UNIVERSITY OF EAST SARAJEVO FACULTY OF ELECTRICAL ENGINEERING EAST SARAJEVO



FIRST STUDY CYCLE STUDY PROGRAM ELECTRIC POWER ENGINEERING

East Sarajevo, 2023.

ORGANIZATIONAL UNIT								
Name of the organizational unit	Faculty of Electrical Engineering							
City	East Sarajevo							
Municipality of the organizational unit	East New Sarajevo							
Street address	Vuka Karadžića							
Address-number	30							
Adress Post code	71123							
Address-place	Lukavica							
Phone of the organizational unit	+387 (057) 342 788							
Fax of the organizational unit	+387 (057) 340 402							
E-mail of the organizational unit	kontakt@etf.ues.rs.ba							
Web adress of the organizational unit	https://www.etf.ues.rs.ba/eng/							
Organizational code in the Treasury of the RS	12510005							
PIN of the organizational unit	4400592530093							
VAT number of the organizational unit	400592530093							
Identity number assigned by the Republic Institute of Statistics	01029606							
Dean of the organizational unit	PhD Božidar Popović, Associate Professor							

CURRICULUM

FIRST STUDY CYCLE

- ELECTRIC POWER ENGINEERING -

Teaching activities at the Faculty of Electrical Engineering in East Sarajevo are organized in three study cycles. Study cycles are carried out through study programs.

The first study cycle prepares students for a higher degree of study and enables them to acquire general and specific knowledge needed for employment in certain professional jobs. Upon completion of the first study cycle, the academic title of Bachelor of Science (B.Sc.) in Electrical Engineering is acquired, with an indication of the study program. Along with the diploma of the first study cycle, a diploma supplement is also issued for a more detailed insight into the level, nature, content, system and rules of study and the results achieved during studies. The educational degree of the first cycle in all study programs lasts four study years, i.e. eight semesters, which corresponds to 240 ECTS points.

The first study cycle is realized through the following study programs:

- Electric Power Engineering,
- Automation and Electronics,
- Computer Science and Informatics.

The decision for the final study program is made when enrolling at the faculty.

The general goals of the first study cycle at the Faculty of Electrical Engineering in East Sarajevo are efficient and rational higher education of personnel in the field of electrical engineering, through:

- guiding and helping the student during the teaching process,
- the introduction of only one-semester courses with a maximum of six hours of direct teaching,
- relieving teaching content of unnecessary repetitions and facts, with the necessary
 modernization that follows the rapid development in various areas of electrical engineering,
 increasing the number of hours of exercises and practical work compared to lectures,
- establishing a system of rules and criteria for quality assurance (QA) of the educational process,
- guidance through optional subjects,
- continuous monitoring and checking of students' knowledge,
- application of modern didactic methods.

Also, a modern multidisciplinary educated electrical engineering graduate who can successfully work in the economy and services where there is a need for this profile of personnel, is educated through:

- the introduction of optional subjects, which under certain conditions can also be subjects from another study program,
- introduction of common program contents for all study programs,
- the introduction of two practically oriented projects, which are valued as special subjects and obligations of professional practice.

The goal of the first study cycle is the professional preparation of the candidate for continuing education, in the second study cycle through:

- hiring teaching staff with recognized scientific results who are capable of motivating students for further professional and scientific training,
- introduction of the most modern teaching content in the professional part of studies, which can be a motivation and challenge for students to engage in scientific work.

General outcome of the learning process at the end of the first study cycle:

- knowledge and understanding of basic principles in the field of study,
- recognition of problems that arise in practice and the possibility of their quick and economical solution, using the most modern technical achievements in the specific field,
- ability to work in a team in a multidisciplinary environment,
- within the specialty and beyond, to follow the development and latest technical achievements and recognize the needs and opportunities to apply these achievements in the environment,
- developing the skills of self-learning, which enables to get the necessary comprehensive education,
- to respect legal regulations and social norms of behavior.

The first two years of study are common for all students, regardless of the chosen study program. All subjects in the first two years are compulsory. Here, students acquire the general knowledge necessary to continue with the chosen study programs.

In the third and fourth year of study, students are directed to the above three study programs. Students acquire knowledge specific to the study program they have chosen. A number of subjects are compulsory, while the rest are optional and chosen by students based on their interests and affinities. After completing eight semesters, each student works on and defends a final thesis. Students are able to apply the theoretical and practical knowledge acquired in targeted study programs in practice, and it also serves as a basis for continuing their studies in the second study cycle.

DEAN

Prof. Božidar Popović

Qualification model										
Study program The name of the qualification according to the Law on Professions in RS English name of the qualification according to the standard (EKO, EQF) Image: Comparison of the the standard (EKO, EQF)										
I - the first cycle										
	Дипломирани	Bachelor of Science in								
ELECTRIC	инжењер	Electrical Engineering		07.023-						
POWER	електротехнике -	– 240 ECTS –	7	from						
ENGINEERING	240 ECTS -	Electric Power		22. 06. 2009.						
	Електроенергетика	Engineering								

QUALIFICATIONS STANDARD FOR THE STUDY PROGRAM: ELECTRIC POWER ENGINEERING

1. BASIC CHARACTERISTICS

Study cycle: First study cycle Degree: Academic Study program: Electric Power Engineering

Name(s) of qualification (generic part + specific part):

Bachelor of science in Electrical Engineering – 240 ECTS – Electric Power Engineering

Language of study: English

Study duration: The study lasts four years, and the year consists of two semesters (winter and summer).

Minimum volume - number of ECTS: 240 ECTS credits

Level: 7

Conditions/method of admission: For the first study cycle, study program Electric Power Engineering, at the Faculty of Electrical Engineering, University of East Sarajevo, the conditions for the enrollment are prescribed by the law on higher education, the Statute and other acts of the University and the Faculty. All persons who have completed a four-year high school in the Republic of Srpska and Bosnia and Herzegovina, the Republic of Serbia (Agreement on special and parallel connections), as well as students who have completed a four-year high school abroad (subject to nostrification) have the right to enroll in the Faculty of Electrical Engineering. Upon enrollment, an entrance exam in mathematics is taken.

1.1. Introduction to Qualification

Teaching in the study program Electric Power Engineering at the Faculty of Electrical Engineering of the University of East Sarajevo is conducted according to the 2012 curricula. The study program Electric Power Engineering trains highly qualified experts in the field of general electrical engineering and power systems. Through the educational profile of Electrical Engineer - Electric Power Engineering, the skills and knowledge necessary to work with modern technologies in the field of power engineering are acquired. Mastering interdisciplinary areas, as well as collaboration and teamwork skills, which today represent one of the key factors in the areas of maintenance and development of power systems, round off the complete set of engineer education, which is dictated by the modern labor market.

Common program bases and elective contents educate a modern multidisciplinary graduate electrical engineer, who can successfully work in the economy and services where there is a need for this profile of personnel. This goal is achieved through:

- the introduction of optional subjects, which under certain conditions can also be subjects from another study programs,
- introduction of common program content for all study programs, and
- the introduction of two practically oriented projects, which represent special subjects and duties as part of professional practice.

Students are also trained to organize and conduct extracurricular activities at each cycle of education through the organization of competitive and sports content, which develops their leadership, entrepreneurial and team skills.

The first study cycle at the study program Electric Power Engineering aims to acquire fundamental and specialist knowledge and skills in the field of general electrical engineering, analysis of power systems, elements of power systems, production, transmission and electricity distribution. as well as the application of modern technologies from the mentioned and related fields. The student will also acquire the knowledge necessary for further education and training.

By successfully mastering the Electric Power Engineering study program, the student is enabled to effectively apply scientific and professional achievements in the field of general electrical engineering and power engineering in the process of education (secondary and higher education), independent and professional work (maintenance, design and development of power systems), as well as finding new achievements in multidisciplinary fields related to the core areas.

Objectives of the study program:

- achievement of competencies, academic knowledge and specific practically applicable knowledge and skills in the field of electric power engineering,
- application of modern technologies in the process of maintenance, design and development of power systems,
- recognition of problems that arise in practice and the possibility of their quick and economical solution using the most modern technological achievements,
- · ability to work in a team in a multidisciplinary environment,
- monitoring the development and latest technical achievements, as well as recognizing the need and possibilities for their application in the environment,
- · development of self-learning skills aimed at achieving lifelong education,
- respect for standards, legal regulations, as well as social norms of behavior.

1.2. Reasons for the existence of the qualification - justification

The purpose of this study program is the formation of highly educated personnel for the needs of the economy in the field of electric power engineering.

The current situation, development trends and the needs of the market for engineers in the field of electric power engineering served as the basis for defining the structure and content of this study program. The following strategies and opinions were additionally taken into account when designing the Electric Power Engineering study program:

- Strategy of scientific and technological development of the Republic of Srpska 2012-2016,
- · Requirements of chambers of commerce and associations of electrical engineers,
- Opinions of business entities,
- Opinions of experts from various scientific and professional disciplines.

Graduates of this study program acquire a high level of knowledge in the aforementioned field, which will enable them to look at issues more complexly and make adequate decisions and conclusions. The social justification stems from the need for further development of the profession in the field of electric power engineering in the Republic of Srpska - Bosnia and Herzegovina and the surrounding area. The high-quality education offered by this study program is the basis for independent and lifelong pursuit of maintenance and development of power systems, which is one of the important elements that have recently been current and present on the labor market. Support for this study program is also in the function of raising the quality of education and improving the power industry in the Republic of Srpska - Bosnia and Herzegovina, as well as in the function of forming young engineering staff in the Republic of Srpska - Bosnia and Herzegovina.

The program is designed so that upon completion of the basic academic studies of the first cycle, students acquire knowledge and skills for working on engineering projects and tasks in the field of electric power engineering. Graduated students (graduated engineers) are able to apply the acquired knowledge to clearly define the problem and how to solve it, perform an assessment of the feasibility of the solution, create documentation, implement the solution, as well as the ability to work in a team and communicate with experts from other fields. In addition to basic knowledge in mathematics, physics, electrical engineering, electrical measurements, theory of electrical circuits, electronics, electromagnetism and telecommunications, students acquire knowledge and skills in the areas of: analysis of power systems, power plants, electric machines and electric drives, switchgear and protection systems, high voltage engineering, distribution networks and electrical installations, measurement and computer design in the power industry. In addition, the purpose of the study program is to enable permanent further training with the acquired education, that is, the program provides a basis for further master's studies in the field of electric power engineering.

On the basis of the above, it can be said that the justification is reflected in the additional goals of the Electric Power Engineering study program at the Faculty of Electrical Engineering of the University of East Sarajevo:

- Appreciation of the company's strategic determination in those domains that rely on the application of knowledge and skills from the scientific and professional fields of electric power engineering.
- Ensuring that the learning outcomes of the study program correspond to the needs and demands of the market.
- Improving learning outcomes by introducing modern teaching methods, with the use of appropriate laboratory equipment and modern software tools.

- Creating conditions for student mobility.
- Creating conditions for the work of professional practice and projects in successful business entities.
- Achieving national and international cooperation in the implementation of the teaching process within the study program.
- Creating opportunities for lifelong learning even after graduation.

2. COMPETENCES / LEARNING OUTCOMES

A student who completes the Electric Power Engineering study program at the Faculty of Electrical Engineering of the University of East Sarajevo, acquires general knowledge, skills and competences that cover broad areas of general electrical engineering, as well as specialist knowledge, skills and competences in the main areas of electric power engineering: analysis of power systems, electric machines and electric drives, switchgear and protection systems in the power system, electrical installations, computerized design in the power industry and high voltage technology. Regardless of the choice of subjects in the professional part of the study, which enables a narrower profiling towards certain areas of electric power engineering, and which enables an understanding of the area and easier orientation towards certain profiles, as well as easier adaptation to the needs of the labor market.

2.1. List of competencies at the qualification level

KNOWLEDGE

The knowledge that a graduate in electric power engineering should have includes the following:

- fundamental knowledge in the field of electrical engineering, natural sciences, foreign languages,
- fundamental knowledge in the field of electrical measurements, theory of electrical circuits, elements of power systems, production, transmission, distribution and consumption of electrical energy, power electronics, electrical machines and converters,
- specialist knowledge in the field of computer design in the power industry, high voltage techniques, power system protection, electric drives, high voltage measurement techniques, electrical apparatus and measuring systems, switchgear, power plants, electrical installations, management in engineering practice.

SKILLS

The skills that a graduate in electric power engineering should possess include the following:

- planning, design and maintenance of elements of the power system,
- voltage regulation, reactive power balance analysis and reduction of losses in the power system,
- · designing insulation and solving problems caused by overvoltages in the power system,
- analysis and elimination of disturbances in the power system, caused by short circuits,
- work analysis, design, implementation and adjustment of relay protections,
- knowledge of electrical and mechanical calculation procedures for the design of switchgear,
- designing and knowledge of characteristics of the power plants and their operation,
- knowledge of operation and handling of high-voltage measuring equipment,

- modeling of elements and simulating the operation mode of the power system using a computer,
- project management in the power industry,
- designing and regulating the operation of electrical machines,
- converter design and operation management of electric drives,
- planning and designing electrical installations and grounding,
- communication and managerial skills,
- independent and team work.

COMPETENCES

Competences that should be possessed by a graduate in electric power engineering include the following:

- supervision and maintenance of the proper operation of the power system,
- identification, analysis and elimination of power system failure modes,
- analysis of the state and optimization of the elements of the power system,
- planning and development of new energy systems,
- supervision and maintenance of proper operation of industrial processes,
- participation and management of projects in the field of electric power engineering and creation of project documentation,
- · permanent education and training in the profession,
- management of existing and development of own power companies.

COMPETENCY MATRIX OF STUDY PROGRAM ELECTRIC POWER ENGINEERING	General subjects	Fundamental subjects of engineering	Professional subjects	Projects and students practice	Final thesis
Fundamental knowledge in mathematics, physics, electronics, electrical engineering, computer science and programming technics	х	х			
Independent work with basic software tools	х	х			
Ability to analyse and model different physical manifestations and entities, simple components, devices, and systems from the field of electrical engineering	х	х			
Basic knowledge from the area of electrical measurements, electric circuits theory, elements of electric power systems, production, transmission, distribution and consumption of electrical energy, power electronics, electrical machines, and converters	х	х	х		
Independently conduct experiments, statistical processing of the experimental results, analyse and understand the experiments, formulate, and conduct conclusions to understand the processes, devices or systems	х	х	х	x	х
Ability to analyse the conditions and optimization of the electric power system		х	х	х	х
Ability to apply acquired theoretical knowledge in practice			х	х	х
Ability to apply standards, technical regulations, as well as to understand the influence of the components, devices and systems of electric power engineering, their operation and maintenance			х	х	х
Ability to successfully participate in various teams, to gain basic skills of leadership in the project teams			х	х	
Able to develop critical opinions, to identify and analyse problems, predict behaviour of the selected solution with clear outcome of good and/or bad choice			х	х	х
Able to use scientific and professional literature	х	х	х		
Specially trained for combination of basic knowledge from different scientific and professional areas, considering the specifics of the study program Electric Power Engineering			х	x	х
Competent to apply theoretical and practical knowledge based on scientific principles for solving complex and real problems from practice			х	x	х
Completely trained for continuation of the scientific work, trained for publication of scientific and professional papers in scientific fields, such as general electrical engineering, and electric power engineering		х	х		х
Has developed professional ethics and respect of professional norms			х	x	х
Understanding the importance and role of knowledge, experience and skills in making decisions on all levels of industrial/job environment			x	x	х

2.2. Qualification and course structure

SCHEDULE OF ECTS POINTS ACCORDING TO COURSE GROUPS/list of basic and elective subjects/

Subject group	ECTS (minimum)
General subjects important for the study of engineering	76 ECTS credits
- Mathematics - 1	7,0
– Mathematics - 2	7,0
– Mathematics – 3	6,0
 Numerical Mathematics 	6,0
 Fundamentals of Electrical Engineering - 1 	7,0
 Fundamentals of Electrical Engineering - 2 	7,0
- Physics	6,5
 Physical Fundamentals of Electronics 	5,5
 Fundamentals of Computer Technique 	5,5
 Introduction to Programming 	5,5
 Application Software 	3,0
– English Language - 1	2,0
– English Language - 2	2,0

Subject group	ECTS (minimum)
- English Language - 3	2,0
 English Language - 4 Introduction to Management 	2,0
Fundamental subjects of engineering - compulsory	58 ECTS credits
- Electric Circuits Theory - 1	5,0
- Electric Circuits Theory - 2	5,0
- Electronics - 1 - Electronics - 2	6,0 5.0
- Electromagnetics - 1	6,0
- Electromagnetics - 2	5,0
- Electrical Measurements	5,0
- Object Oriented Programming	6,0
 Programming Languages Eundamentals of Telecommunications 	5,0 5.0
- Process Computers	5,0
Vocational subjects	68 ECTS credits
- Electroenergetic Networks and Systems - 1	5,0
- Electrical Machines - 1	5,0
- Electrical Machines - 2	6,0
- Electrical Appliances - 1	5,0
- High Voltage Technique - 2	5.0
- Power Distribution Facilities	7,0
- Electromotive Plants	5,0
- Power System Protection	7,0
- Computer Aided Design in Electroenergetics	6,0
- Automatic Control Systems	5,0 6.0
Elective program - General	5 ECTS credits
 Management in Engineering Practice 	5,0
Elective program - Professional	50 ECTS credits
- Electroenergetic Networks and Systems - 2	5,0
 Distribution and Industrial Networks 	5,0
- Electrical Appliances - 2	5,0
- Power Plants	5,0
- Electrical Installations with Luminance	5,0
- Measurements in Electroenergetics	5,0
- Microprocessor Control of Electric Drives	5,0
- Power Electronics - 2	5,0
- Electric Power Converters	5,0
Projects and practice	7,0 ECTS credits
– Project – 1	2,0
- Project - 2	2,0
- Ferial Practice	3,0
Final work	5 ECTS credits
- Final Paper (Thesis)	5,0

2.3. Curriculum plan of the Study Program of Electric Power Engineering



5.	EE-08-1-030-5	Electrical Appliances – 1	С	No	V	2	1	1	5,0	
6.	EE-08-1-031-5	Process Computers	С	No	V	2	1	1	5,0	
7.	EE-08-1-135-6	Automatic Control Systems	С	No	VI	3	2	0	6,0	
8.	EE-08-1-156-6	Electrical Machines – 2	С	No	VI	2	1	2	6,0	
9.	EE-05-1-171-6	High Voltage Technique – 1	С	No	VI	3	1	1	6,0	
10.	EE-08-1-035-6	Project – 1	С	No	VI	0	0	2	2,0	
11.	EE-08-2-xxx-6	Optional subject EPE - 3.1	E	No	VI	2	2	0	5,0	
12.	EE-08-2-xxx-6	Optional subject EPE - 3.2	E	No	VI	2	2	0	5,0	
				ΙΝ ΤΟΤ	AL:	24	17	9	60	
FOURTH YEAR										
1.	EE-08-1-041-7	Fundamentals of Telecommunications	С	No	VII	2	2	0	5,0	
2.	EE-05-1-174-7	High Voltage Technique – 2	С	No	VII	2	1	1	5,0	
3.	EE-08-1-128-7	Power Distribution Facilities	С	No	VII	3	1	1	7,0	
4.	EE-08-1-044-7	Electromotive Drives	С	No	VII	2	1	1	5,0	
5.	EE-08-1-045-7	Ferial Practice	С	No	VII	0	0	4	3,0	
6.	EE-08-2-xxx-7	Optional subject EPE - 4.1	E	No	VII	2	2	0	5,0	
7.	EE-08-1-136-8	Power System Protection	С	No	VIII	3	2	1	7,0	
8.	EE-08-1-132-8	Computer Aided Design in Electroenergetics	С	No	VIII	2	2	1	6,0	
9.	EE-08-1-053-8	Project – 2	С	No	VIII	0	0	2	2,0	
10.	EE-08-2-xxx-8	Optional subject EPE - 4.2	E	No	VIII	2	2	0	5,0	
11.	EE-08-2-xxx-8	Optional subject EPE - 4.3	E	No	VIII	2	2	0	5,0	
12.	EE-08-1-054-8	Final Paper	С	No	VIII	0	0	4	5,0	
				IN TOT	AL:	20	15	15	60	

