2. Student can indicate processes in system and explain interactions between system and its environment.
3. Student can recognize the ways of heat transfer in real engineering problems.
4. Student can calculate the energy amount in thermodynamic processes and apply the basic energy laws in design of energy engines.
5. Student can use software tools for modeling thermodynamic processes in systems.
6. Student can analyse the theoretical results and relate them with measurements results.
7. Student can interpret and evaluate efficiency of thermodynamic processes and investigate the influence of those processes on environment.

Study Programme Learning Outcomes

Military Engineering

3 Basic technical knowledge

- 3.1. To identify, analyse, model and resolve military engineering problems by integrating basic knowledge of natural and technical sciences
- 3.2. To apply complex methodology by integrating engineering knowledge and skills in military engineering practice
- 3.3. To integrate and apply engineering principles and techniques in the operation of military system in unpredictable conditions

6 Development, implementation and operation of technical systems in economic and social environment

- 6.1. To analyse and evaluate the effect of engineering solutions on society and environment
- 6.2. To apply and create engineering approaches in analysing and assessing products and processes in security environment
- 6.4. To plan, organise, create and implement engineering testing, and to analyse and interpret the results

Screening of student's work

- 2 ECTS Lectures attendance
- 1 ECTS Written exam
- 1.5 ECTS Oral exam
- 0.5 ECTS Practical work
- 5 ECTS

Forms of Teaching

- » Lectures
 - » Lectures of specific topics prepared in the form of a power point presentations.
- » Exercises
 - » Solving numerical examples in the classical way (on the board).
- » Laboratory
 - » Demonstration of some process in the laboratory. Demonstration applications of infrared thermographic methods.

Week by Week Schedule

1. Lectures: Basics concepts – type of systems, interactions between system and its environment
Seminar: The examples and problems from current lectures.
2. Lectures: The first law of thermodynamics for closed and open system.
Seminar: The examples and problems from current lectures.
3. Lectures: The ideal gases and ideal incompressible matter – properties and equation of state.
Seminar: The examples and problems from current lectures.
4. Lectures: Internally reversible process of ideal gas in closed and open system
Seminar: The examples and problems from current lectures.
5. Lectures: The basic cycles: Carnot cycle, Joule cycle, Diesel cycle and Otto cycle.
Seminar: The examples and problems from current lectures.
6. Lectures: The second law of thermodynamics, the irreversible processes, characteristic of processes.
Seminar: The examples and problems from current lectures.
7. Lectures: Real matter and the processes with real matter. Calculation of thermal properties.
Seminar: The examples and problems from current lectures.
8. Lectures: The basic concept of heat transfer. The mechanisms of heat transfer.
Seminar: The examples and problems from current lectures.
9. Lectures: Conduction, Fourier law for different object geometry.
Seminar: The examples and problems from current lectures.
10. Lectures: Convection. Types of convection. Calculation of heat transfer coefficient.
Seminar: The examples and problems from current lectures.
11. Lectures: Heat transfer by radiation. Basic type of geometric models for calculation of radiation heat transfer.
Seminar: The examples and problems from current lectures.
12. Lectures: Real problems of heat transfer. Overall heat transfer coefficient.
Seminar: The examples and problems from current lectures.

13. Lectures: Basics of infrared thermography. Characteristics of infrared cameras. Determination of objects and ambients parameters.
Seminar: The examples and problems from current lectures.
14. Lectures: Combustion. Types of fuels, combustion's equations. The first law of thermodynamics and conservation law for mass.
Seminar: The practical work with infrared thermography.
15. Lectures: Final exam.
Seminar: The examples and problems from current lectures.

Literature



Boris Halasz (2015). *Uvod u termodinamiku*, Fakultet strojarstva i brodogradnje



Boris Halasz (2012). *Zbirka zadataka iz Uvoda u termodinamiku*, Fakultet strojarstva i brodogradnje



Antun Galović, Boris Halasz, Ivanka Boras (2010). *Toplinske tablice*, Fakultet strojarstva i brodogradnje

Additional Literature



M. Andrassy; I. Boras; S. Švaić, (2008). *Osnove termografije s primjenom*, Fakultet strojarstva i brodogradnje

Toxic Industrial Chemicals

130167



Lecturer



doc. dr. sc.
Vilko Mandić

Course Description

Acquaintance with the knowledge about properties of hazardous chemicals and dangerous goods as transport entity. Understanding the routes of exposure and harmful effects of hazardous industrial chemicals on human health and environment. Acquaintance with national and European legislation on hazardous chemicals.

Study Programmes

» Chemical, Biological, Radiological and Nuclear Defence -> Military Engineering (Course) (required course, 7th semester, 4th year)

Learning Outcomes

On successful completion of the course, students will be able to:

1. To understand and correlate properties and harmful effects of hazardous chemical.
2. To understand and adopt procedures for hazardous chemicals based CLP Regulation.
3. To be acquainted with the relevant regulations in the field of hazardous chemicals.
4. To correlate potentially harmful effects of specific hazardous industrial chemicals on human health and environment with their physical and chemical properties.
5. Cognition of international agreements and laws in the area of dangerous goods transportation.
6. Recognition of factors important for the transportation of dangerous goods and potential hazards.
7. The development of critical way of thinking on the dangerous goods transportation process and possible influences on human health, natural and built environment.

Study Programme Learning Outcomes

Military Engineering

- 1 Basic competences of the military profession
 - 1.2 To assess the situation and implement appropriate tactics for a basic tactical unit
- 2 Special military competences
 - 2.1 To analyse the environment and to develop and apply tactics of the branch/service
- 3 Basic technical knowledge

ECTS Credits 4.0

English Level Lo

E-learning Level L1

Study Hours

Lectures 30

Laboratory exercises 15

Associate Lecturer

dr. sc. Ante Vučemilović, pred.

Teaching Assistants

Vesna Pehar, pred.

Svetko Župan, dipl. ing.

Grading

Grading: Grade - total point range: poor (2) - (50 - 60) good (3) - (61-74) very good (4) - (75-90) excellent (5) - (91 - 100) Obligations: Class attendance and activity at field practice.