	Elective courses Electric Power Engineering										
THIRD YEAR											
1.	EE-08-2-036-6	Electrical Appliances – 2	E	No	VI	2	2	0	5,0		
2.	EE-08-2-090-6	Power Electronics – 2	E	No	VI	2	2	0	5,0		
3.	EE-08-2-038-6	Electrical Engineering Technologies	E	No	VI	2	2	0	5,0		
4.	EE-08-2-084-6	Electroenergetic Networks and Systems – 2	E	No	VI	2	2	0	5,0		
5.	EE-08-2-106-6	Measurements in Electroenergetics	E	No	VI	2	2	0	5,0		
6.		One elective subject from III year of study, VI semester, from other study programs	Е	No	VI	2	2	0	5,0		
FOURTH YEAR											
1.	EE-08-2-202-7 EE-08-2-202-8	Distribution and Industrial networks	Е	No	VII VIII	2	2	0	5,0		
2.	EE-08-2-049-7 EE-08-2-049-8	Electric Power Converters	E	No	VII VIII	2	2	0	5,0		
3.	EE-08-2-087-7 EE-08-2-087-8	Electrical Installations with Luminance	E	No	VII VIII	2	2	0	5,0		
4.	EE-08-2-050-7 EE-08-2-050-8	Power plants	Е	No	VII VIII	2	2	0	5,0		
5.	EE-08-2-105-7 EE-08-2-105-8	Microprocessor Control of Electric Drives	E	No	VII VIII	2	2	0	5,0		
6.	EE-08-2-047-7 EE-08-2-047-8	Management in Engineering Practice	E	No	VII VIII	2	2	0	5,0		

7.		One elective subject from IV year of study, corresponding semester, from other study programs	E	No	VII VIII	2	2	0	5,0
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FIRST YEAR

	J.B.C.			UNIVER Faculty	SITY OF E	AST SAR	AJEVO eering			
		Stud	ly pro	o gram: Ele	ctric Pow	er Engine	ering			
2163 VS 4.5V 3 40 3	II.		First study cycle First year of study							
Full name of	the									
course						MA	THEMATIC	51		
Subject code				Su	oject stati	us	Semes	ter		ECTS
EE-0	8-1-00	1-1		C	ompulsory	/	I			7.0
Teacher		Assistant	: Prof	essor Nat	aša Pavlov	/ić Koma	zec			
Associate		Assistant	: Prof	essor Nat	aša Pavlov	/ić Koma	zec			
Number of	essons	/teachir	ng wo	orkload	Individ	lual stud	ent workloa	ad (in ho	ours	Student workload
	(we	ekly)	-			per	a semester)		coefficient S _o
L	4	AE		LE	L		AE	L	E	So
3		3		0	60		60	C)	1.33
total teachi	ng wor	kload (in	hou	rs, per sen	nester)	tot	al student w	/orkloac	l (in hou	urs, per semester)
W= 3	8*15 + 3	2*15 + 0	*15 :	=90 hours		T	= 3*15*S₀ +	3*15*S	o + 0*1 5	5*S₀ = 120 hours
Total wo	rkload	of the s	ubjeo	t (teachin	g + studer	nt): In _{opt} =	W + T =90	+ 120 =	210 ho	urs per semester
Learning outcomes Prerequisites Teaching methods	 build h scientific master 	his the ender r bas nato r alge r alge r alge r alge r alge r alge r alge r the r the r the r the r the r the r the r the r alge r alge	ought stru eavor, and ic mathem rics and gr ebraic stru hethods fo theory of <u>elements</u> requireme process is rm of wor nd Function ory. n to Grou	ectures, i.e especiall natical terr aph theor ctures: gr r solving s limit value of differe ents for lis realized n k - auditor ons. Permo	e. mather y of engi ms: relat ry oupoid, g systems of rea <u>ntial calc</u> tening. nainly th ry exercise utations	natical thin neering crea ion, function group, ring, of linear equ sequences <u>ulus and its</u> rough a fror es and Combin	king, wh ations n and op field, ve ations and fun applica ntal forn ations.	nich is the peration of the peration of work of Newtor Number Number 1990 (1990)	ne carrier of every n, as well as elements ace, matrix rk - lectures and an n 's Binomial	
Subject conte per weeks	2 ent 8 [4. The Fie 5. Vector 5. Deterr 7. Systen 8. Rank 6 9. Scalar Dimensic 10. Cardi Number 11. Metr Fheorem 12. Limit: 13.The D 14. Appli	eld o Space minar ns of of a N Prod ons. nal N (e). ic Space ic Sp	f Complex ce. Linear nts and Ma Linear Equ Matrix. Kro uct of Vec lumber of ace. Seque Real Func tive Func ns of the l	Numbers Operators atrices. Jations: Conecker-Ca tors. Unit a Set. A S ences and tions. Con tion. Mea Wean Valu	. Polynor s. ramer's F apelli The ary Vect equence Converg tinuous n Value	nial and Rat Rule, Gauss corem. Eige or Space. Vo of Real Nur ence in Met Function. Theorems. em. L'Hopita	cional Fu Eliminat nvalues ectors a nbers. N cric Spac	inctions ion Me and Eig nd Geor Aonoto res. Ban	s. thod. genvectors. metry in Three ne Sequences. Euler's ach Fixed Point r Order Derivatives.

	15. Convex Function. Taylor's Formula. Investigation of Functions.										
	Compulsory literature										
Author(s)		Publication title, publisher	Year	Pa	ges (from-to)						
Murray H. Protter		Basic Elements of Real Analysis, Springer	1998								
R. Magnus		Fundamental Mathematical Analysis, Springer	2020								
H. Anton, C. Rorre	S	Elementary Linear Algebra -11 th edition, Wiley	2014								
		Additional literature									
Author(s)	1	Publication title, publisher	Year	Pa	ges (from-to)						
A. Croft, R. Devison, M. Hargreaves, J. Flint		Engineering Mathematics, Person	2017								
		Type of student work evaluation	Points		Percentage						
	Pre-exar	nination obligations									
Obligations,		attendance at lectures/exercise	es 5		5%						
forms of		homewo	⁻ k 5		5%						
knowledge		midterm exam	il 30)	30%						
assessment and		midterm exam	II 30)	30%						
grading											
		final exam (written/ora	I) 30)	30%						
	TOTAL		10	0	100%						
Web page											
Certification											
date											

			UNIVEF Faculty	SITY OF E	AST SAR	AJEVO eering				
SYNC 82	887 ± 0	Stu	idy progra	am: Electri	ic Power	Engineering	7			
210 L 500 300 L 500	/	Firs	First study cycle First year of study						$\langle \rangle \square \langle \rangle$	
Full name of the	9					PHYSICS				
course										
Subjec		Subject status Semester			ter	ECTS				
EE-08-1	-002-1		C	ompulsory	/	1			6,5	
Teacher(s)	Dr 2	Zoran Ljub	oje, full pi	rofessor						
Associate(s)	Ves	na Miletic	, msc	ما بنام مرا	امىيە امىيا		ad /in h		Chudantwarkland	
Number of les	sons/te (week	eaching wo Iv)	orkioad	Individ	iuai stud per	ent workio a semester	ad (in no)	ours	Student Workload coefficient S_{0}	
L	AE	.,,	LE	L		AE	, LI	E	So	
3	1		1	3*15*	S₀	1*15*S₀	1*15	5*S₀	1.4	
total teaching	worklo	ad (in hou	rs, per ser	nester)	tot	al student v	vorkload	l (in hou	ırs, per semester)	
W=3	*15 + 1	1*15 +1*1	.5=75h			T=3*15*S	io+ 1*15	*So+1*1	15*S₀ = 105h	
Total w	orkloa	d of the su	ıbject (tea	ching + stu	udent): lr	n _{opt} = 75 + 10	05 = 180	hours p	per semester	
	Intr	oducing st	ing students to the basics of certain areas of physics that are necessary for							
Learning	eleo	ctrical eng	ineering s	tudents.						
outcomes	Intr	oducing st	tudents to	classical r	mechanic	:S.				
	Intr	oducing st	tudents to	certain a	reas of th	iermodynar	nics and	optics.		
Prerequisites	The	ere are no	requireme	ents for lis	tening ar	nd passing t	he cours	se.		
Teaching	Lec	tures, aud	itory exer	cises, sem	inar pape	ers, laborat	ory exer	cises		
methous	1 1	1. Introduction. Introduction to Newtonian mechanics. Kinematics. Translational								
	mo	1. Introduction. Introduction to Newtonian mechanics. Kinematics. Translational movement of a material point.								
	2. K	2. Kinematics. Rotational motion of a material point.								
	3. C	3. Dynamics of the material point.								
	4. V	4. Work, power and energy.								
	5.1	5. Introduction to the special theory of relativity								
Subject content		 b. Dynamics of rotational motion of solid bodies. Coscillatory motion 								
per weeks	8. E	8. Examples of harmonic oscillator								
	9. N	9. Mechanical waves.								
	10.	10. Elements of thermodynamics. An ideal gas.								
	11.	Work and	heat. Law	/s of therm	nodynam	ics.				
	12.	Basics of t	the moleci	ular-kineti statistics	c theory	of gases.				
	14.	Introducti	on to opti	ics. Geome	etric opti	cs				
	15.	Wave opt	ics		50.10 op 0					
				Compuls	ory litera	iture				
Author	(s)		Put	olication ti	itle, publ	isher		Year	Pages (from-to)	
Zoran Ljuboje		FIZI FTF	KA, . Univerzit	tet u Istoči	nom Sara	ievu.		2008.	3-132	
		ZBI	, EN ZADA	TAKA IZ FI	ZIKE, Viši	kurs D				
G. Dimić, M. Mit	rinović	Bec	grad		·			1991.	-	
		·		Addition	nal litera	ture				
Author	(s)		Puk	olication ti	itle, publ	isher		Year	Pages (from-to)	

I. V. Saveljev		OPŠTI KURS FIZIKE, prevod ETF Sarajevo	1969.	-	
		Type of student work evaluation	Poin	ts	Percentage
	Pre-exar	nination obligations			
Obligations,		attendance at lectures/exercise	es 5		5%
forms of		midterm exam	I 20		20%
knowledge		midterm exam	II 20		20%
assessment and		lab. exercises/practical wo	[.] k 15		15%
grading					
		final exam (written/ora	I) 40		40%
	TOTAL		100		100%
Web page					
Certification					
date					

			UNIVER	RSITY OF E	AST SAR	AJEVO			
- YNC -		C+	Faculty			Eering			
		Stu	iay progra		c Power	Engineering			
513 30 M	46.0	First study cycle First year of study							√∭ v
course	tne		FU	JNDAMEN	TALS OF	ELECTRICA	L ENGI	NEERIN	G – 1
Subject		Su	hiect statu	IC	Semes	tor	FCTS		
Subject	couc		54	•				2015	
FF 00.1 /	002.1		Compulsory				7.0		
EE-08-1-003-1				ompulsory	, 	I			7.0
Teacher(s)	PhD Srd	an Lai	le, assistar	nt professo)r Né				
Associate(s)	ns/teachi		orkload		ual stud	ent worklo	ad (in h	ours	Student workload
(weeklv)	ing wo	JI KIOBU	marvia	per	a semester)	ours	coefficient So
L	AE		LE	L		AE	, L	E	So
3	2		1	60		40	2	0	1.33
total teaching v	vorkload (ir	hours	, per seme	ster)		total student	workload	(in hour	rs, per semester)
W= 3*1	5 + 2*15 + 1	1*15 =	90 hours			T= 3*15*So -	+ 2*15*S	o + 1*15	5*So = 120 hours
Total workl	oad of the s	subject	(teaching	+ student):	Inopt= W	+T=Uopt= 90	+ 120 =	210 hou	urs per semester
Learning outcomes	 By mastering this subject, the student will be able to: Explain the basic concepts and laws of electrostatics and DC currents, Calculates electric force, field, potential, voltage, flux and electric field energy, Determine the expression for the capacitance of various systems of conducting bodies Apply Ohm's law, Kirchhoff's laws, and electrical network theorems to solve electrical networ with DC currents, with and without capacitors, Use the knowledge of this subject in the Fundamentals of Electrical Engineering - 2 and subsequent electrical engineering subjects 							energy, nducting bodies solve electrical networks gineering - 2 and	
Teaching		(with)	with the use				t) audit	I.	pises and laboratory
methods	exercises	s. Stud	lents also r	eceive hom	iework.				
	1. Cor	ncept c	of electric lo	ad. Coulor	nb's law a	nd electric fie	eld vecto	r. Distrib	uted charges.
	2. Ele	Electric field potential, potential difference and voltage. Electric dipole.							
	3. Vec	Vector flux. Gauss's law. Examples of the application of Gauss's law.							
	4. Cor	Conductors in an electrostatic field. Electrostatic induction. Mirroring method.							
	5. Ca	Dacitor	s and capa	citance. Sel	ries, para oporaliza	d Cause's La	a connec	ction of C	apacitors.
	7. Ene	 b. Dielectrics in the electric field. Generalized Gauss's Law. Boundary conditions. 7. Energy and forces in the electrostatic field. Movement of a charged particle 							
	8. Ele	ctric cu	urrent. Kirch	nhoff's first l	aw. Spec	fic resistanc	e and co	nductivit	V.
	9. Res	sistors.	Ohm's and	d Joule's lav	<i>.</i> w. Resist	or connection	is. Grour	nd resista	ance. Electric generators
Subject content	and	I the te	erm emp.						
per weeks	10. Sim	nple cii	rcuit. Maxir	num power	transmis	sion conditio	n. Poter	itial and	voltage. Equivalence of
		age ar	na current g	jenerator.	annlicatio	on of Kirchho	ffe laws	for col	ving electrical networks
	Me	thod of	f contour ci	urrents.	αρριισαία		ni s iaws	101 501	ving electrical rietworks.
	12. No	de pote	ential metho	od. Triangle	-star equ	ivalences and	d vice ve	rsa. Line	earity theorem.
	13. Red	ciprocit	ty theorem.	Thevenen's	s and No	rton's theorer	n. Theor	em of co	ompensation. Theorem of
	pov	ver cor	nservation i	n electrical.	network	S.			
	14. Spe	ecial fo	rms of elec	trical netwo	rk. Eleme	ents of non-lin	ear elect	trical net	work. Electrical networks
	15. Ele	ctrosta	itic network	s and Kirch	hoff's law	s. Energy ba	lance in	networks	s with capacitors.

	Compulsory literature									
Author(s)		Publication title, publisher	Year	Pages (from-to)						
David J. Griffiths		Introduction to electrodynamics 3 rd edition, Prentice Hall, Upper Saddle River, New Jersey 07458. ISBN 0-13-805326-X	1999							
Viktor Hacker, Chr Sumereder	istof	Electrical Engineering: Fundamentals, De Gruyter Oldenbourg	2020							
		Additional literature								
Author(s)		Publication title, publisher	Year	Pages (from-to)						
Charles A. Gross, Thaddeus A. Ropp	el	Fundamentals of Electrical Engineering 1 st Edition, CRC Press	2012							
Leonard S. Bobrow		Fundamentals of Electrical Engineering (The Oxford Series in Electrical and Computer Engineering) 2 nd Edition, Oxford University Press	1996							
		Type of student work evaluation	Point	ts Percentage						
Obligations	Pre-exar	nination obligations								
forms of		attendance at lecture	es 5	5%						
knowledge		lab. exercises/practical wo	rk 15	15%						
assessment and		midterm exam	il 25	25%						
grading		midterm exam	II 25	25%						
0	Final exa	am	30	30%						
	TOTAL		100	100%						
Web page										
Certification										
date										

A CONTRACTOR OF THE OWNER		UNIVER	RSITY OF EA	AST SAR	AJEVO		<		
		Faculty	of Electric		Eering		\geq	\mathbf{G}	
	St		am: Electric	C Power	Engineering	, dy (<	$\partial \mathbf{n} \nabla$	
Full name of the	FI	rst study cy	/cie	FILS	t year of sti	udy		× [L] ×	
course			FUNDAMENTALS OF COMPUTER TECHNIQUE						
Subject	code	Su	Subject status Semest			ter	ECTS		
EE-08-1-0	004-1	C	compulsory I					5,5	
Teacher(s)	PhD Nikola D	Davidović, A	/idović, Assistant professor						
Associate(s)	Marko Malo	vić, Teachir	ng assistan	t		1/2 1			
Number of lesso	ons/teaching w	orkload	Individ	ual stud	ent workloa	ad (in nou V	irs :	Student workload	
L	AE	LE	L		AE	, LE		So	
2	0	2	52.5		0	52.5		1.75	
total teaching we	orkload (in hou	urs, per ser	nester)	tota	al student w	vorkload (i	in hours	, per semester)	
W= 2*15	+ 0*15 + 2*15	=60 hours		T=	2*15*So +	0*15*So +	+ 2*15*5	So = 105 hours	
Total worklo	ad of the subje	ect (teachir	ng + studen	t): In _{opt} =	W + T =60	+ 105 = 16	65 hours	s per semester	
Learning outcomes	 To understand the basic mathematical and electronic foundations of computer well as to design switching networks with basic logic circuits. To understand the architecture of the processor and the working principle of memory and peripheral units. To understand the functions of system software, especially operating systems To understand the concepts of algorithm and program, as well as the principle algorithm application in computer programs. 						s of computers, as principle of ting systems. the principle of		
Prerequisites	No requirem	ents.							
Teaching	lectures, lab	oratory exe	ercises						
Subject content per weeks	 Composition, general and hierarchical model of a computer system. Mathematical basics of computers, conversion of numbers from decimal to other number systems and vice versa. Arithmetic operations in the binary system, signed numbers, 1st and 2nd complement. Floating point numbers, BCD numbers, ASCII code. Electronic basics of computers, Boolean algebra, logical operations AND, OR and NOT. Logic circuits, logic functions, minimization. Combination networks, adder. Sequential networks, RS flip-flop. Registers, buses. Memories, hierarchy of memory devices, 2D and 3D memories, RAM, ROM and stack memories. Computer architecture, processor, data transfer. Phases in instruction execution, obtaining and executing Load, Add and Store commands. Types of instructions. Addressing modes. Data structures. Scalar data, arrays, data structures, lists, stores and queues. Peripheral devices. Input and output devices. Mass storage, tapes, disks. Operating systems, division and composition, processor management, memory, file 								
	System.		Compulso	orv litera	ture				
			compuise	ny mero	ule				

Author(s)		Publication title, publisher	Year	Pages (from-to)						
Obradović, S.		Fundamentals of Computer Engineering, VISER	2014.							
		Additional literature								
Author(s)		Publication title, publisher	Year	Pages (from-to)						
Stallings, W.		Computer organization and architecture	2013.							
Andrew Tanenbau	ım	Structured Computer Organization, Pearson	2013.							
Đorđević, Radivoje	ević,	Fundamentals of Computer Engineering,	2017							
Punt, Stanisavljevi	ić	Akademska misao	2017.							
		Type of student work evaluation	Points	Percentage						
	Pre-exar	Pre-examination obligations								
Obligations		attendance at lectures/exercise	es 5	5 %						
forme of		homewor	⁻ k 5	5 %						
knowledge		lab. exercises/practical wo	⁻ k 10	10%						
assessment and		midterm exam	1 25	25 %						
grading		midterm exam	II 25	25 %						
Broomb										
		final exam (written/ora	l) 30	30%						
	TOTAL		100	100 %						
Web page			-	·						
Certification										
date										

ALCONT OF MICTOR				UNIVER Faculty	SITY OF E	AST SA	RAJEVO ineering			
A			Stu	udv progra	m · Electri	ic Powe	r Engineerin	a		
			Eire	st study ov			rst voor of s	y tudy		2 + 0
Eull name of	the		FII:	si siuuy cy	cie	Г	ist year of s	luuy		*
	uie			INTRODUCTION TO MANAGEMENT						
course										
Subject code				Subject status			Seme	Semester		ECTS
EE-0	8-1-00	5-1		compulsory I				2		
Teacher(s)		Nenad N	1arko	vić, asst. p	orof.				•	
Associate(s)		-								
Number of	lesson	s/teachiı	ng we	orkload	Individ	dual stu	ident workl	oad (in h	ours	Student workload
	(we	eekly)				pe	er a semeste	r)		coefficient S _o
L		AE		LE	L		AE	L	E	So
2		0		0	30		0	()	1
total teachi	ng wor	kload (in	hou	rs, per ser	nester)	te	otal student	workload	d (in ho	urs, per semester)
	V	/= 2*15=	30 h					T= 2*15	5*S₀= 3	0 h
Total w	vorkloa	d of the	subje	ect (teachi	ng + stude	ent): In	opt = W + T = 3	30 + 30 =	60 hou	ırs per semester
		After suc	cessi	ful comple	tion of th	e cours	e, student w	ill be abl	e to:	
		1. criti	cally	understar	nd key ma	nagem	ent theories	, concept	s and p	orinciples,
		2. app	licati	on of the	managem	ent fur	ction to solv	e proble	ms,	
		identi	fy the	e manager	's positior	in the	organizatio	٦,		
		3. understand the historical influence of management on today's management process,								
Learning		4. understand the internal and external environment of the organization and its culture								
outcomes		Culture,								
		5. Identify the steps in the decision-making process,								
		 b. understand the impact of organizational strategy and organizational structure, 7. understand the importance of leadership, teamwork and human resource. 								
		7. understand the importance of leadership, teamwork and human resource management								
		Indulage ITERIL, 8 anticipates the problems they will face during career development as managers or								
		team members.								
Prereguisites	5	-								
Teaching										
methods		Presenta	tions	s, Case stu	dies					
		1. Mana	geme	ent						
		2. Histor	y of r	nanageme	ent					
		3. Organ	izatio	onal enviro	nment ar	nd cultu	ire			
		4. Planni	ng ar	nd decisio	n making					
		5. Organ	izatio	onal strate	gy					
Subject conte	ent	6. Organ	izatic	onal struct	ure and d	esign				
per weeks		7. Huma	n res	ource mar	nagement					
		8. Team	mana	agement						
		9. COLLC	QUI	JM						
		10. Lead	ershi	р						
		11. Comi	muni	cation ma	nagement	t				
		12. Chan	ge ar	nd innovat	ion mana	gemen	t			

	13. Cont	rol								
	14. Moti	vating employees								
	15. Man	aging operations								
Compulsory literature										
Author(s)		Publication title, publisher	Year	ear Pages (from-to)						
Stephen P. Robbins, Mary		Management	2012							
Coulter		Prentice Hall, Eleventh edition	2012		-					
	Additional literature									
Author(s)		Publication title, publisher	Year F		Pages (from-to)					
		Management – An Introduction	2011		_					
Daviu Bouuy		Prentice Hall, Fifth Edition	2011							
		Type of student work evaluation	Points		Percentage					
Obligations,	Pre-exar	nination obligations								
forms of		Activity and attendance at lecture	es 10		10%					
knowledge		Midterm exar	n 39		39%					
assessment and										
grading		final exam (written/ora) 51		51%					
	TOTAL		100		100%					
Web page										
Certification										
date										

	-18			VERSITY OF ulty of Elect	EAST rical E	SARAJEVO			Son Co		
Since			Study pro	ogram: Elec	tric Po	wer Engineerin	ng				
27 713 4.5V 30	II.	F	irst study c	ycle		First year of st	tudy				
Full name of the	ne course				E		UAGE 1		¥ 74		
Subj	ect code		Sub	oject status		Semes	ster		ECTS		
EE-08	3-1-007-1		СО	mpulsory		1		2			
Teacher(s)	Dark	o Kovačev	vić, PhD, as	sociate pro	tessor						
Associate(s)	occonc/tor	chingwa	rkload	Individual	studo	nt workload (i	in hours no		Student workload		
Number of I	(weekly)	semester)			in nours pe	:1 a	coefficient So			
L	AE	/	LE	L		AE	LE		So		
1	1		-	15		15	-		1		
total teachi	ng workloa	d (in hou	rs, per sem	ester)		total student	workload	(in h	ours, per semester)		
	W=15	+ 15 = 30					T=15 +	15 =	30		
	Total wor	kload of t	he subject	(teaching +	stude	nt): In _{opt} = W +	T = 60 hou	rs pe	er semester		
	1. ba	sic knowl	edge of mo	orphology a	nd syn	itax of the Engl	lish langua	ge;	* • • • • •		
	2. fui	ndamenta	als of conve	ersation rela	ated to	o general topics	s and gene	ral p	rofessional topics in		
Learning	elect	rical engli	neering;	tranclata an	d doce	ariba yarbally a	nd in writi	og to	wt units writton in English		
outcomes	and r	alated to	general to	nics and ge	noral r	professional to	nics in elec	trica	l engineering		
	4. ab	ility to cre	eate shorte	er text units	relate	d to general to	pics in elect	ener	al professional topics in		
	electrical engineering										
Prerequisites	Ther	There are no special requirements for taking courses and taking exams.									
Teaching	meth	method of demonstration, method of practical work, method of written work, method of reading									
methods	and v	vorking o	n the text,	method of	conve	rsation, metho	d of oral p	reser	ntation		
	1. A I Simp	Beginner′∶ le Tense.	s guide to I Present Co	Electrical En ontinuous Te	igineer ense.	ring. Basic wo	ord order ir	n Eng	lish sentences (1). Present		
	2. Ele	2. Electrical Laws and Theorems. Basic word order in English sentences (2). Past Simple Tense.									
	Past	Past Continuous Tense.									
	3. Br	3. Branches of Electrical Engineering. Present Perfect Tense. Past Perfect Tense.									
	4. Th	4. The History of the Smartphone. Expressing Future.									
	5. Th	ne Importance of Computer Technology in Your Engineering Career Nouns.									
Subject conten	6. A I	Brief Histo	of History of Automation Pronouns.								
subject conter	IL 7. AI	History of Automation: The Rise of Robots and Al. Articles.									
per weeks	9 Th	8. Computers - The Beginnings. Adjectives and Adverbs.									
	10. V	10. What is Digital Technology? Different Types of Microcomputers. Differences between PLCs and									
	Micro	ocontrolle	ers. Conju	unctions.			·				
	11. A	11. Augmented Reality.									
	12. A	ctive and	Passive Vo	pice.							
	13. A	ugmente	d Intelliger	nce.							
	14. D	Irect and	Indirect Sp		oct Inf	luontial Tranda					
	15. E		Ingineering		sorv lit).				
Auth	or(s)		Pu	blication tit	le. pul	blisher	Yea	ar	Pages (from-to)		
M. Swan, C. W	alker	AG	ood Gramr	nar Book, O	xford	University Pres	s 1997	,			
		Eng	lish Langua	age for Elect	rical E	ngineers 1:					
D Kovačević		Gen	eral Conce	epts Facult	y of El	lectrical	2021				
D. Rovacevic		Eng	ineering of	the Univer	sity of	East Sarajevo;	2021	-			
		Aca	demic Min	d							
	or(c)		Der	Additio	nal lite	erature	V-		Dages (from to)		
Autho	01(5)		PU	blication fit	ie, pui	uisner	rea	1	Pages (from-to)		
L											

	Type of student work evaluation	Points	Percentage							
	Pre-examination obligations									
	attendance at lectures/exercises	15	15 %							
obligations,	positively evaluated seminar paper	5	5 %							
forms of	activity in lectures/exercises	10	10 %							
assossment and	first test	20	20 %							
assessment and	second test	20	20%							
grauing	Final examination									
	final examination (oral)	30	30 %							
	TOTAL	100	100 %							
Certification date										

			UNIVER Faculty	SITY OF EAS	ST SAR	AJEVO eering			Suc .		
- YNC	687 + 0	Sti	idv progra	m· Electric	Power	Engineering	1				
		Fire	st study cy	/cle	Firs	t vear of stu	Jdv		$\Im \cap \Diamond$		
Full name of th	ne			0.0			,				
course					MA	THEMATIC	S 2				
Subje		Su	bject status		Semes	ter	ECTS				
EE-08-	1-008-2		C	ompulsory		II			7,0		
Teacher(s)	Vid	an Goveda	arica, PhD,	full profess	or						
Associate(s)	Vid	an Goveda	arica, PhD,	full profess	or; Nat	aša Pavlovi	ć Komaz	ec, PhD), assistant professor		
Number of les	ssons/te	eaching wo	orkload	Individu	al stud	ent worklo	ad (in ho	ours	Student workload		
	(week	ly)			per	a semester)		coefficient S _o		
L	AE		LE	L		AE	LI	Ξ	So		
3	3		0	60		60	C)	1.33		
total teaching	g worklo	ad (in hou	rs, per ser	nester)	tot	al student w	vorkload	l (in hou	urs, per semester)		
W= 3	3*15 + 3	3*15 + 0*1	.5 =90 h			$\Gamma = = 3*15*S$	0 + 3*15	$5^*S_0 + 0$	*15*S _o = 120 h		
l otal work	kload of	the subject	t (teachin	g + student)	: In _{opt} =	W + I = 90	+ 120 =	210 ho	urs per semester		
	ВУ	build their thought structures, i.e. mathematical thinking, which is the carrier of every									
		oulia their	thought st	ructures, i.e	e. matn of ongi	ematical th	inking, v stions	vnich is	the carrier of every		
Learning		master the	integrals	of functions	of one	variable an	d their	nnlicat	ions		
outcomes	2.1 3 r	naster the	differenti	al calculus o	of funct	ions of seve	aral varia	applicat	.10115		
outcomes	4 r	naster cur	vilinear m	ultiple and	surface	integrals a	nd their	annlica	ations		
	5. r	naster the	methods	for solving o	ordinar	v differentia	al equati	ons			
	6. ı	uses acquir	ses acquired knowledge in professional subjects.								
Prerequisites	The	ere are no	are no special requirements for taking courses and taking exams.								
Teaching	The	e teaching	eaching process is realized mainly through a frontal form of work - lectures and an								
methods	inte	eractive fo	rm of wor	k - auditory	exercis	es.					
	1. 1	he proble	m of calcu	lating the ar	rea and	l the definit	ion of th	ne defin	ite integral.		
	Pro	Properties of integrable functions.									
	2. F	Primitive fu	unction an	d indefinite	integra	al. The conn	ection b	etweer	n the definite and the		
	ind	efinite inte	egral. New	ton-Leibnitz	formu	ıla.					
	3. N	3. Methods of integration. Improper integrals.									
	4.1	ntegration	of rationa	al, irrational	and tri	gonometric	functio	ns. Inte	grals that are not		
	ele	mentary fu	unctions. A	pplications	of the	definite inte	egral.				
Subject conten	1t 5. N	Metric spa	ces. Functi	ons of multi	iple vai	riables. Con	vergenc	e and c	ontinuity.		
per weeks	6. L	Differentia	bility of fu	nctions of se	everal	/ariables. N	ecessary	and su	ifficient conditions of		
		erentiabili	ty. Differe	ntials of hig	ner ord	er and Tay	lor's fori	nula.	nation of a local		
	7. C	rome and	the necess	Jacobian de	ons for	its existenc					
		Sufficient c	onditions	for the evict		f a local evt	romo S	ulvosto	r's criterion		
	Cor	nditional e	xtremes		.ence u		. erne. J	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,			
	9 (Curvilinear	integrals I	ov coordinat	tes. Cu	rvilinear arc	integra	ls.			
	10.	The conce	ept of mult	iple integra	ls. Dou	ble integral	s. Triple	integra	lls.		
	11.	Change of	variables	in multiple	integra	lls. Green-R	iemann	theore	m.		

	12. Surfa	ace integrals by coordinates. Surface integrals per s	urface are	ea. Sto	kes theorem					
	and Ostr	ogradsky.								
	13. Scala	r and vector field. Divergence and rotor. Classification	ion of ve	ctor fie	elds.					
	14. Ordii	nary differential equations. Differential equations of	of the first	order						
	15. Linea	ar differential equations of higher order. Differentia	al equatio	ns wit	h constant					
	coefficie	nts. Euler's equation.								
Compulsory literature										
Author(s)		Publication title, publisher	Year	Pa	iges (from-to)					
R Courant		Differential and integral calculus, Vol. I, Ishi	2010		_					
R. Courant		Press	2010							
V 7		Multi-variable calculus – A first step, De	2020							
1. 200		Gruyter	2020							
Additional literature										
Author(s)		Publication title, publisher	Year	Pa	iges (from-to)					
Wai Chau Xia		Differential equations for engineers,	2010							
		Cambridge University Press	2010		-					
A K Sharma		Text book of multiple integrals, Discovery	2005							
A. K. Sharma		Publishing House	2005							
		Type of student work evaluation	Points	;	Percentage					
Obligations	Pre-exar	nination obligations								
forms of		Activity and attendance at lecture	s 10		10%					
knowledge		midterm exam	I 30		30%					
assessment and		midterm exam	I 30		30%					
assessment and			·							
graung		final exam (written/oral) 30		30%					
	TOTAL		100		100%					
Web page										
Certification										
date										

A STORAGE			SITY OF E	AST SAR	AJEVO				
YNC		Study progra	m· Electric	c Power	Engineering				
		First study cv	cle	Firs	t vear of study	v	$\Im \cap \Diamond$		
Full name of the						,			
course			INTRODUCTION TO PROGRAMMING						
Subject	code	Sul	bject statu	IS	Semeste	r	ECTS		
EE-08-1-0)09-2	C	ompulsorv				5.5		
Teacher(s)	eacher(s) Snježana Mi			ović, PhD, assistant professor					
Associate(s)	Zorana Šta	aka, MSc, seni	ior teachin	g assista	nt; Marko Ma	lović, BSc,	teaching assistant		
Number of lesso	ns/teaching	g workload	Individ	ual stud	(in hours	Student workload			
(\	veekly)			per	a semester)		coefficient S _o		
L	AE	LE	L		AE	LE	So		
2	1	2	36		18	36	1.2		
total teaching we	orkload (in h	nours, per ser	nester)	tota	al student woi	rkload (in h	ours, per semester)		
W= 2*1	15 + 1*15 + 2	2*15 = 75 h			$T = 2 \times 15 \times S_0$	+ 1*15*S ₀ +	+ 2*15*S₀ = 90 h		
Total workload of the subject (teaching + student): In _{opt} = W + T = 75 + 90 = 165 hours per semester						ours per semester			
	By master	ing this subje	ct, the stud	ients wi	ll: colving of prov	romming	archloms of low or		
	1. De capa	omplexity	nuent algo	onunnic	solving of pro	gramming p	or oblems of low of		
Learning		to work with	software	lovelonn	nent tools in t	he C progra	amming language		
outcomes	3. be able	to implement	t algorithm	nically so	lved problems	s in the C p	rogramming language		
	4. be able to use function modules of low or medium complexity in the C programming								
	language.					1/	0		
	There are	ere are no requirements for registering and listening to the course. Required prior							
Prerequisites	knowledge	e from the su	bject: Func	lamenta	ls of compute	r technique	2.		
Teaching	Lectures, a	auditory exer	cises, laboi	ratory ex	ercises, know	ledge verif	cation tests,		
methods	homework	ks.							
	1. Introduc	ction to gene	ral prograr	nming fu	indamentals.	Algorithms			
	2. C program structure. Basic data types in the C programming language. Variables, declaration, format specifications								
	3. Data inc	out and output	ut (printf. s	canf).					
	4. Program development process: editing, compiling, linking, testing and debugging.								
	5. Preproc	essor directiv	es. Comm	ents. Cas	sting.				
	6. Operato	ors in C.							
Subject content	7. Control	flow: sequen	ce.						
per weeks	8. Control	flow: selection	on.						
	9. Control	flow: iteratio	n (loops).						
	10. Contro	ol flow: nested	d loops.						
	11. Arrays	– General co	ncepts.						
	12. 1D arra	ays of numbe	rs.						
	13. 2D arra	ays of numbe	15. ving with 1	ר אמר ח) arrays				
	15 Strings		ion String	s functio	ns				
	13. 30 mgs		Compulse	orv litera	iture				
Author(s)		Put	olication ti	tle, publ	isher	Year	Pages (from-to)		
							0		

K. N. King		C Programming: A Modern Approach, W. W.	2008		-
		Norton & Company, 2 nd Edition			
		Additional literature			
Author(s)	1	Publication title, publisher	Year	Pa	ges (from-to)
Kernighan, B.W., Ritchie,		Programming language C, Prentice Hall,	1000		
D.M.		Second edition	1988		-
		Type of student work evaluation	Point	s	Percentage
	Pre-exan	nination obligations			•
		attendance at lectures/exercise	s 5		5%
		defense of laboratory exercise	s 15		15%
obligations,		knowledge verification test	s 10		10%
torms of		class activities (optiona) 4		4%
assessment and		homework assignments (optiona	l) 4		4%
grading		midterm exam I (optiona) 25		25%
Broomb		midterm exam II (optiona) 45		45%
		final exam (written/ora) 70		70%
	TOTAL		108		108%
Web page			•		
Certification					
date					

A CONTRACTOR OF CONTRACTOR		UNIVE							
YNC S		Study program: Electric Power Engineering						$\Box \Box \varphi \Box \varphi \Box \varphi$	
		Study program: Electric Power Engineering						2 + 0	
Full name of	the								
course		G – 2							
Subject o	ode	Su	Subject status			Semester		ECTS	
EE-08-1-0	10-2	C	Compulsory II				7.0		
Teacher(s)	PhD Srđa	in Lale, assista	le, assistant professor						
Associate(s)	MA Bojar	na Colić, BA Zo	rana Mandić			1/* 1			
Number of lesso	ns/teachir vookly)	ng workload	Individual	stud	ent workloa	ad (in ho V	iours Student workload		
(,		IF	1	per		,	F	So	
3	2	1	60		40	2	0	1.33	
total teaching wo	orkload (in	hours, per ser	nester)	tot	al student w	/orkload	l (in hou	urs, per semester)	
W= 3*15	+ 2*15 + 1	*15 =90 hours	,	T=	3*15*So +	2*15*Sc	、 + 1*1!	5*So = 120 hours	
Total workload o	of the subj	ect (teaching +	- student): Ino	pt= V	V+T=Uopt=	90 + 12	0 = 210	hours per semester	
Learning outcomes	 Explain the basic concepts and laws of electromagnetism and time-varying currents, Calculates magnetic force, induction, flux, magnetic field and magnetic energy, Determine the expression for inductance and intermediate inductance of different contours, Apply Faraday's law and Kirchhoff's law to the calculation of magnetic circuits, Distinguish general equations of electrical networks with time-varying currents and simple periodic currents, Apply the phasor and complex calculus for solving simple periodic current circuits, Explain the basic concepts of symmetrical three-phase systems and the ways of forming a rotating magnetic field, Use the knowledge of this subject in the following subjects of electrical engineering cturdies. 							me-varying currents, agnetic energy, uctance of different gnetic circuits, varying currents and dic current circuits, and the ways of ectrical engineering	
Prerequisites	There are	e no requireme	ents for regist	ering	and listenin	ng to the	subjec	t.	
reaching	Lectures	(with with the	use of moder	n auc	alovisual eq	uipment ⁄	t), audit	tory exercises and	
Subject content per weeks	 Elec law. Mag mov Mag Mov Amp Amp Amp Galc field Indu effe equation Energian 	 Electromagnetic force. Magnetic field and vector of magnetic induction. Bio-Savar's law. Magnetic induction vector flux and the law of conservation of magnetic flux. The movement of the charged particle in the electr. and magn. field. Hall effect. Ampere's law. Basic concepts about the magnetic properties of matter. Generalized Ampere's law. Boundary conditions. Kirchhoff's laws for magnetic circuits. Calculation methods. Permanent magnet magnetic circuit. Dielectrics in the electric field. Generalized Gauss's Law. Boundary conditions. Induced electric field. Faraday's law electromag. induction. Eddy currents, surface effect and proximity effect. Inductances. Measurement of magnetic induction. Flow equation. Energy and forces in the magnetic field. General method of calculating magnetic forcer 							

	8. General equations of electricity. network with time-varying currents. Generalized									
	 9. Periodic and simple periodic quantities. Mean and effective value. Basic passive clamants in the periodic regime. Petating vectors 									
	elements in the periodic regime. Rotating vectors. 10. Phasor diagrams. Resonance and anti-resonance. Active and reactive power. Power									
	tactor.									
	 Nichron s laws in complex form, impedance and admittance, Equivalences. Methods and theorems in complex form. Simply resonant and anti-resonant circuit. 									
	Transformers.									
	13. Polyphase and three-phase systems, generators and receivers.									
	14. Two	p-phase and three-phase rotating mag. field. Basi	c concepts	of synchronous and						
	asy	nchronous motor.								
	15. Fre	quency dependencies. Resonance and anti-res	onance p	henomena in more						
	con	plex networks. R, L and C at high frequencies.								
Author(s)		Publication title publisher	Vear	Pages (from-to)						
Addition(3)		Introduction to electrodynamics 3 rd edition	Tear							
David J. Griffiths		Prentice Hall. Upper Saddle River. New Jersey	1999							
		07458. ISBN 0-13-805326-X								
Viktor Hacker, Chr	istof	Electrical Engineering: Fundamentals, De	2020							
Sumereder	2020									
		Additional literature								
Author(s)		Publication title, publisher	Year	Pages (from-to)						
Charles A. Gross, T	haddeus	Fundamentals of Electrical Engineering 1 st	2012							
A. Roppel		Edition, CRC Press	-							
		Fundamentals of Electrical Engineering (The								
Leonard S. Bobrov	v	Oxford Series in Electrical and Computer	1996							
		Press								
		Type of student work evaluation	Points	Percentage						
	Pre-examination obligations									
Obligations,		attendance at lecture	s 5	5%						
forms of		lab. exercises/practical wor	k 15	15%						
knowledge	I 25	25%								
grading		midterm exam	II 25	25%						
Brading	Final exa	m	30	30%						
	TOTAL		100	100%						
Web page										
Certification										

			UNIVERSITY OF EAST SARAJEVO							
		Faculty of Electrical Engineering								
		Study program: Electric Power Engineering								
			First study cy	/cle	Firs	styear of stud	dy			
Full name of the course			PHYSICAL FUNDAMENTALS OF ELECTRONICS							
		I								
Subject code			Su	Subject status			Semester		ECTS	
EE-08-1-011-2			C	compulsory II					5,5	
Teacher(s)	Dr	Zoran	Ljuboje, full p	Ljuboje, full professor						
Associate(s)	Ve	sna M	iletic, msc							
Number of le	essons/t	eachir	ng workload	Individu	ual stud	ent workloa	d (in ho	urs	Student workload	
	(week	iy)	15	per a semester)						
L 2	2 AE			L 525		AE 52.5			3 0	
2 total teachin	z gworklo	ad (in	hours nor sor	JZ.J	tota	JZ.J	orkload	(in hou	1.75	
W=	=2*15 + 2)*15 +	0*15 = 60 h	nesterj	1010	T= 2*15*S _o +	+ 2*15*9	(in nou S _o + 0*1	$15* S_0 = 105 h$	
Total	workloa	d of th	he subject (tea	ching + stu	dent): Ir	$h_{opt} = 60 + 10^{10}$	5 = 165	hours r	per semester	
	1.1	ntrod	ucing students	to the basi	cs of at	omic and qua	antum p	hysics	from the aspect of	
Loorning	ele	electronics development								
Learning	2.1	ntrod	duction to the electronic theory of metals and the zone theory of solids.							
3. Getting to know the properties of semiconductors, contact phenomena and							nena and			
	opt	toelec	tronics.			<u> </u>				
Prerequisites	Ine	ere are	e no requireme	ents for liste	ening ar	id passing th	e course	e.		
methods	Leo	Lectures, auditory exercises, seminar papers.								
	1.	1. Introduction. Introduction to atomic physics. Movement of electrons in electric and magnetic fields								
n n		2. Milliken's experiment. Absolute blackbody radiation.								
	3.1	3. Photoelectric effect. X-ray radiation.								
	4.1	4. Model of the atom. Bohr's model of the atom.								
	5.1	5. Introduction to quantum mechanics. Wave properties of a particle. The Schrödinger								
	equ	equation. 6. Tunnel effect. Heisenberg's uncertainty principle								
Subject conte	nt 7. (7. Quantum mechanical model of the atom.								
per weeks	8.6	8. Electronic theory of metals. Fermi-Dirac distribution function.								
	9. [9. Distribution of electrons by momentum and energy. Electrical conductivity of metals.								
	10.	10. Zone theory of solids. Strong link approximation. Weak link approximation								
	11.	12. Semiconductors. Specific conductivity of own and mixed semiconductors.								
	13.	13. Current density equation for semiconductors. Hall effect.								
	14.	14. Contact phenomena. Metal-semiconductor contact. Busbar contact, p-n contact.								
	15.	Intro	auction to opt	oelectronics	s. Photo	resistors. Ph	otodiod	es. LED	Js. Lasers.	
- الحد . ۵	or(c)		Deal	compuiso	lo nuel	ichor		1005	Pages (from to)	
Zoran Liubaia	5) (5)		Fizički osnovi	snovi elektronike, ETF, Univerzitet u				016	2 1/E	
			Istočnom Sar	ajevu			[_]	.010.	5145.	
G. I. Epifanov			Fizika čvrstog	ika čvrstog stanja, prevod ETF Sarajevo 1969. 838.,					838., 147298.	