Prerequisites for

Practical Military Training - Chemical, Biological, Radiological, and Nuclear Defence



- 3.2. To apply complex methodology by integrating engineering knowledge and skills in military engineering practice
- 4. Personal and professional skills and characteristics
 - 4.2 To model and resolve a problem and to interpret problem solution by using appropriate knowledge and methods
- 5. Social skills (team work and communication)
 - 5.2 Organize and plan individual and team work in international and interdisciplinary work groups
- 6 Development, implementation and operation of technical systems in economic and social environment
 - 6.1. To analyse and evaluate the effect of engineering solutions on society and environment

Screening of student's work

- 1 ECTS Lectures attendance
- 1 ECTS Midterm exam
- 1 ECTS Written exam
- 1 ECTS Practical work
- 4 ECTS

Forms of Teaching

- » Lectures
 - » ex cathedra
- » Field work
 - » polygon

Week by Week Schedule

1. Lectures: Defining the properties of hazardous chemicals. Classification and labeling of hazardous chemicals according to CLP Regulation.
Laboratory practice: Field practice
2. Lectures: Basic terms and concepts in toxicology. Relationship dose-response. Classification of harmful effects.
Laboratory practice: Field practice
3. Lectures: Routes of exposure and absorbance of hazardous chemicals.
Laboratory practice: Field practice
4. Lectures: Seveso Directive and Regulation of major accidents involving dangerous substances.
Laboratory practice: Field practice
5. Lectures: Transport of dangerous goods in road traffic. Classification of dangerous goods and labeling of dangerous goods according to ADR treaty. ADR requirements. Physical-chemical processes characteristics for dangerous goods, effects of dangerous goods on human health, natural and built environment.
Laboratory practice: Field practice
6. Lectures: Properties of flammable gases, explosive, conditions for an explosion, explosive limits.
Laboratory practice: Field practice
7. Lectures: Partial exam
Laboratory practice: Field practice
8. Lectures: Properties of flammable liquids, flammable solids, ignition sources, combustion process, types of blazes, basic concepts of fire extinguishing methods
Laboratory practice: Field practice

9. Lectures: Properties of flammable solids, self-accelerated decomposition. Oxidizing chemicals. Poisons. Effects of gases and vapors on human health. Infective chemicals. Radioactivity. Corrosive chemicals. Laboratory practice: Field practice
10. Lectures: Labeling of vehicles for transports of dangerous goods. HazMat Placards and UN numbers. Shipping papers for transport of dangerous goods. Laboratory practice: Field practice
11. Lectures: Representatives of chemical groups of hazardous industrial chemicals. Inorganic chemicals I: metals, transition metals and their compounds. Halogen elements (chlorine, bromide, iodide). Laboratory practice: Field practice
12. Lectures: Inorganic chemicals II: nitrogen, sulfur, carbon, and phosphorous compounds. Acids and bases. Laboratory practice: Field practice
13. Lectures: Organic chemicals I: compounds with oxygen (alcohols, aldehydes and ketones, acids) Laboratory practice: Field practice
14. Lectures: Organic chemicals II: compounds with nitrogen, sulfur, phosphorus, and halogen elements. Laboratory practice: Field practice
15. Lectures: Partial exam Laboratory practice: Field practice

Literature



F. Plavšić, A. Wolf-Čoparda, Z. Lovrić, D. Čepelak (2006). *Siguran rad s kemikalijama*, O-tisak, Zagreb



J. Timbrell (2005). *The poison paradox: chemicals as friends and foes*, Oxford University press, New York, SAD.



D. Lowe (2000). *Management of dangerous goods: A Manual for Dangerous Goods Safety Officers*, Kogan Page Ltd., London, Engleska

Similar Courses

» Toxic Chemicals and Human Health, The Citadel

Lecturers

prof. dr. sc. **Vesna Alar**

-Corrosion and Protection (P, P)

izv. prof. dr. sc. **Željko Alar**-Artillery Weapons, Equipment and Ammunition (P, P, L)
-Materials (P, P, L)red. prof. art. dr. sc. **Danijela Ašperger**

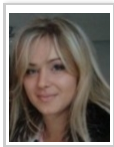
-Instrumental Analytical Chemistry (P, P, L)

doc. dr. sc. **Ana Babić**-Physics I (S)
-Physics II (P, P, S)doc. dr. sc. **Jurica Babić**-Data Structures, Software Engineering and Software Design (L)
-Informatics (P, P, L)
-Network System (P, P, A)**Domagoj Bagarić**, pred.-Physical Training I (TJ)
-Physical Training II (TJ)**Emil Banek**, dipl. ing.

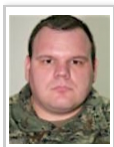
-Military Geography with Topography (T)

Mario Banožić

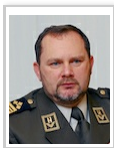
-Defence Economics (P, P, S, A)

Marina Barbarić, mag. ing. mech.

-Energy and Drive Systems (L)

Dejan Barešić, pred.-Energy and Drive Systems (P, P)
-Practical military training - Signals (T)**Ivan Barić**, mag. educ. hist.

-Ethics of Military Profession (S)

doc. dr. sc. **Robert Barić**-International Security and Security of EU (P, P, S)
-Military Leadership (P, P, L)doc. dr. sc. **Slavko Barić**

-Military Leadership (P, P, L)

prof. dr. sc. **Tomislav Bašić**

-Artillery Survey (P, P)

izv. prof. dr. sc. **Branko Bauer**

-Production Technologies (P, P, L)

izv. prof. dr. sc. **Nina Begičević Redep**

-Decision Analysis (P, P, S, A)

Janko Bekić

-Introduction to International Politics (S)

prof. dr. sc. **Mirko Bilandžić**-Applied Intelligence Models (P, P)
-Comparative Intelligence Systems (P, P, S, A)
-Final BSc Thesis - Military Intelligence (S)
-Intelligence Tactics and Techniques (P, P)
-Military Sociology and Sociology of War (P, P, S)
-National Security and Intelligence (P, P)

dr. sc. Luka Boban

-Thermodynamics (L)

doc. dr. sc. Vječislav Bohanek

-Maintenance and Storage of Ordnance (P, P, P, P)
 -Mine and Explosive Ordnance (P, P, L)
 -Practical Military Training - Engineers (PRJ)

izv. prof. dr. sc. Nenad Bojčetić

-Armament and Ammunition in Armour (P, P)

prof. dr. sc. Davor Bonefačić

-Electronic Warfare (P, P)
 -Radar Systems and Air Traffic Management (P, P)
 -Radio Devices and Systems (P, P)

prof. dr. sc. Ivanka Boras

-Thermodynamics (P, P)

Goran Boroš

-Peace Support Operations (S)

doc. dr. sc. Kosta Bovan

-Academic Writing and Research Methods (P, P, S, A)

prof. dr. sc. Denis Bratko

-Final BSc Thesis - Military Police (S)
 -Military Psychology (P, P)

Dražen Brkić, struč. spec. cin.