Ž. Pržulj, Z. Ljuboje, Z. lvić		Zbirka riješenih zadataka iz fizike čvrstog stanja, ETF, Univerzitet u Istočnom Sarajevu	2016.	729., 121197.						
Author(s)		Publication title, publisher	Year		Pages (from-to)					
		Type of student work evaluation	Points		Percentage					
	Pre-exar	nination obligations								
Obligations,		attendance at lectures/exercise	s 5		5%					
forms of	midterm exam I 20 2									
knowledge	midterm exam II 20 2									
assessment and		test and seminar paper	s 15	5	15%					
grading	grading									
		final exam (written/ora) 40)	40%					
	TOTAL	10	0	100%						
Web page										
Certification										
date										

			UNIVERSITY OF EAST SARAJEVO Faculty of Electrical Engineering								
			Study program: Electric Power Engineering								
			Firs	st study cv	cle	F	rst vear of st	, udv			
Full name of	the							,			
course						APPL	CATION SOF	TWARE			
Sub	ode		Subject status			Semes	Semester		ECTS		
EE-08-1-012-2				compulsory						3,0	
Teacher(s)		dr Marija	ana Ć	osović, as	sistant pro	ofessor					
Associate(s)		dr Nikola	ı Dav	idović, ass	istant pro	fessor				-	
Number of	lesson	s/teachi	ng we	orkload	Indivic	lual stu	ident worklo	ad (in ho	ours Student workload		
	(w	eekly)	[pe	er a semester	a semester)		coefficient S₀	
L					L			L	E	S₀	
U tatal tasahi				2	U O			6	U I (in her	2	
total teachi	ng woi – ೧*1⊑	rkioad (in 5 ± 0*15 -	⊓ou ⊾ ∩*1	rs, per sen 5 –30 h	nester)	t	tal student v ד– 0*15*9	VOTKIOAC + 0*15	(10 not)	*15*S ₂ – 60 h	
Total w	orkloa	ad of the	subie	ect (teachi	ng + stude	nt): In	m = W + T = 3	$\frac{0}{0} + 60 = 0$	90 hou	rs per semester	
lotaria		1. Το ι	indei	rstand the	way a cor	nputer	works, as we	ell as to k	now th	ne basic parts and	
		programs necessary for its functioning.									
		2. To create and edit text documents using the tools offered by the word processing									
Looming		program.									
outcomes		3. To use and edit tabular documents in work.									
outcomes		4. To use various calculation operations by entering mathematical and logical formulas									
		offered by the program for processing tabular calculations.									
		5. To create and edit a presentation using the tools offered by the program for creating									
		preser	ntatio	ons.							
Prerequisites	5	There ar	e no	requireme	ents for re	gisterir	ig and listenir	ng to the	course	2.	
methods	Laborato	ry ex	ercises								
		1. Word processors. Working environment: menu, submenus.									
		2. Saving and exiting the program. Opening a saved document.									
		3. Text marking (copying, moving, deleting, clipboard - concept).									
		4. Paragraph (meaning: paragraph mark, procedures: insert, split, join). Paragraph editing									
		5. Programs for working with tables and spreadsheet calculations (concept). Starting up.									
		 b. working environment. workbook, worksheet (comparison Word: document, page). 7. Cell. data ontry, movement. Editing the contents of a cell. 									
Subject contr	ont	8 Insertion deletion: rows and columns: cell contents. Cell formatting									
per weeks		9. Changing column width and row height. Work with worksheets									
		10. Calculation using formulas. Copying formulas. absolute and relative addressing									
		Functions concept. Using the Help and Wizard.									
		11. Programs for creating presentations (concept). Starting up. Work environment. Help.									
		Opening	, reco	ording, clo	sing, findi	ng doc	uments.			-	
		12. Work	king v	vith prese	ntation pa	iges in	different viev	vs.			
		13. Inser	ting,	deleting, a	and copyir	ng slide	s. Text input.	Change	the ap	pearance of the text.	
		14. Entry of images and other objects. Formatting objects. Adding a diagram.									
	15. Inter	15. Internet. Client-server architecture. Programs for working with electronic mail.									
---------------------------------------	-----------	--	--------	----	---------------	--	--	--	--	--	
Compulsory literature											
Author(s)		Publication title, publisher	Year	Pa	ges (from-to)						
L Lambert C Erve		Microsoft Office Step by Step (Office 2021 and	2022								
· · · · · · · · · · · · · · · · · · ·		Microsoft 365)	-								
		Additional literature		-							
Author(s)		Publication title, publisher	Year	Pa	ges (from-to)						
		Type of student work evaluation	Points		Percentage						
	Pre-exar	nination obligations									
Obligations,		attendance at lectures/exercises			5 %						
forms of		homework	< 5		5 %						
knowledge		midterm exams	60		60 %						
assessment and											
grading		final exam (written/oral) 30		30 %						
	TOTAL		100		100 %						
Web page											
Certification											
date											

			UNIVERSITY OF EAST SARAJEVO Faculty of Electrical Engineering							yük_
			Study pro	o gram: Ele	ectric Po	ower Engineerir	ng			⊆u¢{
10 10 10 10 10 10 10 10 10 10 10 10 10 1		Fi	rst study c	ycle	1	First year of s	tudy		le contra de la co	
Full name of the o	ourse		•		1	ENGLISH LANG	UAGE 2			
Subject	code		Sub	oject statu	s	Semes	ster			ECTS
EE-08-1-	013-2		со	mpulsory		II				2
Teacher(s)	Darko K	ovačev	vić, PhD, as	sociate pr	ofessor	r				
Associate(s)	ons/teach	ing wo	rkload	Individu	al stude	ent workload (in hours n	or o	C+	dent workload
Number of less	weeklv)	ing wo	INIOAU	marviau		semester)	in nours p	cia		oefficient So
L	AE		LE	L		AE	LE			So
1	1	- 15 15 ·		-			1			
total teaching v	vorkload (i	in hour	rs, per sem	lester)		total student	: workload	(in h	ours, per	r semester)
	W=15 + 1	15 = 30		4. 1.			T=15 +	15 =	30	
10	tal worklo	ad of the	he subject	(teaching	+ stude	ent): In _{opt} = W +	I = 60 hot	irs pe	er semes	ter
	1. Dasic	KNOWIE	eage of mo	rminology	from d	ifferent areas of	lish langua	ge; ion :	and comr	nunication
	technol	ogies:		minology	nomu	incrent areas c				numeation
	3. funda	amenta	ls of conve	ersation re	elated to	o general topic	s and gene	ral p	rofessior	nal topics in
Learning	electrica	al engir	neering;			0	0			·
outcomes	4. ability	. ability to understand, translate and describe verbally and in writing text units written in English								
	and rela	and related to general topics and general professional topics in electrical engineering								
	5. ability	y to cre	eate shorte	er text uni	ts relate	ed to general to	opics and g	ener	al profes	sional topics in
Dronoguisitos	electrica	al engir	neering	iromonto	fortali		+ taking av			
Teaching	method	of den	pecial requences ponstration	n method	of nra	ctical work me	thod of w	ittor	work m	ethod of reading
methods	and wo	rking o	n the text.	method c	of conve	ersation, metho	d of oral r	rese	ntation	lethou of reduing
	1. How	compu	ters chang	ged the wo	orld. The	e effect of cybe	rbullying	n ch	ildren.	Modal verbs (1)
	2. What	2. What is a computer? Modal verbs (2)								
	3. Perip	3. Peripherals you can use with your computer. Modal verbs (3)								
	4. Inside	4. Inside a computer. Conditional sentences (type 0 and 1)								
	5. Comp	5. Computing and health. Conditional sentences (type 2)								
	7 The s	/hat is an operating system. Conditional sentences (type 3)								
Subject content	8. What	What is graphics software?								
per weeks	9. Multi	media.								
	10. Prog	10. Programming languages. Verbals: Participle								
	11. A da	in th	e life of a d	computer	operato	or/programmer	r Verbals	Ger	und	
	12. Com	puter	network ty	/pes. Vei	rbals: In	ifinitive	Complex		C	
	13. Com	iputer i	hetwork a	rcnitectur	e. Netw 2 Intorn	ork topology	Gerund a	na in	finitive	
	15. Ben	efits of	the Intern	net and so	cial med	dia.				
				Compu	Isory li	terature				
Author(s	;)		Pu	blication t	itle, pu	blisher	Ye	ar	Ра	ges (from-to)
M. Swan, C. Walke	er	A Go	ood Gramr	nar Book,	Oxford	University Pres	ss 199	7		
		Engl	lish Langua	age for Ele	ctrical E	Engineers 2: ICT	Г .,			
D. Kovačević Faculty of Electri				trical Engi	neering	g of the Univers	Sity 202	L		
		I UI E	ast sarajev	Δddi+i	ional lit	erature	1		I	
Author(s	;)		Pu	blication t	itle, pu	blisher	Ye	ar	Pa	ges (from-to)
	л Г-I-:	Prof	essional E	nglish in U	lse: ICT,	, Cambridge		7	1.07	
S. K, ESTERAS & E. I	vi. Fabre	Univ	versity Pre	SS			200	/	1-6/	
			Type of	student v	vork ev	aluation		P	oints	Percentage

	Pre-examination obligations		
Obligations,	attendance at lectures/exercises	15	15 %
forms of	positively evaluated seminar paper	5	5 %
knowledge	activity in lectures/exercises	10	10 %
assessment and	first test	20	20 %
grading	second test	20	20%
	Final examination		
	final examination (oral)	30	30 %
	TOTAL	100	100 %
Certification date			

SECOND YEAR

				SITY OF E	AST SAF	AJEVO			
y y h c	Jeny +	Stu		m: Electri	ic Power	Engineering			
)	Fire	st study cy	ini. Electri	Seco	ond year of s	tudv		2 + 0
Full name of th	he		st stady cy						
course					M		53		
Subje	ect code		Su	bject statı	us	Semes	ter		ECTS
EE-08	-1-014-3	b an Cavada		ompulsory	/				6,0
Associate(s)	Mil	ica Boškov	ić. MSc. se	nior teac	hing ass	stant			
Number of le	essons/te	eaching wo	orkload	Indivic	dual stud	lent workloa	ad (in ho	ours	Student workload
	(week	ly)			per	a semester)		coefficient S _o
L	AE		LE	L		AE	LE		So
3	2		0	63		42	0		1.4
total teaching W=	g worklo 3*15 + 2	ad (in hou 2*15 + 0*1	rs, per ser .5 =75 h	nester)	to	al student w: T= = 3*15*S	vorkload ₀ + 2*15	(in hoι *S₀ + 0	urs, per semester) *15*S₀ = 105 h
Total wor	kload of	the subject	ct (teachin	g + studer	nt): In _{opt}	= W + T = 75	+ 105 =	180 ho	urs per semester
Learning outcomes	By 1. r 2. s 3. r 4. r 5. u	 By mastering this subject, the students will be able to: 1. master the theory of degrees and Fourier series and their applications 2. solve systems of differential equations 3. master the theory of functions of a complex variable 4. master the Laplace transform and its applications 5. uso acquired knowledge in professional subjects 							ions
Prerequisites	The	ere are no	special rec	quirement	s for tak	ing courses	and taki	ng exar	ns.
Teaching	The	e teaching	process is	realized n	nainly th	rough a fror	ntal form	n of wo	rk - lectures and an
methods	int	eractive fo	rm of wor	k - auditoi	ry exerci	ses.			
Subject conter per weeks	1. f 2. l 3. c 4. s Par 5. f and 6. c 6. c 7. s 8. 1 Rie 9. c 10. 11. 12. res 13.	Juniform co Graded ser Systems of Systems of Sourier ser d Fourier to Gamma an Ferential ec Systems of The concep mann conc Conformal Elementa Cauchy's I Taylor's a idue and C The conce	series. onvergence ies. Differe orthogona uality. Trig ies. Conve ransform. d beta fun quation an ordinary o bot of a fund ditions. mapping. ry functior basic integ nd Lauren Cauchy's th ept of Lapl	e of series entiation a al function onometric rgence of actions. So ad Bessel f differentia ction of a Bilinear fu as of the C gral formu t's series. neorem on ace transf	of funct and powns. Gene c series. the Fou lving dif unctions l equation complex unction. Cauchy-G la. Appli Singular o residue form. Pro	ions. Uniforn er-order inte ralized Fouri rier series. D ferential equ s. ons. Systems variable. Co fursa integra cations of Ca ities of analy s. operties of th	m conve egration er series irichlet's aations u s of linea ntinuity I theore suchy's b rtical fun	rgence . Macla 5. Besse 5 theore as theore as theore and de m. basic inf actions.	of series. uren's series. el's inequality and em. Fourier integral rries. Bessel rential equations. erivative. Cauchy- tegral formula. The concept of

	14. Conv	14. Convolution of functions. Inverse Laplace transform and applications of Laplace									
	15. Conc of mathe	15. Concept of partial differential equation. Partial equations of the first order. Equations of mathematical physics.									
Compulsory literature											
Author(s)	Author(s) Publication title, publisher Year Pages (from-to										
R. Magnus		Fundamental mathematical analysis, Springer	2020	-							
R. H. Dyer, D. E. Ec	dmunds	From real to complex analysis, Springer	2014								
		Additional literature									
Author(s)	1	Publication title, publisher	Year	Pages (from-to)							
P. Dyke		An introduction to Laplace transforms and Fourier series, Springer	2014	-							
R. P. Agarwal, K. P Pinelas	erera, S.	An introduction to complex analysis, Springer	2011								
		Type of student work evaluation	Points	Percentage							
Obligations	Pre-examination obligations										
forms of		Activity and attendance at lecture	s 10	10%							
knowledge		midterm exam	I 30	30%							
assessment and		midterm exam	I 30	30%							
grading											
8		final exam (written/oral) 30	30%							
	TOTAL	TOTAL 100 100%									
Web page											
Certification											
date											

	12. Serie	12. Series, parallel and cascade connection of quadrupoles.									
	13. Elem	entary filter theory, filter cascade. General proced	ure for det	termining the							
	bandwid	bandwidth of symmetrical reactive filters.									
	14. K-filt	14. K-filters LPF, HPF, bandpass and non-bandpass filters. Disadvantages of K-filters.									
	15. Filter	15. Filters with derived cells. Eliminating the shortcomings of K-filters, filter chains.									
		Compulsory literature									
Author(s)	Year	Pages (from-to)									
R. C. Dorf, J. A. Svo	oboda	Introduction to Electric Circuits, 9 th Edition, Wiley	2013	-							
		Additional literature									
Author(s)		Publication title, publisher	Year	Pages (from-to)							
D. P. Kanoussis		Introduction to electric circuits theory, Vol. 1	2017								
		(The electrical engineering series)	2017	-							
C. D. Stoinmotz		Theory and calculation of electric circuits,	2010	_							
c. r . Steinmetz		Watchmaker Publishing	2010								
		Type of student work evaluation	Points	Percentage							
Obligations	Pre-exar	nination obligations									
forms of		attendance at lectures/exercise	s 10	10%							
knowledge		midterm exam	I 30	30%							
assessment and		midterm exam	I 30	30%							
grading											
Broomb		final exam (written/oral) 30	30%							
	TOTAL		100	100%							
Web page											
Certification											
date											

				UNIVER	SITY OF E	AST SA		EVO			
E XNC	Jesy +		Stu	dy progra	m· Electri		er En	aineerina	1		
10 15 15 10 10 10)		Firs	t study cy		Sei	cond	vear of s	tudy		$\Im \cap \Diamond$
Full name of the			1113	, stady cy					caay		
course					E	LECTR	ICAL	MEASUR	REMENT	S	
Subj	ect code	2		Su	bject statı	us		Semes	ter		ECTS
EE-08	3-1-016-	3		C	ompulsory	/					5,0
Teacher(s)	as	st. prof	fesso	r PhD Mic	odrag Forc	an					- / -
Associate(s)	as	st. prof	fesso	r PhD Mic	drag Forc	an, ass	st. M/	A Goran \	/uković,	asst. N	1A Nikola Kukrić
Number of le	essons/	eachin	ng wo	orkload	Individ	dual stu	uden	t worklo	ad (in h	ours	Student workload
	(wee	kly)				ре	er a s	semester)		coefficient S₀
L	AE			LE	L			AE	L	E	So
2	0			2	45			0	4	5	1.5
total teachin	g workl	Dad (in	hour	rs, per ser	nester)	t	otal s	student w		d (in hou	urs, per semester)
VV=	2*15 +	$0^{+}15 +$	· 2*1	5 =60 N	ag i studo	m+\. Im	= 1	$= 2^{*}15^{*}$	$S_0 + 0^* I$	$5^{+}S_{0} + 2$	$2^{+}15^{+}S_{0} = 90$ h
TOLAT WO		Basic k	nowl		ng + stude	and sta	opt-V	v + 1 = 00	otrical n		ng quantities
	2	2. Basic knowledge of measurement systems and statistical analysis of the measuring									
	re	results.									
Learning	3.	3. Basic knowledge of measuring instruments, signal generators, sensors and transducers.									
outcomes	4.	4. Basic knowledge of measuring methods, measurement-information technology, and									
	m	measurement information systems.									
	5.	Basic k	nowl	edge of n	neasuring	electri	cal ai	nd non-el	lectric q	uantitie	es.
Prerequisites	Th	ere is r	10 со	nditionali	ty related	to oth	er su	ıbjects (n	o prerec	quizites).
Teaching	Le	ctures(L), la	boratory	classes/ex	ercises	s (LE)).			
methods		· · · ·			•		. ,				
	1.	Introdu libratio	uctio	n. Metrol	ogy, meas	ureme	nt sta	andards,	measur	ement	traceability, and
		calibration hierarchy.									
	Re	2. International System of Quantities (ISQ) and International System of Units (SI). Realization of SL units for electrical quantities									
	3.	3. Measurement errors and statistical analysis of the measuring results. Measurement									
	ur	certain	nty.				,			U	
	4.	Measu	ringi	instrumer	nts. Instrui	ment ty	ypes	and perfe	ormance	e chara	cteristics.
	5.	Electro	onic ii	nstrumen	ts. Data ao	cquisiti	on ai	nd signal	process	ing syst	tems.
Subject conte	ontent 6. Recording, storage, and display devices. Oscilloscopes.										
per weeks	er weeks 7. Signal generators and analysers.										
	8.	Measu	reme	ent of resi	stance, in	ductan	ice, a	ind capac	itance.		
	9.	Mean	ureme	ent of po	s allu com	ipensa	Smo	art plactri	city met	orc	
	11	Instru	imen	t transfor	mers	incigy.	JIId		city met		
	12	. Senso	ors ar	nd transdu	ucers.						
	13	. Meas	urem	nent of no	n-electric	quanti	ities.	Measure	ement o	f tempe	erature.
	14	. Meas	urem	nent relial	oility and s	safety s	syste	ms.		1	
	15	. Meas	urem	nent-infor	mation te	chnolo	gy ar	nd measu	irement	inform	ation systems.

	Compulsory literature									
Author(s)		Publication title, publisher	Year	Pages (from-to)						
Prithwiraj Purkait, Budhaditya Biswas, Santanu Das, Chiranjib Koley		Electrical and Electronics Measurements and Instrumentation, McGraw Hill Education, New Delhi.	2013	-						
Alan S. Morris, Reza Langari.		Measurement and Instrumentation - Theory and Application, Academic Press - Elsevier.	2016							
V. Radenković, V. Milenković		Električna mjerenja, EF Niš, ETF I. Sarajevo	2004							
S. Damjanović, M. Banjanin, M. Ćosović, M. Forcan		Praktikum za laboratorijske vježbe iz električnih mjerenja, ETF I. Sarajevo	2016							
Author(s)		Publication title, publisher	Year	Pages (from-to)						
				-						
		Type of student work evaluation	Points	Percentage						
	Pre-exar	nination obligations								
		attendance at lectures/exercise	s 5	5%						
Obligations,		I partial exam (colloquia) 20	20%						
forms of		II partial exam (colloquia) 20	20%						
knowledge		laboratory exercise	s 15	15%						
assessment and		seminar pape	r 10	10%						
grading	Final exa	m	I							
		test pape	r 15	15%						
		oral examination	n 15	15%						
	TOTAL		100	100%						
Web page										
Certification										

			UNIVER Faculty	SITY OF EA	AST SAI al Engii	RAJEVO neering						
		Stuc	dy progra	ım: Electrio	c Powei	Engineering	7					
Fi			study cy	cle	Sec	ond year of s	study		ECTS 6 rs Student workload coefficient So 50 1			
Full name of the					E	LECTRONICS	1					
course												
Subject	code		Sul	bject statu	S	Semes	ter		ECTS			
EE-08-1-		C	ompulsory					6				
Teacher(s)	PhD Boži	idar Po	opović, As	ssociate Pr	ofesso							
Associate(s)	MSc Gor	an Vul	ković									
Number of less	ons/teachi	ng woi	rkload	Individ	ual stu	dent worklo	ad (in he	ours	Student workload			
(weekly)	-			pe	a semester)		coefficient S _o			
L	AE		LE	L		AE	L	E	So			
3	2		1	45		30	1	5	1			
total teaching w	vorkload (in		s, per sen	nester)	to	tal student v	vorkload	1 (in hou *C 1 1?	urs, per semester)			
	$13 + 2 \cdot 13 +$	1.15	= 90 h	a + studen	t). In	I=3 · 15 · 5	0 + 7.12	180 hc	$15 \cdot 5_0 = 90 \text{ II}$			
	By ma	stering		iect the s	tudent	will be able t	to:	100 110	fuis per semester			
Learning outcomes	1. Unc conclu 2. Unc conclu 3. Unc conclu 4. Unc conne	 Understanding and analyzing the operation of semiconductor diodes, making correct conclusions about polarization, ways and conditions of operation. Understanding and analysis of bipolar transistor operation, making correct conclusions about polarization, methods and conditions of operation. Understanding and analyzing the operation of unipolar transistors, making correct conclusions about polarization, methods and conditions of operation. Understanding and analyzing the operation of unipolar transistors, making correct conclusions about polarization, methods and conditions of operation. Understanding and knowledge of the basic concepts of operation and ways of connecting individual components in analog and digital electronic circuits. 										
	the op 4. Unc circuit	oeratio Ierstar s (BJT,	on of elec nding the JFET, MO	tronic com principles OSFET).	of ope	ration and a	urrent a nalysis c	nd alter	rnating mode. stage amplifier			
Prerequisites	No prere	quisit	es.									
Teaching methods	Lectures	, audit	ory exer	cises, laboı	ratory e	exercises						
Subject content per weeks	 Studen threshold Analys point, te Rectifi with diod Analys transisto Detern circuits v Polariz of BJT tra 	nt oblig d volta is of di mpera ers, sv des. sis of b or. Field mination vith BJ zation ansisto	gations a age, station iode oper ature dep witches, S bipolar tra- ds of oper on of the T transis of BJT. Proprs.	nd assessr c and dyna ration in di endence, o Gchottky di ansistor (B. ration of B operating tors. olarization	nent. C mic res irect po capacita odes, Z JT) ope JT tran point o of para	urrent-volta, istance (idea larization ar ance). ener diodes, ration. Static sistors. of the BJT tra allel connect	ge chara al and re ad invers , LEDs, p c charact ansistor. ed BJTs.	al diode al diode e polar hotodic eristics Tempe Limitat	cs of diodes, es). ization (operating odes, Rectifier circuits of the bipolar rature stabilization of ions in the operation			

	7. Ebers-	Moll model of a bipolar transistor. Equivalent PI c	ircuit of BJ	Γ transistor for small					
	signals. I	Equivalent circuit of BJT transistor for small signals	. TTL - logic	circuit (inverting					
	circuit). DTL - logic circuits (AND, OR, NOT, NOR).								
	8. JFET operation analysis. Static characteristic of JFET. Limitations in JFET operation								
	9. Polarization of JFET. Equivalent to the small signal circuit of the JFET. JFET in switching								
	mode.								
	10. Anal	ysis of operation of MOSFET with built-in channel.	Static char	acteristics of					
	embedd	ed channel MOSFETs. Limitations in MOSFET oper	ation. Anal	ysis of MOSFET					
	operatio	n with an induced channel.							
	11. Stati	c characteristics of MOSFET with an induced chan	nel. Vertica	l MOSFET - VMOS,					
	CMOS. P	olarization of MOSFETs (built-in, induced channel)	. Equivaler	it to the MOSFET					
	small-sig	nal circuit.							
	12. Feat	ures of the amplifier. Single stage amplifiers. Analy	vsis of AC-c	oupled amplifier					
	with bip	olar transistor in connection with ZE, ZB, ZC.							
	13. Anal	ysis of an AC-coupled amplifier with a JFET coupled	d with ZS, Z	G, ZD, Analysis of an					
	AC-coup	led amplifier.							
	14. Two-	stage amplifier. Amplifiers with direct coupling-lev	vel shifters	(with Zener diode,					
	with trar	nsistor). Darlington configuration and cascode amp	olifier. Amp	litude and phase					
	characte	ristics of the amplifier - Bode diagrams.							
	15. Phot	otransistor. Optocoupler. IGBT. Thyristor and othe	er semicono	ductor components					
	from the	same family.							
		Compulsory literature							
Author(s)		Publication title, publisher	Year	Pages (from-to)					
G. McWhorter, A.	J. Evans	Basic Electronics, Master Publishing, Inc.	2004						

	Additional literature										
Author(s)		Publication title, publisher	Year	Pages (from-to)							
A. S. Sedra, K. C. Smith		Microelectronics Circuits, Sounders College Publishing	1991								
		Type of student work evaluation	Points	Percentage							
Ohlisstians	Pre-exar	nination obligations									
obligations,		attendance at lectures/exercise	5 5	5%							
forms of		midterm exam	s 35	35%							
assessment and		lab. exercises/practical wor	< 10	10%							
assessment and											
graung		final exam (written/oral) 50	50%							
	TOTAL		100	100%							
Web page											
Certification											
date											

				UNIVER	SITY OF E	AST SA	RAJEVO			SUC.
A			C+1	dy progra	m: Electr		r Engineering	,		
)		Fire	st study cy		Sec	ond year of s	tudy		$\partial n \phi$
Full name of	the		1113	st study cy	cie	560	und year or s	luuy		
course					F	PROGRA	MMING LAN	IGUAGE	S	
Sub	iect co	de		Subject status Semester			ECTS			
FE-0	8-1-01	8-3		C	ompulsory	/				6.0
Teacher(s)		Snježana	Miliı	nković, Ph	D, assista	nt profe	ssor			0,0
		Miljan Si	kimić	, MSc, ser	ior teach	ing assis	stant; Zorana	Štaka, I	MSc, sei	nior teaching
Associate(s)	i	assistant				-				-
Number of	lessons	s/teachi	ng wo	orkload	Individ	dual stu	dent workloa	ad (in h	ours	Student workload
	(we	ekly)				ре	r a semester)		coefficient S _o
L		AE		LE	L		AE	L	E	So
2		1		1	60		30	3	0	2
total teaching	ng wor	kload (in	hou	rs, per sen	nester)	to	tal student w	/orkload	l (in hou	urs, per semester)
W	+ 1*15 -	+ 1*1	5 =60 h			T= = 2*15*S	o + 1*15	$5*S_0 + 1$	*15*S₀ = 120 h	
Total wo	orkload	of the s	ubjec	t (teachin	g + stude	nt): In _{op}	= W + T = 60	+ 120 =	180 ho	urs per semester
		By maste	ering	this subje	ct, the stu	ident wi	ll: 			
		L. under:	stand	of practic	a program	iming co	ncepts in pro	d conco	i progra	amming languages,
Learning		2. De cap	mina	in the pro	arimpieni	a langu:		u conce	pis oi p	locedulai
outcomes		3 he ahl	e to i	molement	and test	more c	omplex progr	ams in t	he C la	nguage using static
outcomes		and dvna	amic	data struc	tures.	inore o	surprex pro8			
		4. be abl	e to i	mplement	and test	more c	omplex progr	ams in t	the C la	nguage using
	i	advance	d con	cepts in w	n working with functions.					
	•	There ar	e no i	requireme	ents for re	gisterin	g and listenir	ng to the	course	e. Required prior
Prerequisites	; I	knowled	ge fro	om the subjects: Fundamentals of computer technique, Introduction to						
		program	ming	•						
Teaching		Lectures	, aud	itory exer	cises, labo	oratory e	exercises, kno	owledge	verifica	ation tests.
methods		1 Introd	uatio	n Chrono	logy of de	volonm	ant and char	octorict	ios of m	o gra min g
		1. Introu		n. Chrono	logy of de	evelopin	ent and char	acterist	ics of pr	ogramming
		7 Classif	icatio	on of prog	ramming	languag	es			
		3. Svntax	ofp	rogrammi	ng langua	ges. Foi	mal svntax d	escripti	on.	
		4. Data t	ypes	concept.	0 000	0				
	!	5. Pointe	rs in	с.						
Subject conte	ent	6. Advanced data types.								
per weeks		7. Dynan	nic m	emory allo	ocation. Ir	npleme	nting arrays i	n a dyn	amic me	emory area in C
	1	program	ming	language						
	1	8. Subpr	ograr	ns – gener	al concep	ots. Fund	tions and pro	ocedure	s. Func	tions in C.
		9. Transf	er of	argument	s. Recursi	ion.Mer	nory classes.			
		10. Struc	tures	s in C.						
			n in C		onto					
		⊥∠. Files	– ger	ieral conc	epts.					

	13. Input	13. Input/output, text and binary files in C programming language.										
	14. Dyna	mic data structures.										
	15. Inter	net and web technologies - basic concepts.										
		Compulsory literature										
Author(s)		Publication title, publisher	Year	Pa	ges (from-to)							
Kernighan, B.W., R	litchie,	Programming language C, Prentice Hall,	1000									
D.M.		Second edition	-									
	Additional literature											
Author(s)		Publication title, publisher	Year	Pa	ges (from-to)							
B C Dierce		Types and Programming Languages, The MIT	2002		_							
D. C. PIEICE		Press	2002		-							
		Type of student work evaluation	Points		Percentage							
	Pre-exan	nination obligations										
Obligations		attendance at lectures/exercise	s 5		5%							
forms of		defense of laboratory exercise	s 15		15%							
knowledge		knowledge verification test	s 10		10%							
assessment and		midterm exam I (optiona	l) 35		35%							
grading		midterm exam II (optiona	l) 35		35%							
Brading												
		final exam (written/ora) 30		30%							
	TOTAL		100		100%							
Web page												
Certification												
date												

				UNI Faci	VERSITY O	F EAST	SARAJEVO				
				Study pro	ogram: Ele	ctric Po	ower Engineerir	ng			
10 15 15 15 15 15 15 15 15 15 15 15 15 15			Fi	irst study c	ycle	1	Second year of	study			
Full name of t	he cou	irse			-		ENGLISH LANG	UAGE 3			
Sub	ject co	de		Sub	oject status	5	Seme	ster		ECTS	
EE-0	8-1-01	9-3	~	СО	mpulsory		III			2	
Teacher(s)		Darko Ko	ovačev	vić, PhD, as	sociate pr	otesso	r				
Associate(s)	lassan	c/toochi	ng 140	rklaad	Individue	alctud	ant workload (in hours not	-	Student workload	
Number of	lesson: (we	s/teach eeklv)	ng wo	IRIOAU	maividua	aistuu	semester)	in nours per			
L		AE		LE	L		AE	LE		So	
1		1		-	15		15	-	1		
total teach	ing woi	rkload (i		rs, per sem	ester)		total student	workload (i	in ho	ours, per semester)	
Tot	al worl	kload of	<u>+ 0 1.</u> the su	biect (tead	hing + stu	dent) [.]	$\frac{1-1}{10}$	$\frac{50+1}{0+30} = 60$	<u>hou</u>	$5 \cdot 15 \cdot 50 = 50 \cdot 11$	
100		1. famili	arizati	on with th	e characte	ristic la	inguage constru	uctions relat	ted t	to the use of the English	
		language	e in te	chnical scie	ences, with	n specia	al reference to	the discours	se of	electrical engineering	
		and info	rmatio	on and con	nmunicatic	on tech	nologies.				
		2. familiarization with terminology in English from various fields of technical sciences, with spe									
	1	reference to the discourse of electrical engineering and information and communication									
		technolo	ogies;	;; conversation related to various areas and tonics related to technical sciences, with							
		3. advan special r	oforor	onversation	n related to	o vario cs from	us areas and to electrical engi	pics related	to t Linfo	echnical sciences, with	
Learning		commur	nicatio	n technolo	gies:		relectived engi		i iiiic		
outcomes 4. familiariza				on with te	rminology	and wa	ays of textual p	resentation	of ir	nformation related to the	
		historica	l deve	elopment o	of various p	henon	nena, devices a	nd inventior	ns im	nportant for electrical	
		enginee	ring ar	nd informa	tion and co	ommui	nication techno	logies;			
		5. ability	of un	derstandir	ng, translat	ion an	d verbal and wr	itten descri	ptio	n of textual units written	
	i	in Englis	h and	related to	technical s	science	s, with an emp	hasis on ele	ctric	al engineering and	
		informat	tion ar	nd commu	nication te	chnolo	igies;	with an on	nnh	asis on electrical	
		o. ability enginee	ring ar	nd informa	tion and co		nication techno	logies	прпа		
Prerequisites	-	There ar	e no s	pecial regu	uirements	for tak	ing courses and	I taking exar	ms.		
Teaching		method	of der	nonstratio	n, method	of pra	ctical work, me	thod of writ	tten	work, method of reading	
methods	i	and wor	king o	n the text,	method o	f conve	ersation, metho	d of oral pre	esen	itation	
		1. Electr	icity T	ransmissio	n.						
		2. A Brie	f Histo	ory of Hydr	oelectricit	у.					
	·	3. Histor	y of lo	elephone. ibor Ontice							
		4. пізіої 5. Тhe H	y OI FI istory	and Devel	onment of	Batter	ies				
		6. The History of Electric Motor Technology: a Journey through Time.									
Cubication		7. A Brie	f Histo	ory of Prog	ramming:	Why Fi	unctional Progr	amming Ma	tters	s?	
Subject conte	nt	8. A Brie	f Histo	ory of the E	Early Interr	net.	_	-			
per weeks	9	9. The H	istory	of the Inte	grated Ciro	cuit.					
		10. Micr	oproc	essor Histo	ory and Bac	ckgrou	nd.				
		11. A Bri	ef His	tory of Em	bedded Sy	stems:	Computer Har	dware and S	oftw	vare.	
		12. A Bri 12. A Bri	ef His	tory of Em	bedded Sy: boddod Sy:	stems:	Networking an				
		14. Histe	orv an	d Origins o	f Magnetic	sterns: m		JUN.			
		15. The	Histor	y of Digital	isierung in	Five P	hases.				
				,	Compu	Isory li	iterature				
Auth	nor(s)			Pu	blication ti	itle, pu	ıblisher	Yea	r	Pages (from-to)	

D. Kovačević		2020	D								
Additional literature											
Author(s)		Publication title, publisher	r F	ages (from-to)							
		Type of student work evaluation		Points	Percentage						
	Pre-exam	nination obligations									
Obligations,		attendance at lectures/exe	15	15 %							
		positively evaluated seminar	5	5 %							
knowledge		activity in lectures/exe	10	10 %							
assessment and		firs	20	20 %							
grading		secon	d test	20	20%						
graung	Final exa	Final examination									
		final examination	(oral)	30	30 %						
	TOTAL			100	100 %						
Certification date											

			UNIVER Faculty	SITY OF E	AST SA	ARAJEVO						
			Stu	dv proard	im: Electri	ic Pow	er Enaineeri	na				
1 4 1 7 1 5 4 5 Y 3 30	Ì		Firs	st study cy	cle	Se	cond year o	f study		$\mathcal{O} \mathcal{O} \mathcal{O}$		
Full name of	the											
course												
Sub	ject co	de		Sul	bject statı	us	Sem	ester		ECTS		
EE-C	8-1-020)-4		C	ompulsory	/		V		6.0		
Teacher	ļ	Assistant	: Prof	essor Nat	aša Pavlov	/ić Kon	nazec					
Associate	A	Assistant	: Prof	essor Nat	aša Pavlov	/ić Kon	nazec					
Number of	lessons	/teachii	ng wo	orkload Individual student workload (in ho			nours	Student workload				
	(we	ekly)		16		р	er a semest	er)		coefficient S _o		
2	-	א ב א		0	42		63		0	3 ₀		
total teachi	ng worl	s (load (in	hou	rs. per sen	nester)	t	otal student	workloa	doad (in hours per semester)			
W= 2	2*15 + 3	3*15 + 0	*15 =	=75 hours	,	-	T= 2*15*S _o	+ 3*15*	S₀ + 0*15	5*S _o = 105 hours		
Total w	orkload	ad of the subject (teaching + student): In _{opt} = W + T = 75 + 105=180 hours per semester										
Learning	ng By mastering this subject, the student will be able to: 1. master the numerical methods of solving nonlinear equations and systems 2. master various types of interpolation of functions and their applications 3. knows the methods of numerical integration								systems ations			
outcomes	2	4. master various types of approximation of functions5. knows the methods for numerical solution of ODE6. uses acquired knowledge in professional subjects										
Prerequisites	s 1	here ar	e no i	requireme	ents for lis	tening						
Teaching	1	he teac	hing	process is	realized n	nainly	through a fr	ontal for	m of wo	rk - lectures and an		
methods	1	nteractiv	ve to	rm of wor	k - auditor	ry exer	CISES.	alveic				
Subject conto	ent F 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	 Introduction to Numerical Mathematics. Error Analysis. Nonlinear Equations. Localization of the solution of the equation. Bisection Method. Fixed-Point Iteration Method. Secant Method. Newton's Method. Linear Systems. Matrix Norm. Direct methods. Iterative methods. Jacobi and Gauss Seidel Method. Eigenvalues and Eigenvectors. Leverrier Method, Krylov Method. Interpolation by Polynomials. Lagrange Interpolation. Newton Interpolation and Divide Differences. Interpolation Using Equally Spaced Points. Trigonometric Interpolation. Newton Interpolation. Numerical Differentiation. Numerical Integration. Newton-Cotes quadrature formulas. Quadrature Formulas of Gaussian Type. Orthogonal Polynomials Approximation of functions. Mean Square Approximation. The Method of Least Squares. Uniform Approximation. Numerical Ordinary Differential Equations. Euler's Method. Runge-Kutta Methods. Boundary Value Problems of Ordinary Differential Equations. Finite Difference Methods. Shooting Methods. 								Bisection Method. Jacobi and Gauss Equally Spaced tion. lethod of Least ge-Kutta Methods. ite Difference		
Auth	nor(s)			Pub	lication ti	itle. n	ıblisher		Year	Pages (from-to)		
				1.01		ine, pr				1 4863 (11011 10)		