-Practical Military Training - Engineers (T)

prof. dr. sc. Ilko Brnetić

-Calculus I (P, P, A)
 -Probability and Statistics (P, P, A)

Goran Budimić

-Public Administration (S)

doc. dr. sc. Mario Bukal

-Calculus II (P, P)

dr. sc. Andrija Buljac

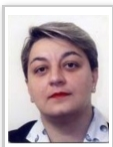
-Fluid Mechanics (L)

Ivana Bunjan, mag. ing. met.

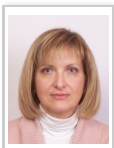
-Materials (L)

izv. prof. dr. sc. Tomislav Burić

-Calculus I (P, P)

red. prof. art. dr. sc. Ksenija Butorac

-Criminology With the Criminal Law Basics (P, P)

prof. dr. sc. Željka Car

-Management for Engineers (P, P)

Ivana Cetina, pred.

-Crises Management in CBRN Situation (L)
 -Instrumental Analytical Chemistry (L)
 -Organic Chemistry (L)
 -Practical Military Training - Chemical, Biological, Radiological, and Nuclear Defence (T)
 -RBC Detection, Identification and Monitoring (L)

Stefan Cikota

-Physics I (S, L)
-Physics II (S, L)

Miro Čolić, mag. phys.

-Introduction to Technical Science - Special Topics (S)

Ivan Čular, mag. ing. mech.

-Design Elements (L)

Boris Čaleta-Car, mag.ing.el.

-Practical Military Training - Monitoring and Guidance (T, K, L)
-Radar Systems and Air Traffic Management (A)
-Rocket Air Defence Systems (L)

prof. dr. sc. Krešimir Čosić

-Defence Systems and Technologies (P, P)

doc. dr. sc. Petar Čurković

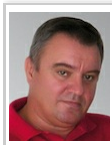
-Organization and Technology of Military Equipment Maintenance (P, P, A)

prof. dr. sc. Marko Delimar

-Energy and Drive Systems (P, P)

izv. prof. dr. sc. Mario Dobrilović

-Ammunition and Explosive Materials (P, P)
-Maintenance and Storage of Ordnance (P, P)
-Mine and Explosive Ordnance (P, P, L)
-Practical Military Training - Engineers (P, P, L, K, PRJ)

prof. dr. sc. Željko Dobrović

-Introduction to Strategic Management (P, P, A)

Mihael Cindori, mag. ing. mech.

-Fluid Mechanics (L)

Dražen Čovran, dipl. ing.

-Practical military training - Signals (T, L)

Slobodan Čurčija, pred. mr. sc.

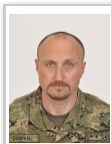
-Military Leadership (P, P, L)
-Military Management (P, P, S)

izv. prof. dr. sc. Danko Čorić

-Materials (P, P, L)

Dražan Čurčić, pred.

-Physical Training I (TJ)
-Physical Training II (TJ)
-Physical Training III (P, P)
-Physical Training IV (P, P)
-Physical Training V (TJ)
-Physical Training VI (TJ)
-Physical training VII (TJ)
-Physical Training VIII (TJ)

Ivan Damiani, dipl. ing.

-Infantry Weapons With Fire Conduct (S, T)
-Knowledge and Maintenance Technology of Classical and Missile Weapons (L)
-Organization of Technical Services (L)
-Practical Military Training - Technical Services (A, L)

dr. sc. Kristina Detelj

-Defence Economics (P, P)

izv. prof. dr. sc. Slaven Dobrović

-Environmental Protection (P, P, S)

prof. dr. sc. Jasminka Dobša

-Statistics (P, P, A)

doc. dr. sc. **Zoran Domitran**

- Armament and Ammunition in Armour (P, P)
- Computer and Engineering Graphics (P, P, L)
- Design Elements (P, P, L)
- Infantry Weapons With Fire Conduct (P, P)

prof. dr. sc. **Vesna Dragčević**

- Roads (P, P)

Deni Dumanić, dipl. ing.

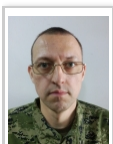
- Practical Military Training - Technical Services (L, A)

Boženko Devoić, pred. mr. sc.

- Theories and Politics of Peace and War (S)

izv. prof. dr. sc. **Vedran Đulabić**

- Public Administration (P, P, S)

Damir Đuretek, dipl. ing.

- Knowledge and Maintenance Technology of Classical and Missile Weapons (P, P, L)
- Organization and Technology of Military Equipment Maintenance (A)

v. pred. dr. sc. **Lidija Furač**

- Chemistry (S, L)

dr. sc. **Darko Galinec**

- Process Modelling and Design of IS (P, P, S, L)

izv. prof. dr. sc. **Tatjana Gazivoda****Kraljević**

- Applied Organic Chemistry (P, P)
- Organic Chemistry (P, P)

doc. dr. sc. **Stjepan Domjančić**

- Ethics of Military Profession (P, P, S)
- Military Management (P, P, P, P)

Darko Duhović, mr. sc.

- Contemporary Combat Systems and Equipment (P, P)
- General Tactics (S, A)

prof. dr. sc. **Ivo Džijan**

- Fluid Mechanics (P, P)

prof. dr. sc. **Goran Đukić**

- Management of Military Logistics Systems (P, P)

doc. dr. sc. **Stevo Đurašković**

- Croatian Political History (P, P, S)

Suzana Filjak, pred.

- Decision Analysis (S, A)
- Military Psychology (A)

Mladen Fusić, pred.

- Bridges (L)
- Fortifying and Camouflage (L)
- Maintenance and Storage of Ordnance (P, P, S, L)
- Mine and Explosive Ordnance (P, P, L)
- Practical Military Training - Engineers (L)
- River Crossing (A)

izv. prof. dr. sc. **Ivica Garašić**

- Production Technologies (P, P, L)

Leopold Gelemanović, mag. ing. mech.

- Field Artillery Tactical Doctrine (L)
- Practical Military Training - Field Artillery (L)

doc. dr. sc. **Teo Giljević**

-Public Administration (P, P, S)

dr. sc. **Stjepan Gluščić**

-Basics of Criminal Procedural Law (P, P)

Marijan Gospočić, bacc. ing. admin. chris.