K. E. Atkinson		An Introduction to Numerical Analysis (2nd edition), Wiley	1989.		
S. D. Conte, Carl d	e Boor	Elementary Numerical Analysis - An Algorithmic Approach (3rd edition), McGraw-Hill	1981.		
Author(s)		Publication title, publisher	Year	Pa	ges (from-to)
Parviz Moin		Fundamentals of Engineering Numerical Analysis, Cambridge University Press	2010.		
R. W. Hamming		Numerical Methods for Scientists and Engineers, Dover Publications	1986.		
		Points		Percentage	
	Pre-exar	nination obligations			
Obligations,		attendance at lectures/exercise	es 5		5%
forms of		homewor	[.] k 5		5%
knowledge		midterm exam	1 30)	30%
assessment and		midterm exam	II 30)	30%
grading					
		final exam (written/ora	I) 30)	30%
	TOTAL		10	0	100%
Web page					
Certification					
date					

			UNIVER Faculty	SITY OF E	AST SAI	RAJEVO neering			Stores -	
Pynce		Stu	idv proard	m: Electric	c Powei	Enaineerina	1			
		Firs	st study cy	cle	Sec	ond year of s	tudy		\mathcal{O}	
Full name of the					FCTRIC					
course										
Subject	code		Subject status Semester			ECTS				
EE-08-1	-021-4		C	ompulsory		IV			5,0	
Teacher(s)	Srđan La	le, Pł	nD, assista	nt profess	or					
Associate(s)	Marko II	kić, M	Sc, senior	teaching a	assistan	t	. /			
Number of less	ons/teachi (wookhy)	ng wo	orkload	Individ	ual stu	dent worklo	ad (in h v	ours	Student workload	
		T	IE	-	pe) 	F		
2	1		1	45		22.5	22	5	15	
total teaching v	vorkload (ir	ן hou	rs. per ser	nester)	to	tal student v	vorkload	d (in hoi	urs. per semester)	
W= 2*	*15 + 1*15	+ 1*1	5 =60 h			T= = 2*15*	S₀ + 1*1	5*S₀ + 1	1*15*S₀ = 90 h	
Total work	oad of the	subje	ct (teachir	ng + studei	nt): In _{op}	t= W + T = 60) + 90 =	150 hou	urs per semester	
	Knowled	lge ar	nd skills ar	e acquired	for:					
	of el	ectric circu	uits with ti	me-spa	ce character	istics (el	ectric c	ircuits with		
	distribut	ed pa	arameters	, telegraph	ner's eq	uations).				
	sis of	electrical	circuits in	the tim	e domain. St	ate spac	ce and s	state equations.		
Learning	Analogie	es wit	h similar d	lynamic sy	stems.					
outcomes	3. Analy	sis of	electrical	circuits in	the con	plex domain	n. Laplad	ce trans	form. An example of	
	the bena	avior	ne topology of electric circuits. Introduction to graph theory. Matrix methods							
	for the a	ing ti malvs	is of elect	s of electrical circuits. Computer methods for the analysis of electrical						
	circuits	Work	with self-developed software packages and professional package PSPICE							
	There ar	e no	requireme	ents for reg	gistering	g and listenir	ng to the	e course	e. Required	
Prerequisites	prerequ	isites	: Fundame	entals of el	ectrical	engineering	1 and 2	, Mathe	ematics 1, 2, 3,	
	Numerio	al ma	athematics	s, Physics.						
Teaching	Teaching	g is co	onducted i	n the form	n of lect	ures, audito	ry exerc	ises and	demonstration	
methods	exercise	s on t	he compu	iter. Learn	ing, tes	ts, assignme	nts and	consult	ations.	
	1. Analy	sis of	circuits w	ith distribu	ited pai	ameters. Te	legraph	er's equ	lations.	
	2. Propa	gatio 	n equatio	ns in the st	ationar	y state for th	ne case (of a sim	ple periodic source.	
	Propaga	tion o	constant a	nd charact	eristic i	mpedance.	lingwow		tor of voltage and	
	3. Repre	senta	tion Line		y moue imneda	e using travel	ing wav	es. raci	tor of voltage and	
	4. Line v	vithou	ut distortio	on. Lossles	s line. o	uarter-wave	transfo	rmer. S	hort-circuited and	
Subject content	open lin	e witl	nout losse	s. occurrer	nce of s	tanding wav	es and r	esonan	ce.	
per weeks	5. Analy	sis of	electrical	circuits in	the tim	e domain. St	ate size	s and st	ate space.	
	6. Equat	ions d	of state, in	dependen	t initial	conditions.	Solving t	the equ	ation of state,	
	classical	meth	nod.							
	7. Circui	ts of t	he first or	der, respo	nse of	he circuit to:	a const	ant and	l simple periodic	
	excitatio	on fur	iction. App	lication of	fcompu	iters for solv	ing equa	ations o	of state of higher	
	order.									

	8. Integr	al transformations for the analysis of electric circui	ts. Ohm's	law in the							
	operatio	nal area.									
	9. Equiva	alent circuit method in the s-domain. Thevenen's a	nd Norton	's theorem in the s-							
	domain.										
	10. Supe	rpositional integrals in the analysis of electric circu	its. Netwo	ork functions.							
	11. Diam	nel's and convolutional integral for determining the	response	of an electric circuit.							
	12. Basic	concepts from graph theory, subgraphs, path, cor	tour, tree	, section.							
	13. Торс	logical matrices of circuits. Interrelationships of to	pological r	matrices of circuits.							
	14. Basic	14. Basic laws of electrical networks in matrix form.									
	15. Computer methods for the analysis of electrical circuits.										
		Compulsory literature									
Author(s)		Publication title, publisher	Year	Pages (from-to)							
R C Dorf I A Svo	boda	Introduction to Electric Circuits, 9 th Edition,	2013	-							
1		Wiley	2015								
		Additional literature									
Author(s)		Publication title, publisher	Year	Pages (from-to)							
D. P. Kanoussis		Introduction to electric circuits theory, Vol. 1	2017	_							
D. T. Kanoussis		(The electrical engineering series)	2017								
C P Steinmetz		Theory and calculation of electric circuits,	2010	_							
		Watchmaker Publishing									
		Type of student work evaluation	Points	Percentage							
Obligations	Pre-exar	nination obligations									
forms of		attendance at lectures/exercise	s 10	10%							
knowledge		midterm exam	I 30	30%							
assessment and	midterm exam II 30 30%										
grading											
8.00.08	final exam (written/oral) 30 30%										
	TOTAL		100	100%							
Web page											
Certification											
date											

			UNIVER Eaculty	RSITY OF E	AST SAR	AJEVO Pering				
		Stu	dv progra	m· Electri	c Power	Enaineerina	,			
	_	Firs	t study cy	vcle	Seco	nd vear of s	tudv		$\Im \cap \Diamond$	
Full name of the			, e staay ey							
course					ELECTE	OMAGNET	ICS - 1			
Subject o	code		Su	bject statu	IS	Semester			ECTS	
EE-08-1-0)22-4		C	ompulsory	,	IV			6	
Teacher(s)	Darko	o Šuka, A	ssistant P	rofessor						
Associate(s)	Darko	o Šuka, A	ssistant P	rofessor						
Number of lesso	ns/tead	ching wo	orkload	Individ	ual stud	ent workloa	ad (in h	ours	Student workload	
(\	veekly)				pei	semester)		_	coefficient S _o	
				L		AE		E	S ₀	
3	3 orkload	l (in hou		45	tot	45 al student w	uorkload) h (in hou	I,U	
W= 3*15	+ 3*15	+ 0*15 =	-90 hours	nester)	т	= 3*15*S ₂ +	2*15*9	s + 0*1	$5*S_0 = 90$ hours	
Total workle	oad of t	the subie	ect (teach	ing + stude	ent): Inon	= W + T = 9	0 + 90 =	180 ho	ours in semester	
	By ma	astering	, this subje	ct, the stu	dent will	be able to:				
	1	evalu scien	ate the ir	nportance eral, espec	of funda ially thei	imental exp r basic role	erimen in elect	ts for th rical en	ne development of gineering,	
Learning		. realiz	zes mathe	matical m	odels of	problems th	at arise	e in prac	ctice.	
outcomes	4	. find a	a quick an	d econom	ical solut	ion using th	ne most	moder	n calculation and	
	_	design techniques, 5. develop the skill of self-learning and upgrading knowledge, understand the								
	5	. deve	ortance of compliance with technical regulations and norms and legal							
		regul	ations in this area of electrical engineering.							
Proroquisitos	Requi	ired prio	r knowled	knowledge of the subjects: Fundamentals of Electrical Engineering I and II						
Trerequisites	and N	/lathema	itics I, II ai	nd III.						
Teaching	The fr	rontal m	ethod is u	sed for lec	tures, ar	nd the intera	active m	nethod i	is used for exercises.	
methods	For se	eminar p	apers and	homewor	k, individ	dual and gro	oup met	hods an	re combined	
	L 1	. Intro	duction to	o macrosco matic field	opic elec I	tromagnetic	c fields.	Definiti	ion and specificity of	
	2	Flect	ric and ele	ectrostatic	i. field Co	ulomh's law	v Field	and not	ential Point and line	
		elect	rostatic d	ipole.			v. ricia			
	3	. Elect	rostatic fi	eld equation	ons in va	cuum. Conc	luctors	in an el	ectrostatic field.	
		Elect	rode syste	ems.						
Subject content	4	. Imag	e theoren	ns in the p	lane and	spherical m	nirrors			
per weeks	5	. Field	of paralle	el different	ly charge	ed threads.	The fiel	d of two	o non-coaxial	
permeens		cond	ucting she	eaths						
	6	6. Imag	e theoren	n in a cylin Gauss's law	drical mi	rror. The ele	ectrosta	atic field	t in the material	
	-		ities of be	Gauss S Iav	es and t	ne field in th	c, DI P. De diele	ctric Fi	eld equations in the	
	'	mate	rial envir	onment M	lodified i	mage theor	em in a	plane r	mirror. Boundary	
		cond	itions, and	d the law o	of refract	ion in an ele	ectrosta	itic field	l.	
	8	8. Capa	citance. E	nergy in th	ne electro	ostatic field	•			
	8	cond 8. Capa	itions, and citance. E	d the law o nergy in th	of refract	ion in an ele ostatic field	ectrosta	itic field	1.	

	9.	Poisson's and Laplace's equation. Dirac function in	electrosta	atics. The integral							
	form of Poisson's equation.										
	10.	Stationary current field. Current and current densi	ity. Contini	uity equation. Ohm's							
		and Joule's law. The resistors. Point current source	e. Kirchhof	f's laws in integral							
		and differential form.		-							
	11.	Boundary conditions and the law of refraction. Cha	arge distril	oution in a stationary							
		current field. Duality of stationary current and elec	ctrostatic f	ield, Character							
		theorem in the stationary current field. Conductor	s in a perf	ect dielectric.							
		Grounding devices.									
	12.	Stationary magnetic field. Magnetic scalar and ma	gnetic vect	tor-potential.							
		Bio-Savar's law.	0								
	13.	Magnetic field in the presence of matter. Boundar	v conditio	ns and the law of							
		refraction.	,								
	14.	Character theorems in flat and cylindrical ferroma	gnetic miri	rors.							
	15.	Modified image theorem in a plane ferromagnetic	mirror.								
		Compulsory literature									
Author(s)		Publication title, publisher	Year	Pages (from-to)							
		Electromagnetics with a methodical collection									
Božidar M. Krstajić		of tasks, Faculty of Electrical Engineering,	2016.	9 to 284							
		University of East Sarajevo									
		Additional literature									
Author(s)		Publication title, publisher	Year	Pages (from-to)							
Antonija B. Darđa	uić	Electromagnetics, Academic Thought and ETF	2009								
Antonije K. Dordev	VIC	Belgrade	2008.								
B. Notaroš, V. Petr	ović, M.	A collection of exam questions and									
llić, A. Đorđević, B		assignments from Electromagnetics, ETF	2002.								
Kolundžija, M. Dra	ragović Belgrade and Academic Thought										
	govic	Belgrade and Academic Thought									
	govic	Belgrade and Academic Thought Type of student work evaluation	Points	Percentage							
Ohlisstiens	govic Pre-exar	Belgrade and Academic Thought Type of student work evaluation nination obligations	Points	Percentage							
Obligations,	pre-exar	Belgrade and Academic Thought Type of student work evaluation nination obligations attendance at lectures/exercise	Points s 10	Percentage 10%							
Obligations, forms of	govic Pre-exar	Belgrade and Academic Thought Type of student work evaluation nination obligations attendance at lectures/exercise midterm exam	Points s 10 I 30	Percentage 10% 30%							
Obligations, forms of knowledge	Pre-exar	Belgrade and Academic Thought Type of student work evaluation nination obligations attendance at lectures/exercise midterm exam midterm exam	Points s 10 I 30 II 30	Percentage 10% 30% 30%							
Obligations, forms of knowledge assessment and	Pre-exar	Belgrade and Academic Thought Type of student work evaluation nination obligations attendance at lectures/exercise midterm exam midterm exam	Points s 10 I 30 II 30	Percentage 10% 30% 30%							
Obligations, forms of knowledge assessment and grading	Pre-exar	Belgrade and Academic Thought Type of student work evaluation nination obligations attendance at lectures/exercise midterm exam midterm exam final exam (written/oral	Points s 10 I 30 II 30	Percentage 10% 30% 30% 30%							
Obligations, forms of knowledge assessment and grading	Pre-exar	Belgrade and Academic Thought Type of student work evaluation nination obligations attendance at lectures/exercise midterm exam midterm exam final exam (written/oral	Points s 10 I 30 II 30 III 30 III 30	Percentage 10% 30% 30% 30% 100 %							
Obligations, forms of knowledge assessment and grading Web page	Pre-exar TOTAL	Belgrade and Academic Thought Type of student work evaluation nination obligations attendance at lectures/exercise midterm exam midterm exam final exam (written/oral	Points s 10 I 30 II 30 II 30 II 100	Percentage 10% 30% 30% 30% 100 %							
Obligations, forms of knowledge assessment and grading Web page Certification	Pre-exar TOTAL	Belgrade and Academic Thought Type of student work evaluation nination obligations attendance at lectures/exercise midterm exam midterm exam final exam (written/oral	Points s 10 I 30 II 30 II 30 II 100	Percentage 10% 30% 30% 100 %							

			UNIVEF Faculty	SITY OF EA	AST SAF	AJEVO			SUC	
SYNC 82		Stu	idy progra	m: Electric	: Power	Engineering	1			
100 100 100 100 100 100 100 100 100 100		Fir	s study cy	cle	Seco	ond year of s	tudy		$\langle \rangle \Box \langle \rangle$	
Full name of the	e						2			
course										
Subjec	t code		Subject status Semester			ECTS				
EE-08-1	1-023-4		C	ompulsory		IV			5	
Teacher(s)	PhD Bo	židar I	Popović, A	ssociate Pr	ofessor					
Associate(s)	MSc Go	oran V	uković							
Number of les	sons/teach	ing w	orkload	oad Individual student workload (in ho				ours	Student workload	
		1	IF	1	per		,	F		
2	1		1	45		22.5	22	5	15	
total teaching	workload (in hou	rs. per ser	nester)	to	al student v	vorkload	d (in hoi	urs. per semester)	
W=2*	*15 + 1*15	5 + 1*15 + 1*15 = 60 h T=2*15*S ₀ + 1*15*S ₀ +							*15*S₀ = 90 h	
Total workl	oad of the	subjed	t (teachin	g + studen	t): In _{opt} =	W + T = = 6	0 + 90 =	= 150 hc	ours per semester	
	1. U	nderst	anding and	d recognizi	ng, con	structing and	d analyz	ing the	operation of	
	elect	ronic	circuits.							
	2. Di	stingu	ishing, rec	ognizing ar	nd unde	erstanding th	ie chara	cteristic	cs of circuits with and	
	with	out fe	edback as	well as the	type a	nd topology	of feed	oack.		
Learning	3. Di	stingu	ishing and	understan	ding th	e principles	of opera	ation an	id ways of applying	
outcomes	pow	er amp	olifiers, co	nstant curr	ent sou 	rces, differe	ntial am	plifiers	, as well as possessing	
	thei	nowle	rstanding, recognition and application of linear circuits with OP for the							
	4. U	vation	of complex circuits.							
		signin	g and analyzing the work of linear converters and oscillators							
Prereguisites	Attend	ed cou	ng and analyzing the work of linear converters and oscillators.							
Teaching										
methods	Lecture	es, aud	itory exer	cises, labor	atory e	xercises				
	1. Equi	valent	circuit and	d current g	ain of B	JT at high fre	equenci	es. Equi	ivalent circuit of	
	unipola	ir tran	sistors at h	nigh freque	ncies. N	Ailler's theo	rem. Cu	toff free	quency of the	
	amplifi	er.								
	2. Feed	back l	oops, circı	uit structur	e. Circu	lar amplifica	tion, ty	pes, top	ology, properties of	
	feedba	ck circ	uits. Effect	t of negativ	e feedl	back on band	dwidth.			
	3. Effec		egative ree	edback on I	mpeda	nce. Series-p	arallel s	series-se	eries, parallel-series,	
Subject content		-parai		ur. and divisio	n of lar	no signal am	nlifiors	Amnlifi	er in class A with	
per weeks	transfo	rmer o	coupling N	Ion-linear i	distorti	ons.	pincis.	, unpini		
	5. Svm	netric	amplifier	in class A.	B. Com	olementary a	amplifie	r in clas	s B. Class AB	
	amplifi	ers. Ar	nplifier ov	erload pro	tection	Amplifiers i	n class (C and D		
	6. Curr	ent mi	rrors. Wid	lar current	source	, Wilson curi	rent sou	irce. MC	OS current mirrors.	
	Widlar	s curre	ent source	with MOS	transis	tors				
	7. Diffe	rentia	l amplifier	s.						
	8. Diffe	rentia	l amplifier	with BJT a	nd activ	ve load, with	FET tra	nsistors	5.	

	9 Basic	properties of OP Ideal's OP Linear circuits with ide	al onerati	onala	mnlifiers						
	10 Pool	OP Frequency characteristics of operational amplit	lorc		inpiners.						
	10. Real	diagram Diada restifiare Destified veltage filterin	1015. 	liada a	to bilinetion						
	II. BIOCH	diagram. Diode rectifiers. Rectified voltage filterin	g. zener d	node s	stabilization.						
	Parallela	and sequential stabilization.	- ·								
	12. Linea	ar voltage stabilizers. Integrated voltage stabilizers.	Current a	nd ter	nperature						
	protectio	on									
	13. Oscil	13. Oscillators of simple periodic oscillations. Oscillation condition and frequency.									
	Nonlinea	Nonlinear amplitude control of the output voltage amplitude.									
	14. RC o	14. RC oscillators. Wien bridge oscillator. Phase shift oscillator. Stabilization of frequency									
	and amplitude of oscillation. LC oscillators (Collpic, Hartley), Quartz crystal, Pierce										
	oscillato	oscillator.									
	Compulsory literature										
Author(s)		Year	Pa	ges (from-to)							
		Microelectronics Circuits, Sounders College	1991								
A. S. Seura, K. C. S	Publishing	1991									
	Additional literature										
Author(s)		Publication title, publisher	Year	Pa	ges (from-to)						
G. McWhorter, A.	J. Evans	Basic Electronics, Master Publishing, Inc.	2004								
		Type of student work evaluation	Points		Percentage						
	Pre-exar	nination obligations	•								
Obligations,		attendance at lectures/exercises	5		5%						
forms of		midterm exams	35		35%						
knowledge		lab. exercises/practical work	: 10		10%						
assessment and											
grauing	final exam (written/oral) 50 50%										
	TOTAL 100 100%										
Web page											
Certification											

A CONCEPTION			UNIVER	RSITY OF E	AST SAR	AJEVO			Stores and a start of the start	
		Stu	I acuity	m: Flectri	c Power	Enaineerina				
		Fire	st study cy	/cle	Seco	nd year of st	tudy		$\mathcal{O} \mathcal{O} \mathcal{O}$	
Full name of the			OBJECT-ORIENTED PROGRAMMING							
course				OBJECT-ORIENTED PROGRAMMING						
Subject	code		Cubicat status						FOTO	
			54		*5	Semes				
EE-08-1-	024-4		C	ompulsory	1	IV			6,0	
Teacher(s)	Danijel	Mijić,	PhD, Asso	ciate Profe	essor					
Associate(s)			c, teachin	g assistant	lual stud	ont worklos	d (in h	ourc	Student workload	
(weeklv)	ing w	Gikibau	maivid	ber	a semester)	ia (in ne	Juis	coefficient S	
L	AE		LE	L		AE	L	E	So	
2	1		1	60		30	3	0	2	
total teaching w	orkload (n hou	rs, per ser	nester)	tota	al student w	orkload	l (in hou	ırs, per semester)	
W= 2*2	15 + 1*15	+ 1*1	5 = 60 h			T= 2*15*S₀	+ 1*15	*S ₀ + 1*	15*S₀ = 120 h	
Total worklo	ad of the	subje	ct (teachin	ıg + studer	nt): In _{opt} =	W + T = 60	+ 120 =	180 ho	urs per semester	
	1. Knov	1. Knowledge of the basic concepts of object-oriented programming								
Learning	2. Appl	cation	developr	nent skills	using the	e object-orie	ented pa	aradigm	languaga	
outcomes	4 Abilit	v to a	nolv acqui	ired knowl	edge to s	solve specifi	c progra	ems in n	ianguage iractice	
Prerequisites	None	, u			0.00 10 1		<u>e p. e.a.r</u>	<u></u>		
Teaching	lecture	i buc	tory ever	rises labor	atory ex	arcisas				
methods	lecture	s, auui	tory exert	.1303, 18001	atoryex	61 61363				
	1. Intro	oduction to object-oriented programming. Object-oriented paradigm.								
	2. Abst	actior	n. Definition of objects.							
	3. Enca	psulat	isulation.							
	4. Defin	ition o	ion of class.							
	5. Crea		n of objects.							
	7 Dest	uctor	rs. Destruc	tion of ohi	octs					
Subject content	8 Acce	ss to c	lass functi	ions and at	ttributes					
per weeks	9. Class	inher	itance. Ge	neralizatio	on. Inheri	tance. Meth	nods of	perform	nance.	
	10. Abs	tract o	lasses. Po	lymorphis	m.					
	11. Virt	ual ba	sic classes							
	12. Ten	plate	s. Generic	mechanis	m. Genei	ating templ	ate fun	ctions.		
	13. Exc	eption	s. Syntax.	Exception	handling	<u>.</u>				
	14. Inp	ut/out	put. Strea	ms. Classe	s for inp	ut/output st	reams.			
	15. Sta	ndard	library. Co	ontainer cla	asses. Ge	neral purpo	se class	ses.		
				Compuls	ory litera	ture			- "	
Author(s)	0.1.1	Put	plication ti	tle, publ	isher		Year	Pages (from-to)	
Lafore, R		Ubj Pub	ect-Orient dishing	ted Progra	mming ir	1 C++, Sams		2002		
		Additional literature								
Author(s)		Put	plication ti	tle, publ	isher		Year	Pages (from-to)	

		Type of student work evaluation	Points	Percentage
Obligations,	Pre-exan	nination obligations		
forms of		lab. exercises/practical worl	× 20	20%
knowledge		midterm exam	5 50	50%
assessment and				
grading		final exam (written/oral) 30	30%
	TOTAL		100	100%
Web page				
Certification				
date				

			UNI Faci	VERSITY O	F EAST trical F	SARAJEVO			Stores and a start of the start	
ANC			Study pro	naram : Flee	tric Po	wer Engineerin	a			
)	F	irst study o	vole		Second year of	9 study			
Full name of th	e course	•	inst study c	yere	E		JAGE 4			
Subi	oct codo		Sub	viact status		Somos	tor		ECTS	
Subj			Suc	ject status		Jennes	tei		ECIS	
EE-08	3-1-025-4	Kauaža		mpulsory		IV		2		
Associate(s)	Darko	KOVACE	vic, Prid, as	sociate pro	Jiessor					
Number of L	a	Student workload								
	(weekly)	ining we	semester)				in nours per	coefficient S _o		
L	AE		LE	L		AE	LE		So	
1	1		-	15		15	-		1	
total teachir	ng workload	(in hou	rs, per sem	ester)		total student	workload (i	n ho	ours, per semester)	
W	=1*15 + 1*1	5 + 0*15	5 = 30 h			T=1*15*	S₀ + 1*15*S	_o + (0*15*S₀ = 30 h	
Tota	al workload	of the su	ubject (tead	ching + stud	dent): I	$n_{opt} = W + T = 30$	0 + 30 = 60	าอน	rs per semester	
	1. fan	niliarizati	on with th	e character	ristic la	nguage constru	ctions relat	ed t	to the use of the English	
	langu	age in te	chnical sci	ences, with	specia	I reference to t	he discours	e of	f electrical engineering	
	and ir	formatio	on and con	nmunicatio	n techr	nologies.				
	2. fan	iliarizati	on with te	rminology i	in Engli	sh from various	s fields of te	chr	nical sciences, with special	
	refere	nce to tl	he discours	se of electri	ical eng	gineering and ir	formation	and	communication	
	techn	ologies;								
Learning	3. adv	anced co	onversatio	n related to	o variou	us areas and top	pics related	to t	technical sciences, with	
outcomes	specia	l referer	nce to area	s and topic	s from	electrical engir	neering and	info	ormation and	
	comm	unicatio	n technolo	ogies;						
	4. abi	ity of un	derstandir	ng, translati	ion and	l verbal and wri	itten descrip	otio	n of textual units written	
	in Eng	lish and	related to	technical s	ciences	s, with an emph	lasis on elec	tric	cal engineering and	
	inforr	hation ai	nd commu	nication teo	chnolog	gies;		1.		
	5. abi	ity to cre	eate text u	nits related	to tec	nnical sciences	, with an en	npn	asis on electrical	
Duquqquiaitaa	engin	eering ar	nd Informa	tion and co	ommun	unication technologies. aking courses and taking exams.				
Teaching	meth	are no s	pecial requ	n method	of prac	ng courses and	courses and taking exams.			
methods	and w	orking o	nonsualio n the text	method of	convo	reation method	d of oral pre	cor	work, method of reduing	
methous		lution of	f machine l	earning	COIIVE		u or orar pre	:301	Itation	
	2 The	ton my	ths about a	advanced A						
	3 Fut	ure proo	of: cool gad	gets to loo	k forwa	ard to				
	4. Fol	dable ga	dgets are t	he future o	of tech					
	5. Ho	w much o	overengine	ering do vo	ou do?					
	6. Wh	at is IoT	? – A Simpl	e Explanati	ion of t	he Internet of T	Things			
Cultive ender	. 7. Em	bedded s	systems - a	in overview	1		•			
Subject conten	8. Inti	oductio	n to embed	ded syster	ns					
per weeks	9. Wii	eless po	wer transr	nission						
	10. W	hat is W	eb 3.0? A k	orief introd	uction	and it's benefit	s.			
	11. W	hat is th	e semantic	web?						
	12. A	complet	e guide to	7 renewabl	le ener	gy sources.				
	13. Er	ergy effi	iciency. Gu	ide to ener	gy effic	cient devices.				
	14. What is the smart grid?									
	15.5	ways sm	art grid teo	cnnology is	pushin	g renewable er	iergy.	_		
	r(c)		D	Compul	isory lit	terature	Var		Dages (from to)	
Autho	5)	Coll	Publication title, publisher			real		Pages (from-to)		
D. Kovačević		Coll	reises and	exis IOF EN	grisn La Fe	nguage 4 with	2019			
		exe	icises and	assignment	nal lite	oraturo				
۸۰۰۰۴	or(s)		D··	hlication ti		hlisher	Vac		Pages (from to)	
Autho) (S)		PU		ne, pul	DISTE	Teal		rages (Ironi-to)	

Lj. Bartolić		Technical English in Electronics and Electrical Power Engineering, Školska knjiga, Zagreb	1994	1	
		Type of student work evaluation		Points	Percentage
	Pre-exam	ination obligations			
Ohlingtigen		attendance at lectures/exe	rcises	15	15 %
Obligations,		positively evaluated seminar	paper	5	5 %
lorms of		activity in lectures/exe	10	10 %	
assossment and		firs	20	20 %	
assessment and		secon	20	20%	
graung	Final exar	nination			
		final examination	30	30 %	
	TOTAL		100	100 %	
Certification date					

THIRD YEAR – COMPULSORY SUBJECTS

		UNIVE		AST SAR	AJEVO			Stores and a store		
			Faculty	of Electric	al Engin	eering			AGUPA	
		St	udy progra	am: Electric	: Power	Engineering				
3 40 K 6782	-	Fi	rst study cycle Third year of study							
Full name of t	the				ELECT	ROMAGNET	ICS - 2			
course										
Subject code			Su	bject statu	s	Semester			ECTS	
EE-08	8-1-026	5-5	C	ompulsory		V			5	
Teacher(s)	D	arko Šuka,	Assistant P	rofessor				L		
Associate(s)	C)arko Šuka,	Assistant P	rofessor						
Number of I	essons	/teaching w	vorkload	Individ	ual stud	ent worklo	ad (in h	ours	Student workload	
	(we	ekly)			pe	semester)			coefficient So	
L	Α	E	LE	L		AE	L	E	So	
2	2	2	0	45		45	C)	1.5	
total teachin	ng work	load (in ho	urs, per ser	nester)	tot	al student v	/orkload	l (in hou	urs, per semester)	
W= 2	*15 + 2	2*15 + 0*15	=60 hours		Т	= 2*15*S _o +	· 2*15*S	S₀ + 0*1	5*S _o = 90 hours	
Total w	orkload	d of the sub	ject (teach	ing + stude	nt): In _{op}	t= W + T = 6	0 + 90 =	150 ho	ours in semester	
	В	y mastering	g this subje	ct, the stuc	dent will	be able to:				
			luate the importance of Maxwell's equations for the development of science							
		1. eva	in general, especially their basic role in electrical engineering.							
		in g 2 rec	recognize and understand problems that arise in practice.							
Learning		3. real	lizes mathe	ematical mo	odels of	problems th	nat arise	e in prac	tice.	
outcomes		4. finc	 find a quick and economical solution using the most modern calculation and 							
		des	design techniques,							
		5. dev	5. develop the skill of self-learning and updating knowledge,							
		6. UNC	erstand the importance of compliance with technical regulations and norms							
	B	equired pri	or knowled	lge of the s	ubiects:	Fundamen	tals of F	lectrica	Engineering and .	
Prerequisites	N	/athematic	s I. II and II	and Electr	omagne	tics -1.				
Teaching	т	he frontal r	nethod is u	ised for lect	tures. ar	nd the inter	active m	nethod i	is used for exercises.	
methods	F	or seminar	papers and	homewor	k, indivi	dual and gro	oup met	hods ar	re combined.	
		1. Tim	e-varying f	ields. Quas	i-statior	ary magnet	ic fields	,		
		2. Ow	n and muti	ual inductar	nces. Qu	asi-stationa	ary field	energy		
		3. Ind	uctances of	f a two-wire	e line, co	baxial cable,	one ph	ase of a	a three-phase line and	
		mu	tual induct	ance of two	o paralle	l two-wire l	ines.			
		4. Ma:	xwell's equ	ations. Con	ntinuity	equation, N	laxwell's	s equati	ons for stationary	
Subject cente		me	dia.							
Subject conte	ent	5. Cha	racteristics	of Maxwe	ll's equa	itions. Vorti	city and	origin	of the field of vectors	
per weeks		Ε, Ο	, H, and B							
		6. Bou	indary con	ditions and	the law	of refractio	n. Pote	ntial ma	atching. Hertz's	
		pot	potential.							
		7. Con	nplex vecto	ors.						
		8. Con	nplex form	of Maxwel	l's equa	tions. Point	ing's the	eorem		
		9. Con	nplex Point	ing vector,	the me	an value of	the Poir	nting ve	ctor.	

	10	Propagation of electromagnetic wayes									
	10.	Uniform wayes in a homogeneous dialoctria									
	11.	A also a waves in a homogeneous dielectric.		-f idl							
	12.	A plane wave in a nomogeneous conductive mediur	n (cases (of a good, ideal							
		conductor and a real dielectric.									
	13.	Reflection and refraction of plane waves, Standing	waves.								
	14.	Reflection and refraction of waves whose direction	of propa	gation is normal to							
		e separating plane									
	15.	eflection and refraction of waves whose direction of propagation is at an									
		arbitrary angle to the plane of separation. Fresnel c	rbitrary angle to the plane of separation. Fresnel coefficients. Snell's law. Snell's								
		law in complex form.									
		Compulsory literature									
Author(s)	1	Publication title, publisher	Year	Pages (from-to)							
		Electromagnetics with a methodical collection									
Božidar M. Krstajio	ć	of tasks, Faculty of Electrical Engineering,	2016.	285 to 443							
		University of East Sarajevo									
		Additional literature									
Author(s)	1	Publication title, publisher	Year	Pages (from-to)							
Antonijo P. Dorđov	vić	Electromagnetics, Academic Thought and ETF	2008								
Antonije K. Dorde	VIC	Belgrade									
B. Notaroš, V. Petr	rović, M.	A collection of exam questions and									
llić, A. Đorđević, B		assignments from Electromagnetics, ETF	2002.								
Kolundžija, M. Dra	igović	Belgrade and Academic Thought									
		Type of student work evaluation	Points	Percentage							
Ohlisstians	Pre-exar	nination obligations									
Obligations,		attendance at lectures/exercises	10	10%							
forms of		midterm exam I	30	30%							
knowledge		midterm exam II	30	30%							
assessment and											
grading	final exam (written/oral) 30 30%										
	TOTAL 100 %										
Web page											
Certification											
date											

			UNIVE	RSITY OF E	AST SAR	AJEVO			
			Faculty	of Electric	cal Engin	eering			
алуис- 82°- 100		Stu	idy progra	am: Electri	c Power	Engineering			
		Fir	st study cy	/cle	Thir	d year of stu	ldy		
Full name of the course			ELECTRICAL MACHINES – 1						
Subject		Su	bject statı	IS	Semester			ECTS	
EE-08-1-	027-5		C	ompulsory	1	V			5
Teacher(s)	ın Jokić, P	hD, assist	ant profes	sor					
Associate(s)	Srđa	in Jokić, P	hD, assist	ant profes	sor				
Number of lesso	ons/tea	aching w	orkload	Individ	lual stud	ent workloa	d (in ho	ours	Student workload
(weekly	y)			per	a semester)		_	coefficient S _o
L	AE		LE	L		AE	L	E	S _o
2	1		1	45		22.5	22	.5	1.5
total teaching w	orkloa	id (in hou	rs, per ser	mester)	tot	al student wo	orkload	l (in hou	irs, per semester)
W=2	*15+1*	*15+1*15	5=60 h			T=2*15*S	60+1*15	5°5₀+1*	15*S₀=90 h
Total workl	oad of	the subje	ect (teach	ing + stude	ent): In _{opt}	= W + T = 60	+90 = 1	.50 hou	rs per semester
Learning outcomes	 Getting to know the working principles of transformers and induction machines Ability to determine the parameters and characteristics of electrical machines Getting to know the principles of regulation and starting of electrical machines Getting to know the operation of electrical machines in the power system Getting to know the procedures for modelling of transformers and induction machines 						al machines cal machines cal machines system induction machines.		
	Ther	There are no requirements for registering and listening to the course. Required prior							
Prerequisites	knov	wledge fr	ge from the subjects: Fundamentals of electrical engineering 1 and 2, Electric						
	circu	uits theor	neory 1 and 2 and Electromagnetics-1.						
Teaching methods	lectu	ures, audi	tory exerc	cises, labor	atory exe	ercises, semi	nar wo	rk, field	teaching
Subject content per weeks	 Transformers: Kapp's diagram, Autotransformer, Three-phase transformation, Heating and cooling, Laws of similarity, Open-circuit and short-circuit experiments, Starting transformer in open-circuit mode, Higher harmonics, Asymmetries, Asynchronous machines, Phase voltage, Rotating field, Slip ring asynchronous machines, Torque in the slip function M=f(x), Equivalent scheme and parameter estimation, Starting of the machines, Speed regulation, Single-phase motor 								
				Compuls	ory litera	iture			
Author(s)		Pul	olication ti	tle, publ	isher		Year	Pages (from-to)
S. N. Vukosavić		Eleo	ctrical Ma	chines, 202	13th Edit	ion, Springer		2012	
		Eleo	ctric Mach	ines: Stea	dy State,	Transients,			
I. Boldea, L. N. Tu	telea	and	l Design w	ith MATLA	B [®] , 1 st E	dition, CRC		2009	
		Pre	SS						

	Additional literature										
Author(s)	1	Publication title, publisher	Year	Pages (from-to)							
		Type of student work evaluation	Points	Percentage							
Ohligations	Pre-exan	nination obligations									
forms of		attendance at lectures/exercises	10	10 %							
knowledge		test/midterm exam	30	30 %							
assessment and		lab. exercises	10	10 %							
grading											
BroomB		final exam (written/oral)	50	50 %							
	TOTAL		100	100 %							
Web page											
Certification											
date											

			UNIVEF Faculty	SITY OF EAST S	SAR/	AJEVO Pering			Suc.	
SURVEY STREET		Stu	idv proard	m: Electric Pov	ver l	Enaineerina	1			
8 12 15 4 5 YO 40		Firs	st study cy	/cle	Thir	d year of st	udy		\mathcal{O}	
Full name of t	he		F	ELECTROENERGETIC NETWORKS AND SYSTEMS –1						
course			ELECTROENERGETIC NETWORKS AND SYSTEMS -1							
Subject code			Su	bject status		Semes	ter		ECTS	
	-1-028-5	;	compulsory V				5			
Teacher(s) PhD Aleksand			lar Simovi	ć, associate pro	fess	or			5	
Associate(s)	Phi	D Nada Cin	car, assist	ant professor						
Number of le	essons/t	eaching w	orkload	Individual s	tude	ent worklo	ad (in h	ours	Student workload	
	(week	ily)	15		per a	a semester)	F	coefficient S _o	
2 L	2 AE		0	L 2*15*S-		AE 0*15* S-	L	E	3 0	
total teaching	g worklo	ad (in hou	rs. per ser	nester)	tota	al student v	vorkload	, l (in hou	urs, per semester)	
	W=2*1	5 + 2*15 =	60	,		T= T=2	2*15* So	+ 2*15	5* S _o = 90	
Tota	al worklo	oad of the s	subject (te	aching + stude	nt):	In _{opt} = W + 1	r = 150 ł	nours pe	er semester	
	1. F	amiliarity	with powe	er systems, with	h the	e paramete	rs of all	its elen	nents.	
Learning	2. [Detailed in	troductior	n to the laws of	pro	pagation of	voltage	and cu	rrent along lines.	
outcomes	3. [Detailed in	troductior	to voltage reg	ulati	ion in the p	ower sy	stem.		
Droroquisitos	4. l	Detailed ar	alysis of r	formal and dist	inct	ed states of	power	network	ks and systems.	
Teaching	1116	ere is no pi	erequisite		ject	5.				
methods	Leo	tures, aud	itory exer	cises, laborator	y ex	ercises, ser	ninar pa	pers.		
	1.1	ntroductio	n. Studen	t obligations an	id as	ssessment.	Electric	power s	system and its	
		ision, deve	elopment.	iald of alactric r		orouctores	in thau	محاط م	rrant logiclation	
	2.1	Deregulatio Overhead l	on in the field of electric power systems in the world, current legislation.							
	4.6	Electrical cl	haracteris	tics of power tr	ansf	formers. tvi	be of tra	nsform	ers.	
	5. 4	Autotransf	ormers, el	ectrical charact	eris	tics of gene	erators,	electrica	al characteristics of	
	cor	nsumers.				-				
	6. A	Asynchron	ous and sy	nchronous mot	tors,	, distributio	n netwo	ork. Spro	eading current along	
	the	e overhead	line.							
Subject conte	nt 7.1	deal line, i	nfinitely lo	ong line, line im	ped	ance, natu	ral trans	mission	power and	
per weeks	equ	Calculation	of load av	ad voltage distr	ihut	ion in the t	ransmis	sion not	twork	
	9.1	/oltage reg	ulation in	the power syst	tem.	general no	tes and	metho	ds of regulation.	
	10.	Voltage re	egulation i	n ring networks	s. De	eterminatio	n of the	reactiv	e power of the	
	cor	npensator								
	11.	Reactive p	ower bala	ance in the pow	/er s	ystem and	reductio	on of po	ower losses in the	
	ро	wer system	1. 			<i>.</i> .				
	12.	Disturban	ces in the	power system,	typ	es of short	circuits	and ear	th faults. Calculation	
	01 9	Short Circu	it currents	ort-circuit volta	aner	and curren	te char	t_circui+	nower and short	
	circ	cuit curren	t limits.		1862		10, 31101			