-Practical Military Training - Engineers (T)

Goran Grdenić

-Energy and Drive Systems (L)

prof. dr. sc. **Krešimir Grilec**

-Materials (P, P, L)

prof. dr. sc. **Zvonimir Guzović**

-Energy and Drive Systems (P, P)

Hrvoje Heštera, pred.

-Military Geography with Topography (P, P)

doc. dr. sc. **Matija Hoić**

-Air Defence Artillery Weapons (P, P)
 -Field Artillery Gunnery (P, P)
 -Field Artillery Tactical Doctrine (P, P)
 -Infantry Tactics (P, P)
 -Infantry Tactics (Social) (P, P, S)
 -Introduction to Infantry Tactics and Weapon (P, P)

prof. dr. sc. **Silvio Hrabar**

-Radio Devices and Systems (P, P)

dr. sc. **Tea Glavaš**

-English I (P, P, S)
 -English II (P, P, S)
 -English V (P, P)
 -English V D (S)
 -English VI (P, P)
 -English VI D (S)

doc. dr. sc. **Vjeran Gomzi**

-Physics I (L)
 -Physics II (L)

doc. dr. sc. **Dijana Gracin**

-Basics of Criminal Procedural Law (P, P, S, A)
 -Crime Investigation (P, P)
 -Criminology With the Criminal Law Basics (P, P, P, P, A)

dr. sc. **Igor Grgac**

-Geoengineering (L)

Jelena Gusić, mag. math.

-Statistics (A)

dr. sc. **Željko Heimer**

-Informatics and Programming (L)

doc. dr. sc. **Daniel Hofman**

-Computer Architecture and Operating Systems (P, P, A)

Vladimir Horvat, pred.

-Bridges (L)
 -Fortifying and Camouflage (L)
 -Mine and Explosive Ordnance (P, P, L)
 -Practical Military Training - Engineers (T, K, PRJ, L)
 -River Crossing (A)

izv. prof. dr. sc. **Marijana Hranjec**

-Applied Organic Chemistry (P, P)
 -Organic Chemistry (P, P)

Larisa Hrustek

-Business Processes (S, A)

prof. dr. sc. Tihomir Hunjak

-Decision Analysis (P, P, S, A)

Mirko Ištuk, prof.

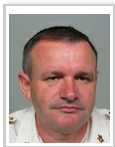
-Field Artillery Tactical Doctrine (L)

Maja Ivanović, mr. sc.

-English III (S)
 -English IV (S)
 -English V (S)
 -English V D (S)
 -English VI (S)
 -English VI D (S)

Mladen Jakobović, .

-Practical Military Training - Military Intelligence (T, A, L)

izv. prof. dr. sc. Mirko Jakopčić

-Air Defence Artillery Weapons (P, P)
 -Artillery Weapons, Equipment and Ammunition (P, P, L)
 -Design Elements (P, P, L)
 -Infantry Tactics (P, P)
 -Infantry Tactics (Social) (P, P)
 -Introduction to Infantry Tactics and Weapon (P, P)
 -Knowledge and Maintenance Technology of Classical and Missile Weapons (P, P)
 -Materials (L)
 -Organization and Technology of Military Equipment Maintenance (P, P)
 -Practical Military Training - Field Artillery (P, P, L, K)
 -Production Technologies (P, P)

Mladen Janić, pred.

-Armament and Ammunition in Armour (P, P, L)
 -Armoured Fighting Vehicles (P, P, L)
 -Basics of Structural Design of Armoured Combat Vehicles (A)
 -General Tactics (S, A)
 -Practical Military Training - Armour (P, P, T, K)
 -Rocket Technology (P, P, A)

doc. dr. sc. Leonardo Jelenković

-Computer Architecture and Operating Systems (P, P, A)

Franjo Hrvojević, pred.

-Military Geography with Topography (T)

dr. sc. Petar Ilinčić

-Armoured Infantry Fighting Vehicles and Armament (P, P, L)
 -Basics of Structural Design of Armoured Combat Vehicles (P, P, A)
 -Knowledge and Maintenance Technology of Army Vehicles (P, P, L)

doc. dr. sc. Darko Ivančević

-Knowledge and Maintenance Technology of Classical and Missile Weapons (P, P)
 -Rocket Air Defence Systems (P, P, L)
 -Rocket Technology (P, P, A)

doc. dr. sc. Ružica Jakešević

-Introduction to Security and Defence Studies (P, P, S)
 -Peace Support Operations (P, P, S)

Zdravko Jakop, mr. sc.

-Artillery Weapons, Equipment and Ammunition (P, P, L)

Marin Jakulj, pred. mr. sc.

-Military Leadership (P, P, L)

Radomir Ječmenica, mr. sc.

-Physics I (L)
 -Physics II (L)

prof. dr. sc. Gordan Ježić

-Communication and Information Systems (P, P, S)
 -Computer and Telecommunication Devices, Systems and Networks (P, P)
 -Network System (P, P)

dr. sc. Jugoslav Jozić

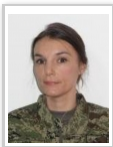
-Political Geography and Geopolitics (S, A)

Dražen Jožef, univ. spec. oec.

-Military Leadership (P, P, L)

Mirko Jukl,

-Electronic Warfare (L)

Marina Jurčić, mr. sc.-Business Processes (S, A)
-Decision Analysis (A)**izv. prof. dr. sc. Biljana Juričić**

-Radar Systems and Air Traffic Management (P, P)

dr. sc. Nikola Kadoić

-Decision Analysis (S, A)

izv. prof. dr. sc. Zoran Kalafatić

-Digital Logic (P, P)

doc. dr. sc. Igor Kanizaj

-Media, Propaganda and Public Relations (P, P, S, A)

doc. dr. sc. Željko Karas

-Crime Investigation (P, P)

dr. sc. Hrvoje Karna

-Practical Military Training - Monitoring and Guidance (L, T, K)

Ivan Katalinić, ing.

-Practical Military Training - Field Artillery (K, T, L)

doc. dr. sc. Zdenka Keran

-Production Technologies (P, P, L)

Ivan Kesedžić, mag. ing. inf. et comm. techn.

-Defence Systems and Technologies (S)

Dražen Keser, dipl.iur.

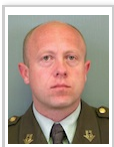
-Practical Military Training - Military Police (T, L, K)

Kristijan Kilassa Kvaternik, dipl. ing.

-Calculus II (A)

dr. sc. Ivica Kinder

-International Law - Selected Chapters (P, P, S)

Davor Kiseljok, ing.-Applied Intelligence Models (S)
-Practical Military Training - Military Intelligence (A, L, T)**Neven Klarić**,

-Field Artillery Tactical Doctrine (P, P, L)

Mario Klun, mag. ing. mech.

- Armament and Ammunition in Armour (L)
- Armoured Fighting Vehicles (L)
- Armoured Infantry Fighting Vehicles and Armament (L)
- Contemporary Combat Systems and Equipment (P, P)
- Practical Military Training - Armour (K, L, T)

prof. dr. sc. Janoš Kodvanj

- Introduction to Technical Science - Special Topics (P, P)
- Mechanics (P, P)

dr. sc. Ivan Korade

- Fluid Mechanics (L)

Krešimir Kosanović, bacc. crim.

- Infantry Tactics (P, P, S, L)
- Introduction to Infantry Tactics and Weapon (P, P, A)
- Practical Military Training - Infantry (L, K, T)

Marijan Kostanjevac, pred. mr. sc.

- Decision Analysis (S, A)
- Military Leadership (P, P, L)

doc. dr. sc. Domagoj Kovačević

- Linear algebra (P, P, A)
- Mathematics I D (P, P, A)
- Mathematics II D (P, P, A)

Vlado Kovačević, mr. sc.

- Crime Investigation (S, A)
- Practical Military Training - Military Police (L, T, K)

Katija Kovačić, mr. sc.

- Military Management (P, P, S)

Ante Kožul, pred. mr. sc.

- Defence Economics (P, P, S, A)
- Management for Engineers (A)
- Management of Military Logistics Systems (P, P, L)

dr. sc. Valentina Ključarić

- Applied Organic Chemistry (P, P, L)
- Chemistry (L)
- Organic Chemistry (L)
- Practical Military Training - Chemical, Biological, Radiological, and Nuclear Defence (P, P)
- RBC Detection, Identification and Monitoring (P, P, L)

Ivica Kodžoman, dipl. ing.

- Management for Engineers (A)
- Management of Military Logistics Systems (P, P, L)
- Practical Military Training - Technical Services (L, A)

prof. dr. sc. Tomislav Kos

- Radio Location (P, P)

prof. dr. sc. Lidija Kos-Stanišić

- Contemporary Civilizations (P, P, S)
- Final BSc Thesis - Military Intelligence (S)

Luka Kovač, dipl. ing.

- Basics of Criminal Procedural Law (P, P, S, A)
- Crime Investigation (S, A)
- Practical Military Training - Military Police (L, K, T)

dr. sc. Tomislav Kovačević

- Defence Economics (P, P, S, A)

prof. dr. sc. Biljana Kovačević Zelić

- Geoengineering (P, P, L)

dr. sc. Andrija Kozina

- Military Pedagogy (P, P, S, A)

Tomislav Kravaica,

- Contemporary Combat Systems and Equipment (S)
- Practical military training - Signals (T)
- Radio Devices and Systems (L)

doc. dr. sc. **Svjetlana Krištafor**

-Chemistry (P, P)

doc. dr. sc. **Severino Krizmanić**

-Fluid Mechanics (P, P)

doc. dr. sc. **Krešimir Križanović**

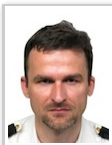
-Informatics and Programming (P, P)

izv. prof. dr. sc. **Igor Krois**

-Electronics (P, P)

Jasenko Krovinić, pred. mr. sc.

-Radio Devices and Systems (L)

Miroslav Kuhar, pred.

-Armament and Ammunition in Armour (P, P, L)
 -Armoured Fighting Vehicles (P, P, L)
 -Armoured Infantry Fighting Vehicles and Armament (P, P, L)
 -Basics of Structural Design of Armoured Combat Vehicles (A)
 -Knowledge and Maintenance Technology of Army Vehicles (L)
 -Practical Military Training - Armour (K, L, T)
 -Practical Military Training - Technical Services (A, L)
 -Rocket Technology (P, P, A)

prof. dr. sc. **Zoran Kunica**

-Production Technologies (P, P)

doc. dr. sc. **Marija Kušter Marić**

-Bridges (P, P, L)

prof. dr. sc. **Davorin Lapaš**

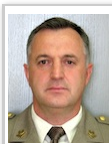
-International Law - Selected Chapters (P, P, S)

Ivan Leutar, pred.

-Artillery Weapons, Equipment and Ammunition (P, P, L)
 -Knowledge and Maintenance Technology of Classical and Missile Weapons (P, P, L)
 -Organization and Technology of Military Equipment Maintenance (P, P, A)

Stanka Limov, prof.

-Military Psychology (A)

dr. sc. **Marinko Lozančić**

-International Security and Security of EU (S)
 -Military Geography with Topography (P, P)

doc. dr. sc. **Danijela Lucić**

-Comparative Intelligence Systems (P, P, S, A)
 -Ethics of Military Profession (P, P, S)
 -National Security and Intelligence (P, P, S)

prof. dr. sc. **Zoran Lulić**

-Armoured Infantry Fighting Vehicles and Armament (P, P, L)
 -Basics of Structural Design of Armoured Combat Vehicles (P, P, A)
 -Knowledge and Maintenance Technology of Army Vehicles (P, P)

Mirko Ljevar, pred.

-Management for Engineers (A)
 -Organization of Technical Services (P, P, L)
 -Practical Military Training - Technical Services (P, P, A)

prof. dr. sc. **Davor Ljubas**

-Environmental Protection (P, P, S)

Zdravko Magdić, mr. sc.

-Practical Military Training - Military Police (T, L, K)

prof. dr. sc. Krešimir Malarić

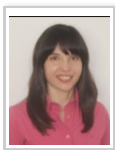
-Safety and Protection of Communication Information Systems (P, P, A)

Milan Maleš, mag. pol.

-Ammunition and Explosive Materials (A)

doc. dr. sc. Vilko Mandić

-CBRN Protection (P, P)
 -Crises Management in CBRN Situation (P, P)
 -RBC Detection, Identification and Monitoring (P, P)
 -Toxic Industrial Chemicals (P, P)

izv. prof. dr. sc. Ana Mandić Ivanković

-Bridges (P, P, L)

doc. dr. sc. Ivan Markić

-Military Pedagogy (P, P, S, A)

Lovro Marković

-Electronics (A)

Vedrana Markučić, mag. ing. mech.

-Fluid Mechanics (L)

Petar Martinović, mag. ing. aeronaut.

-Practical Military Training - Monitoring and Guidance (L, T, K)

prof. dr. sc. Zdravko Matić

-Croatian Political History (P, P, S)
 -Military History (P, P, P, P)

doc. dr. sc. Mario Matijević

-Digital Logic (L)
 -Introduction to Technical Science - Special Topics (P, P, S)
 -Physics I (L)
 -Physics II (L)

prof. dr. sc. Dario Matika

-Contemporary Combat Systems and Equipment (P, P)
 -Electronic Warfare (P, P, L)
 -Introduction to Systems and Automatic Control (P, P)

Jozo Mešić,

-Air Defence Artillery Weapons (P, P, L)
 -Practical Military Training - Air Defence (L, K, T)
 -Rocket Air Defence Systems (L)

doc. dr. sc. Luka Mihanović

-Practical Military Training - Air Defence (P, P)
 -Practical Military Training - Monitoring and Guidance (P, P)

dr. sc. Lenka Mihoković

-Mathematics I D (P, P, A)

doc. dr. sc. Robert Mikac

-Fundamentals of Croatian National Security (P, P)
 -Peace Support Operations (P, P, S)
 -Theories and Politics of Peace and War (P, P)

Predrag Mikulić, mr. sc.

-Practical Military Training - Technical Services (L, A)

Ivan Milanović,

-Contemporary Combat Systems and Equipment (P, P)
 -Practical military training - Infantry (T, L, K)

dr. sc. Daniel Miler

-Computer and Engineering Graphics (L)

izv. prof. dr. sc. Josipa Pina Milišić

-Mathematics II D (P, P, A)

Nikola Mostarac,

-Contemporary Combat Systems and Equipment (P, P)

doc. dr. sc. Darko Možnik

-Communication and Information Systems (S, L)
 -Computer and Telecommunication Devices, Systems and Networks (P, P, A)
 -Electronic Warfare (L)
 -Network System (A)
 -Practical military training - Signals (L, T)
 -Safety and Protection of Communication Information Systems (A)

doc. dr. sc. Saša Mudrinić

-Thermodynamics (L)

prof. dr. sc. Dragana Mutavdžić Pavlović

-Instrumental Analytical Chemistry (P, P, L)

doc. dr. sc. Anamari Nakić

-Linear algebra (P, P)

dr. sc. Iva Nenadić

-Media, Propaganda and Public Relations (S)

doc. dr. sc. Dario Nikić Čakar

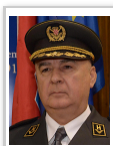
-Democracy and Civil Society (P, P, S)

izv. prof. dr. sc. Boris Olujić

-Military History I (P, P, S)

doc. dr. sc. Rinaldo Paar

-Geoengineering (P, P)

Mate Paden, mr. sc.

-Artillery Weapons, Equipment and Ammunition (P, P, L)

Mladen Pahernik, izv. prof. dr. sc.

-General Tactics (P, P)
 -Military Geography with Topography (P, P)

dr. sc. Frane Pamuković

-Mechanics (S)

Duro Pažin,

-Practical Military Training - Technical Services (A, L)

Vesna Pehar, pred.

-Practical Military Training - Chemical, Biological, Radiological, and Nuclear Defence (T)
 -Toxic Industrial Chemicals (L)

dr. sc. Davorka Perić

-Management of Military Logistics Systems (P, P)

doc. dr. sc. Tomislav Petković

-Introduction to Systems and Automatic Control (P, P, L)

doc. dr. sc. **Irena Petrijevčanin****Vuksanović**

-International Security and Security of EU (P, P, S)

Damir Petrović, struč. spec. ing. agr.

-Practical Military Training - Field Artillery (T, L, K)

Luka Petrović, mag. ing. inf. et comm. techn.

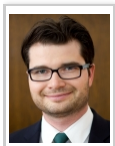
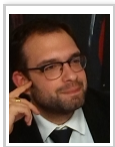
-Introduction to Systems and Automatic Control (L)

doc. dr. sc. **Boško Picula**-International Security and Security of EU (P, P, S)
-Theories and Politics of Peace and War (P, P)doc. dr. sc. **Ana Pilipović**

-Production Technologies (P, P, L)

Andrija Platužić, pred.

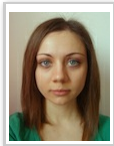
-Military Sociology and Sociology of War (S)

izv. prof. dr. sc. **Vedran Podobnik**-Data Structures, Software Engineering and Software Design (P, P)
-Informatics (P, P)
-Network System (P, P)doc. dr. sc. **Petar Popović**

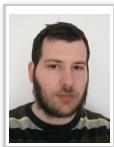
-Introduction to International Politics (P, P, S)

Branko Posarić, ing. stroj.-Artillery Survey (L)
-Artillery Weapons, Equipment and Ammunition (P, P, L)
-Practical Military Training - Field Artillery (T, L, K)prof. dr. sc. **Davor Petrinović**

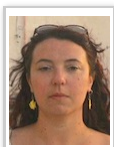
-Introduction to Systems and Automatic Control (P, P)

Jelena Petrović, pred.

-Military Geography with Topography (P, P)

Dario Pevec, mag. ing. inf. et comm. techn.-Informatics (L)
-Informatics and Programming (L)
-Network System (A)doc. dr. sc. **Igor Pihir**

-Business Processes (P, P, S, A)

dr. sc. **Silvija Pisk**

-Military History I (P, P, S)

doc. dr. sc. **Sanda Pleslić**-Physics I (P, P, S)
-Physics II (P, P, S)**Davor Popović**, univ. spec. pol.-Infantry Tactics (P, P, S, L)
-Infantry Tactics (Social) (P, P, T)
-Infantry Weapons With Fire Conduct (P, P, S, T)
-Introduction to Infantry Tactics and Weapon (P, P, A)
-Practical military training - Infantry (K, T, L)doc. dr. sc. **Siniša Popović**

-Defence Systems and Technologies (P, P, S)

doc. dr. sc. **Kristina Potočki**

-River Crossing (P, P)

doc. dr. sc. **Martin Previšić**

-Military History II (P, P)

Milena Prošić, prof.

-English I (S)
 -English II (S)
 -English V D (S)
 -English VI D (S)

Irena Prpić Đurić, pred. mr. sc.

-English III (P, P, S)
 -English IV (P, P, S)
 -English V D (S)
 -English VI D (S)

Ivan Putnik, bac.

-Field Artillery Gunnery (L)
 -Field Artillery Tactical Doctrine (L)

doc. dr. sc. **Ivan Rajšl**

-Energy and Drive Systems (L)
 -Introduction to Technical Science - Special Topics (P, P, S)

Dragutin Remenar, pred.

-Bridges (P, P, L)
 -River Crossing (P, P)

dr. sc. **Rutvica Rusan Novokmet**

-International Law - Selected Chapters (S)

doc. dr. sc. **Marija Seder**

-Data Structures, Software Engineering and Software Design (P, P, L)
 -Informatics (P, P, L)
 -Informatics and Programming (P, P)
 -Introduction to Systems and Automatic Control (P, P, L)

izv. prof. dr. sc. **Božo Skoko**

-Media, Propaganda and Public Relations (P, P, S, A)

izv. prof. dr. sc. **Tomislav Pribanić**

-Data Structures, Software Engineering and Software Design (P, P)
 -Informatics (P, P)

Nikola Protrka

-Criminology With the Criminal Law Basics (S, A)

Darko Puklavac, pred.

-Contemporary Combat Systems and Equipment (P, P)
 -General Tactics (P, P)
 -Practical military training - Infantry (P, P, K, L)

prof. dr. sc. **Silvana Raić-Malić**

-CBRN Weapons (P, P)
 -Organic Chemistry (P, P)

Ivana Rašan

-Management for Engineers (P, P)

Goran Rogalo, pred.

-Physical Training I (TJ)
 -Physical Training II (TJ)
 -Physical Training III (TJ)
 -Physical Training IV (TJ)
 -Physical Training V (P, P)
 -Physical Training VI (P, P)
 -Physical training VII (TJ)
 -Physical Training VIII (TJ)

Ante Samardžić, pred. mr. sc.

-Military History (S)
 -Military History I (S)
 -Military History II (S)

Zvonko Sigmund

-Fortifying and Camouflage (P, P)

Dražen Smiljanić, mr. sc.

-Introduction to Strategic Management (A)

prof. dr. sc. **Ivica Smojver**

- Knowledge and Maintenance Technology of Classical and Missile Weapons (P, P)
- Rocket Air Defence Systems (P, P)
- Rocket Technology (P, P)

Andrej Smolek, struč. spec. cin.

- Practical Military Training - Military Police (K, L, T)

Marko Sossich, mag. phys.

- Physics I (S, L)
- Physics II (S, L)

doc. dr. sc. **Ana Sović Kržić**

- Informatics and Programming (P, P)

doc. dr. sc. **Ivica Stančerić**

- Roads (L)

doc. dr. sc. **Ivan Stojanović**

- Corrosion and Protection (A)

Damir Stručić, dipl.krim.

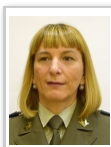
- Applied Intelligence Models (S)
- Intelligence Tactics and Techniques (S, T)
- National Security and Intelligence (S)

Krešimir Sudarić, dipl.ing.polj.

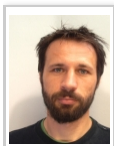
- Practical Military Training - Engineers (PRJ, L, K, T)

Ranko Svetić, mag. ing. admin. nav.

- Practical Military Training - Military Intelligence (T, A, L)

Marina Svrze, pred.

- Media, Propaganda and Public Relations (S, A)

doc. dr. sc. **Goran Šagi**

- Armoured Fighting Vehicles (P, P)
- Armoured Infantry Fighting Vehicles and Armament (P, P, L)
- Basics of Structural Design of Armoured Combat Vehicles (P, P, A)
- Knowledge and Maintenance Technology of Army Vehicles (P, P, L)

Joso Šarlija, pred.

- Physical Training I (TJ)
- Physical Training II (TJ)
- Physical Training III (TJ)
- Physical Training IV (TJ)
- Physical Training V (TJ)
- Physical Training VI (TJ)
- Physical training VII (P, P)
- Physical Training VIII (P, P)

Marko Šarlija,

- Defence Systems and Technologies (S)

prof. dr. sc. **Mario Šavar**

- Fluid Mechanics (P, P)

Stjepan Šebek, mag. math.

- Calculus I (A)
- Calculus II (A)

izv. prof. dr. sc. **Tomislav Šikić**

- Linear algebra (P, P, A)

prof. dr. sc. **Diana Šimić**

- Statistics (P, P, A)

Marko Šimić, pred.

- Bridges (L)
- Fortifying and Camouflage (P, P, L)
- Mine and Explosive Ordnance (P, P, L)
- Practical Military Training - Engineers (PRJ, K, L, T)
- River Crossing (A)
- Roads (L)

doc. dr. sc. **Vinko Šimunović**

-Corrosion and Protection (P, P, A)

prof. dr. sc. **Gordan Šišul**

-Communication and Information Systems (P, P, S)

doc. dr. sc. **Vinko Škrlec**-Mine and Explosive Ordnance (P, P, L)
-Practical Military Training - Engineers (PRJ, T, L, K)**Tatjana Šolaja,**-Crime Investigation (S, A)
-Practical Military Training - Military Police (L, K, T)doc. dr. sc. **Trpimir Mihael Šošić**

-International Law - Selected Chapters (P, P, S)

doc. dr. sc. **Igor Štambuk**-Communication and Information Systems (S, L)
-Practical military training - Signals (P, P)
-Safety and Protection of Communication Information Systems (A)dr. sc. **Marko Švaco**

-Production Technologies (L)

prof. dr. sc. **Siniša Tatalović**

-Introduction to Security and Defence Studies (P, P, S)

doc. dr. sc. **Katarina Tomičić-Pupek**-Business Processes (P, P, S, A)
-Introduction to Strategic Management (P, P, A)
-Process Modelling and Design of IS (P, P, S, L)**Mario Šipoš,** mag.ing.el.

-Field Artillery Gunnery (L)

doc. dr. sc. **Mihovil Škarica**

-Public Administration (P, P, S)

Renato Šoić, mag. ing. comp.

-Computer and Telecommunication Devices, Systems and Networks (P, P, A)

Ivan Šostarec-Field Artillery Gunnery (L)
-Field Artillery Tactical Doctrine (L)doc. dr. sc. **Hrvoje Špehar**

-State and Constitution (P, P, S)

prof. dr. sc. **Nedeljko Štefanić**

-Organization of Technical Services (P, P)

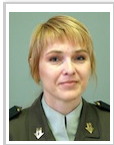
Tihomir Tandarić, dipl. inž. sig.-Maintenance and Storage of Ordnance (P, P, S, L)
-Roads (P, P, L)doc. dr. sc. **Zvonimir Tomičević**

-Introduction to Technical Science - Special Topics (P, P, S)

dr. sc. **Rudolf Tomić**-Armoured Fighting Vehicles (P, P, L)
-Armoured Infantry Fighting Vehicles and Armament (P, P, L)
-Basics of Structural Design of Armoured Combat Vehicles (P, P, A)
-Knowledge and Maintenance Technology of Army Vehicles (P, P, L)

prof. dr. sc. Željko Tomšić

-Energy and Drive Systems (P, P)

Vesna Trut, v. pred. mr. sc.

-Military Management (P, P, S)
-Military Psychology (A)
-Practical Military Training - Military Police (P, P)

dr. sc. Dragutin Tušek

-CBRN Protection (P, P, S, L)
-Crises Management in CBRN Situation (P, P)
-Instrumental Analytical Chemistry (L)
-Practical Military Training - Chemical, Biological, Radiological, and Nuclear Defence (T)

doc. dr. sc. Dražen Tutić

-Military Geography with Topography (P, P)

Hrvoje Vdović, mag.ing.el.

-Informatics (L)
-Network System (A)

dr. sc. Mladen Viher

-Radio Location (L)

prof. dr. sc. Neven Vrček

-Business Processes (P, P, S, A)
-Introduction to Strategic Management (P, P, A)
-Process Modelling and Design of IS (P, P, S, L)

Marinko Vrkić, pred.

-Physical Training I (P, P)
-Physical Training II (P, P)
-Physical Training III (TJ)
-Physical Training IV (TJ)
-Physical Training V (TJ)
-Physical Training VI (TJ)
-Physical training VII (TJ)
-Physical Training VIII (TJ)

izv. prof. dr. sc. Krešimir Vučković

-Design Elements (P, P, L)
-Infantry Weapons With Fire Conduct (P, P)

Mladen Trnski, pred.

-Contemporary Combat Systems and Equipment (P, P)
-Practical Military Training - Military Intelligence (P, P, T, L)

Zvonko Trzun, pred. mr. sc.

-Ammunition and Explosive Materials (A)
-Ballistics (P, P, S)
-Introduction to Technical Science - Special Topics (S)
-Maintenance and Storage of Ordnance (P, P, S, L)

Jadranko Tuta, pred.

-Management for Engineers (A)
-Management of Military Logistics Systems (P, P, L)
-Organization of Technical Services (L)
-Practical Military Training - Technical Services (A, L)

prof. dr. sc. Toma Udiljak

-Production Technologies (P, P)

doc. dr. sc. Snježana Veselica Majhut

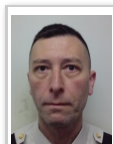
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-English II (P, P)
-English III (P, P)
-English IV (P, P)
-English V (P, P)
-English V D (P, P)
-English VI (P, P)
-English VI D (P, P)

izv. prof. dr. sc. Mario Vražić

-Energy and Drive Systems (P, P)

prof. dr. sc. Milan Vrdoljak

-Ballistics (P, P)

dr. sc. Ante Vučemilović

-CBRN Weapons (S)
-Contemporary Combat Systems and Equipment (P, P)
-Environmental Protection (P, P, S)
-Toxic Industrial Chemicals (P, P)

Luka Vujadinović,

-Practical Military Training - Infantry (K, L, T)

doc. dr. sc. **Domagoj Vujeva**

-State and Constitution (P, P)

Dalibor Vujić, dipl. ing.

-Armament and Ammunition in Armour (L)
 -Armoured Fighting Vehicles (L)
 -Practical Military Training - Armour (K, L, T)

doc. dr. sc. **Dragana Vuk**

-CBRN Weapons (P, P)
 -Organic Chemistry (S)

Božo Vukasović, pred.

-Fundamentals of Croatian National Security (S)

doc. dr. sc. **Tena Vukasović Hlupić**

-Military Psychology (P, P)

dr. sc. **Josip Vuković**

-Radio Location (L)

doc. dr. sc. **Marin Vuković**

-Computer and Telecommunication Devices, Systems and
 Networks (P, P, A)

prof. dr. sc. **Marija Vuković Domanovac**

-CBRN Weapons (P, P)

Mario Werhas,

-Military History I (S)
 -Military History II (S)

Vinko Zebić, pred. mr. sc.

-Communication and Information Systems (S, L)
 -Computer and Telecommunication Devices, Systems and
 Networks (A)
 -Network System (A)
 -Practical military training - Signals (T)

dr. sc. **Maja Zebić Avdičević**

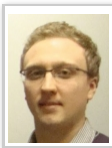
-Environmental Protection (P, P, S, L)

dr. sc. **Marko Zečević**

-General Tactics (P, P)

dr. sc. **Borna Zgurić**

-Contemporary Civilizations (P, P, S)

doc. dr. sc. **Dario Zlatar**

-Ballistics (P, P, S)

izv. prof. dr. sc. **Marta Zorko**

-Political Geography and Geopolitics (P, P, S, A)

izv. prof. dr. sc. **Dragan Žeželj**

-Computer and Engineering Graphics (P, P, L)

Željko Živanović, dipl.ing.k.teh.

-Intelligence Tactics and Techniques (S, T)
 -National Security and Intelligence (S)

dr. sc. **Bojan Žugec**

-Decision Analysis (P, P, S, A)

prof. dr. sc. **Ozren Žunec**



- Ethics of Military Profession (P, P, S)
- Military Sociology and Sociology of War (P, P, S)

Svetko Župan, dipl. ing.



- CBRN Protection (S, L)
- Practical Military Training - Chemical, Biological, Radiological, and Nuclear Defence (T)
- Toxic Industrial Chemicals (L)

Legend:

- P Lectures
- S Seminar
- A Exercises
- L Laboratory exercises
- T Field exercises
- K Construction exercises
- PRJ Design exercises