	14. Earth fault on the overhead line, analysis, compensation of the earth fault current and									
	harmful	consequences.								
	15. Trans	smission stability in the power system, maximum p	oossible tra	insmission power,						
	required	reserve.								
Compulsory literature										
Author(s)	1	Publication title, publisher Year Pages (from-to)								
	Sarić	Basics of analysis of electric power networks	2004							
IVI. 5. Calovic, A. T.	Sanc	and systems, Akademska misao, Belgrade	2004.							
S. Softić		Electricity transmission 1; ETF Sarajevo	1972.							
		2002								
IN. RAJAKOVIC		misao, Belgrade	2002.							
N. Rajaković, M. Ć	alović,	100 solved tasks from Analysis of power	2002							
P. Stefanov, A. Sav	/ić	systems; ETF Belgrade	2002.							
Additional literature										
	nor(s) Publication title, publisher Year Pages (from-to)									
Author(s)	1	Publication title, publisher	Year	Pages (from-to)						
Author(s) M. Đurić	1	Publication title, publisherElements of power systems; ETF Belgrade	Year 2001.	Pages (from-to)						
Author(s) M. Đurić		Publication title, publisherElements of power systems; ETF BelgradeType of student work evaluation	Year 2001. Points	Pages (from-to) Percentage						
Author(s) M. Đurić	Pre-exan	Publication title, publisher Elements of power systems; ETF Belgrade Type of student work evaluation nination obligations	Year 2001. Points	Pages (from-to) Percentage						
Author(s) M. Đurić Obligations,	Pre-exan	Publication title, publisher Elements of power systems; ETF Belgrade Type of student work evaluation nination obligations attendance at lectures/exercise	Year 2001. Points	Pages (from-to) Percentage 5%						
Author(s) M. Đurić Obligations, forms of	Pre-exan	Publication title, publisher Elements of power systems; ETF Belgrade Type of student work evaluation nination obligations attendance at lectures/exercise homewor	Year 2001. Points ss 5 k	Pages (from-to) Percentage 5%						
Author(s) M. Đurić Obligations, forms of knowledge	Pre-exan	Publication title, publisher Elements of power systems; ETF Belgrade Type of student work evaluation nination obligations attendance at lectures/exercise homewor lab. exercises/practical wor	Year 2001. Points es 5 k k	Pages (from-to) Percentage 5% 10%						
Author(s) M. Đurić Obligations, forms of knowledge assessment and	Pre-exan	Publication title, publisher Elements of power systems; ETF Belgrade Type of student work evaluation nination obligations attendance at lectures/exercise homewor lab. exercises/practical wor midterm example	Year 2001. Points ** 5 k k 10 s 40	Pages (from-to) Percentage 5% 10% 40%						
Author(s) M. Đurić Obligations, forms of knowledge assessment and grading	Pre-exan	Publication title, publisher Elements of power systems; ETF Belgrade Type of student work evaluation nination obligations attendance at lectures/exercise homewor lab. exercises/practical wor midterm exame	Year 2001. Points s 5 k 10 s 40	Pages (from-to) Percentage 5% 10% 40%						
Author(s) M. Đurić Obligations, forms of knowledge assessment and grading	Pre-exan	Publication title, publisher Elements of power systems; ETF Belgrade Type of student work evaluation nination obligations attendance at lectures/exercise homewor lab. exercises/practical wor midterm exam final exam (written/ora	Year 2001. Points 25 k k 10 s 40	Pages (from-to) Percentage 5% 10% 40% 45%						
Author(s) M. Đurić Obligations, forms of knowledge assessment and grading	Pre-exan	Publication title, publisher Elements of power systems; ETF Belgrade Type of student work evaluation nination obligations attendance at lectures/exercise homewor lab. exercises/practical wor midterm exam final exam (written/ora	Year 2001. Points s 5 k 10 45 100	Pages (from-to) Percentage 5% 10% 40% 45% 100%						
Author(s) M. Đurić Obligations, forms of knowledge assessment and grading Web page	Pre-exan	Publication title, publisher Elements of power systems; ETF Belgrade Type of student work evaluation nination obligations attendance at lectures/exercise homewor lab. exercises/practical wor midterm exam final exam (written/ora	Year 2001. Points s k k s 40 10 45 100	Pages (from-to) Percentage 5% 10% 40% 45% 100%						
Author(s) M. Đurić Obligations, forms of knowledge assessment and grading Web page Certification	Pre-exan	Publication title, publisher Elements of power systems; ETF Belgrade Type of student work evaluation nination obligations attendance at lectures/exercise homewor lab. exercises/practical wor midterm exam final exam (written/ora	Year 2001. Points s 5 k 10 s I) 45 100	Pages (from-to) Percentage 5% 10% 40% 45% 100%						

				UNIVER Faculty	SITY OF E	AST SA	RAJEVO			Stores -
			Stu	dv proard	ım: Electri	ic Powe	er Engineerii	na		$\mathbf{H}_{\mathbf{u}} \mathbf{P}_{\mathbf{u}}$
101 15 4 STO 10	Ì		Firs	t study cy		Т	hird year of	study	1	
Full name of	the		1115							
course	the					POV	ER ELECTRO	DNICS 1		
course										
Cubication de										FOTO
Subject code				Su	oject stati	us	Seme	ester		ECIS
EE-08-1-029-5				C	ompulsory	/	١	/		5
Teacher(s)	Р	rof. dr I	Vilom	nir Šoja, fu	Ill profess	or				
Associate(s)	Ν	/ISc Mar	ko Iki	ć, senior	teaching a	assistar	nt			
Number of	lessons	/teachiı	ng wo	orkload	Individ	dual stu	udent workl	oad (in h	ours	Student workload
	(we	ekly)				р	er a semeste	er)		coefficient S _o
L	A	E		LE	L		AE	L	E	So
2	1	L		1	45		22.5	22	2.5	1.5
total teachi	ng work	load (in	hour	s, per ser	nester)	t	otal student	workload	d (in ho	urs, per semester)
\	W=2*15	+1*15+	1*15:	=60 h			T=2*15	5*S₀+1*1	5*S₀+1*	ʻ15*S₀=90 h
To	tal work	load of	the s	ubject (te	aching + s	tuden	t): In _{opt} = W +	T = 150	hours p	er semester
	ι	lpon su	ccessf	ul comple	etion of th	e cour	se the stude	nts will b	e able t	:0:
	1	. Under	Understand the importance usage of power converters, their functional and technical							
	C	characteristics,								
Learning		2. Calculate the parameters of the power switching device in the specific application and select the switching device with calculated specification, and optimal trigger methods and								
outcomes	p	select the switching device with calculated specification, and optimal trigger methods and protection.								
	3	. Select	Select the converter for the specific application, with the appropriate topology and							
	f	unction	ctional and technical characteristics,							
	4	. Desigr	n pow	er stage o	of specific	power	converter.			
	P	rerequi	sites i	require kr	lowledge	of fund	lamental of	electrical	engine	ering, circuit theory
Prerequisites	s a	na elect	cronic	s (course	s: Fundam		of Electrical	Enginee	ring i an	
		neory i	and I	, Electron	iics i and i	i), whii	e passing th	e exam re	equires	250% points in each
Teeching			KNOW	leuge ass	essment.					
reaching	L	ectures,	, audi	tory pract	ical lectur	res, lab	s.			
methous		Andul: I	ntrad	luction						
	1	.1 Stude	ent of	oligations	and asses	sment	s.			
	1	.2 Intro	ducti	on in PE:	Definitio	n of Pl	E, significan	e and a	oplicatio	on. Power converters,
	g	eneral o	harad	cteristics	and classif	ficatior	ı.			
	٨	Aodul: F	Power	r electron	ics compo	onents	·			
	2	.1 Ideal	and r	eal powe	r switchin or dovice	g devic	ces: characte	eristics an	IC MODE	els.
Subject cont	ent A	Andul· A	α α α α α α α α α α α α α α α α α α α	converte	or device:	s. Diou	e, invisior,	IVIOSEET,		
per weeks	3	.1 Singl	e-Pha	se AC-AC	Voltage C	ontroll	er: Topologi	es. Work	princip	les.
	3	.2 Three	e-Pha	se AC-AC	Voltage C	ontroll	er: Topologi	es. Work	princip	les.
	4	. Applic	ation	s of AC-A	C Converte	ers: Sta	tic switches	. Starters		
	٨	Aodul: A	AC-DC	converte	rs (rectifi	ers)	(aulture 1 1 1			
	5	. Single	-Phas Phase	e Kectifie Rectific	rs: Topolo	gies. V	ork principl	es.		
	7	. Applic	ation	s of AC-D	Convert	ers: Ba	tterv chargin	es. Ig and DO	motor	control.
	٨	Aodul: L	C-DC	converte	ers (chopp	ers)	,	0		

	8.1 Intro of DC-DC 8.2 Non- 9. Buck-I 10. Insul converte 11. Appl 12. Reso <i>Modul: I</i> 13.1 Intr Harmon 13.2 Sing 14.1 Thr 14.2 Mu	 of DC-DC converter. 8.2 Non-insulated DC-DC converters: buck and boost converter. 9. Buck-boost, Cuk, half and full bridge converter. 10. Insulated DC-DC converters: forward, flyback, insulated half and full bridge, push-pull converter. 11. Application of DC-DC converters: Power supplies. DC motor control. Optimizers. 12. Resonant DC-DC converters: Topologies, work principles and application. <i>Modul: DC-AC converters (inverters)</i> 13.1 Introduction to DC-AC converters: AC voltage output types and its quality indicators. Harmonic filtering. 13.2 Single-Phase inverters: Topologies. Work principles. 14.1 Three-Phase inverters: Topologies. Work principles. 14.2 Multi-level inverters: Topologies. Work principles. 									
	14.3 App 15.1 Cur 15.2 Res	lication of inverters: AC power supplies. Three-pha rent inverters: Topologies. Work principles. Applica onant inverters: Topologies. Work principles. Appli	ise motor ition. cation.	control.							
		Compulsory literature									
Author(s)		Publication title, publisher Year Pages (from-to)									
B. L. Dokić, B. Blan	iuša	POWER ELECTRONICS: Converters and Regulators, Springer	2015.								
		Additional literature									
Author(s)		Publication title, publisher	Year	Pages (from-to)							
N. Mohan		POWER ELECTRONICS: A First Course, John Wiley & Sons	2012.								
Erickson, R. W., Maksimović, D.		Fundamental of Power Electronics, Springer Science+Business Media, LCC	2001.								
		Type of student work evaluation	Points	Percentage							
	Pre-exar	nination obligations									
Obligations,		attendance at lectures/exercise	s 5	5 %							
forms of		homewor	< 5	5 %							
knowledge		lab. exercises/practical wor	< 10	10 %							
assessment and		midterm exam	s 25+25	25 %+25 %							
grading											
		final exam (written/oral) 30	30 %							
	TOTAL		100	100 %							
Web page											
Certification											
date											

			UNIVERSITY OF EAST SARAJEVO								
Full name of ti		Study program: Electric Power Engineering								₽¢Ф	
			First study cycle First vear of study							$\Im \cap \Diamond$	
		e									
course		ELECTRICAL APPLIANCES – 1									
Subject coo		ode		Subject status		JS	Semester		ECTS		
EE-0)-5		C	ompulsory	npulsory		V		5.0		
Teacher(s) PhD Jovar			n Mil	Vikulović, full professor							
Associate(s) PhD Jovan Mikulović, full professor											
Number of	lessons	/teachir	ng wo	orkload	Individ	lual student workload (in ho			ours Student workload		
	(we	eekly)		15		pe	per a semester)		-	coefficient So	
L 2	4	NE D			L		AE	L	E	S 0	
2 total teachi	ng work	د دامعط (in	hour	s ner ser	45 nester)	to	45 tal student w	vorkload	, 1 (in hou	I.J	
W= 2	2*15 + 2	2*15 + 0	*15 + 0*15 =60 hours T= 2*15*So + 2*15*Sc						o + 0*15*So = 90 hours		
Total work	ject (†	(teaching + student): Inopt= W+T=Uopt= 60 + 90 = 150 hours per semester									
	E	By mastering this subject, the student will be able to:									
Learning outcomes	1	1. Explain the working principles of the electrical switchgears,									
	2	 Describe the basic parts of the electrical appliances, Design high voltage plants 									
	4	4. Know everything about electric arc.									
Prerequisites		There are no requirements for registering and listening to the subject. Required prior									
		knowledge from: Physics, Mathematics 1, Fundamentals of electrical engineering 1 and 2.									
Teaching	1	Lectures and auditory exercises.									
methods	1	1. Classification of the electrical quitabases. Electric contacts									
		1. Classification of the electrical switchgears, Electric contacts. 2. Determination of the layer component of the contact resistance. Plate contacts									
		3. Heating of the contacts, transmission of the materials, contact materials, typical									
	c	constructions.									
	4	4. Electric arc, Conditions for occurrence of the electric arc discharge in the gas, structure									
	c	of the electric arc.									
	5	5. Volt-ampere characteristics of the electric arc, static and dynamic characteristics.									
Subject cont per weeks	ent	6. Electric arc and extinguishing of the electric arc of DC and AC currents.									
	7	 7. Linear and transversal electric arc blowing. 8. Constructions of the switcher. Vacuum switch 									
		9. SE6 switch on autonneumatic autoexpansion and electric arc rotation principle									
	1	10. Interaction of the electrical appliances and power grid.									
	1	11. Bus short circuit, Close short circuit, kilometres effect.									
	1	12. Switching off small induction current.									
	1	13. Stress of the electrical switchgears, First pole coefficient.									
	1	14. Symmetrical and aperiodic fault current.									
	1	15. Subtransient, transient and permanent fault current.									
					Compuls	ory lite	ature			1	
Author(s)				Put	lication ti	itle, pul	olisher		Year	Pages (from-to)	
M. S. Savić		Visokonaponska rasklopna oprema, ETF Beograd, Akademska misao Beograd.	2004								
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		Additional literature									
Author(s)	1	Publication title, publisher	Year	Pages (from-to)							
Bharat Heavy Elec	tricals	Handbook of Switchgears, 1st Edition, The	2007								
Limited		McGraw-Hill Companies, Inc	2007								
		Type of student work evaluation	Points	Percentage							
Obligations	Pre-exar	nination obligations									
forms of		attendance at lecture	5 5	5%							
knowledge		seminar pape	r 15	15%							
assessment and		midterm exam	I 25	25%							
grading		midterm exam I	I 25	25%							
Broomb	Final exa	ım	30	30%							
	TOTAL		100	100%							
Web page											
Certification											
date											

		UNIVEF Faculty	SITY OF E	AST SAR	AJEVO			
	Stu	idv proard	m: Electri	ic Power	Enaineerina	1		
500 JO 30	Fir	First study cycle Third year of study						
Full name of the								
course				PROC		JIEKS		
Subject	code	Su	bject statı	JS	Semes	ter		ECTS
EE-08-1-0)31-5	C	ompulsory	/	V			5.0
Teacher(s)	PhD Slobodar	Lubura, t	ull profess	sor				
Associate(s)	Zorana Mand	IC, BSCEE	lun alissia			ad (in ha		Ctudent workload
Number of lesso	veeklv)	Drkioad	individ	per	a semester	ad (in nc)	Jurs	coefficient So
L	AE	LE	L	-	AE	LE	E	So
2	0	2	45		0	45	5	1.5
total teaching we	orkload (in hou	rs, per ser	nester)	tot	al student w	vorkload	l (in hou	urs, per semester)
W= 2*1	.5 + 0*15 + 2 *1	.5 =60 h			T= 2*15*S	_° + 0*15	* S _o + 2	2*15*S₀ =90 h
Total w	orkload of the	subject (te	eaching + s	tudent):	In _{opt} = W + 1	Г = 150 h	ours p	er semester
	Upon	completio	n of the co	ourse the	e student wi	ll be able	e:	
	1. Descri	be various	s types of I	PLC and	their applica	ation in i	ndustri	al systems,
Learning	2. Identif	y the inpu	its and out	tputs of	a PLC in vari	ous indu	ustrial a	applications,
outcomes	3. Use co	 Use counters, timers, algebraic and Boolean operations, memory, subroutines etc. of PLC to do a certain task 						
	of PLC	UI FLC LU UU & CEILUIII LOSK A Write and test PIC Programs for small industrial automation applications						
Dronoguisitos	4. Write	and test P	LC Program	ms for si	nall industri	al autor	nation a	applications.
Prerequisites		Interactive lectures and communication with students						
	Disci	Discussion and Group Works						
Teaching	Discu Press	Discussion and group works Presentation						
methods	Homework							
	Proie	Project						
	1. PLC evolu	ution. histo	orv, applic	ation in	industrial au	utomatiz	ation	
	2. Basic ha	rdware co	omponent	s of PLO	C: CPU mod	dules, I/	O mod	lules, Communication
	processo	r						
	3. Memory structure of PLC, memory areas of PLC, data types							
	4. Digital I/O modules							
	6. Basic cor	cept of PL	_C progran	nming ar	nd standard	program	nming l	anguages
Cubicat contant	7. PLC Prog	, ramming o	devices	U		1 0	U	0 0
Subject content	8. Boole's a	lgebra and	d bit logic	function	s			
perweeks	9. PLC's tim	er instruc	tions: TON	I, TONR,	TOF, typical	industri	ial timir	ng tasks
	10. PLC's cou	inter instr	uctions: C	TU, CTD,	CTUD, typic	cal indus	trial co	unting tasks
	11. PLC's pro	gram cont	trol Instru	ctions, ju	Imp & MCR	instructi	ions	
	12. Instructio	ons for tra	nsterring (Jata, dat truction	a conversio	n and da	ita man	ilpulation
	14. Installatio	on, commi	issioning.	and mail	, ntenance of	PLCs		
	15. STEP7 – I	Micro/WIN	N IDE for p	rogram	ning the S7	200 serie	es PLK	
			_					
			Compuls	ory liter	ature			

Author(s)	1	Publication title, publisher	Year	Pages (from-to)
Frank Petruzella		Programmable logic controllers, 4th edition McGraw Hill	2013	all
		Additional literature		
Author(s)	1	Publication title, publisher	Year	Pages (from-to)
John W. Webb, Ro Reis,	onald A.	Programmable Logic Controllers: Principles and Applications (5th Edition)	2003	all
		Type of student work evaluation	Points	Percentage
Obligations,	Pre-exar	nination obligations		
forms of		attendance at lectures/exercise	s 10	10%
knowledge		lab. exercises/practical wor	k 40	40%
assessment and				
grading		final exam (written/ora	l) 50	50%
	TOTAL		100	100%
Web page				
Certification				
date				

			UNIVER Faculty	SITY OF EA	AST SAR	AJEVO eering			
E YNC		Study program: Electric Power Engineering							
	/	Firs	rst study cycle Third year of study						
Full name of the						,	,		
course				AU	TOMAT	C CONTRO	L SYSTEI	VIS	
Cubicu			Cul		_	6	•		FOTO
Subject		Su	bject statu	S	Semes	ter		ECIS	
EE-08-1-	135-6		C	ompulsory		VI			5
Teacher(s)	Ton	nislav Šeka	ra, Full pr	ofessor					
Associate(s)	Mai	rko Boškov	/ić, Assista	ant profess	or		. /		
Number of less	ons/te	eaching wo	orkload	Individ	ual stud	ent workloa	ad (in ho v	ours	Student workload
	Veeki	y)	16	-	per		/		
3	2		0	L 45		30	LI (L	3 0
total teaching w	vorklo	ad (in hou	rs ner ser	nester)	tota	al student w	orkload	, I (in hoi	urs per semester)
W=3*15	5 + 2*1	.5 + 0*15 =	75 hours	incorcer,	Т	= 3*15*S₀ +	2*15*5	$5_0 + 0*1$	$.5^*S_0 = 75$ hours
Total v	vorklo	ad of the s	ubject (te	aching + st	tudent):	In _{opt} = W + T	= 150 ł	nours p	er semester
Learning outcomes	 teach students classic theory of linear time-invariant systems, closed-loop contrest systems. teach students analysis and synthesis of servosystems as elements of more com control systems. teach students fundamentals of digital control systems and basics of nonlinear set. create a basis for further study of teaching courses using knowledge from control theory. 						ed-loop control s of more complex of nonlinear systems. ge from control		
Prerequisites	The kno Elec	re are no p wledge of ctric Circuit	brerequisi the follov ts Theory.	tes for enr ving subjec	olling th cts: Math	e course. It nematics - 2	is neces , Mathe	sary to matics	have prior - 3, Physics and
Teaching methods	Teaching is conducted in the form of lectures, auditory and demonstration exercises on the computer. The colloquium and the written part of the exam are taken in written form while the oral part of the exam is taken orally. The final grade of the exam will be based on the success of the colloquium, the written part and the oral part of the exam. The Moodle platform is used for creating the content of teaching units, storing teaching materials and results of pre-examination obligations and final examinations, as well as fo communication with students.							ration exercises on taken in written form, exam will be based of the exam. The toring teaching nations, as well as for	
Subject content per weeks	 communication with students. 1. Introduction. Definition and importance of automatic control systems (ACS). Simple control structure and its functional elements. Examples. 2. Mathematical models of elements and systems. Transfer function. Modeling of mechanical systems. Interconnections of elements and subsystems in the system. 3. Algebra of structural block diagrams and signal flow graph-Mason's rule. Electromechanical analogies. 4. The transfer function of linear electrical networks and the representation of the system in state space. 5. Description of the elements of the control loop: plant, sensors, actuators,, amplifiers, two-phase asynchronous motor, direct current motor, servo systems, mechanical reducers, controllers. 6. Responses of elements and systems. Characteristic responses: impulse, step, parabol 						ems (ACS). Simple . Modeling of n the system. 's rule. entation of the system tuators,, amplifiers, s, mechanical pulse, step, parabolic. cy response of the		

system and methods for graphical representation. Amplitude-frequency and phase-
frequency characteristics. Nyquist plot. Bode plots. Processes in linear systems.
7. Stability of linear systems. Necessary and sufficient conditions of stability. Routh and
Hurwitz algebraic stability criteria.
8. Frequency stability criteria. Mikhailov stability criterion. Nyquist stability criterion.
Nyquist curve sketching procedure and Tsipkin's intersection rule. Bode's criterion.
9. Evaluation of the quality of behavior of linear systems. Error constants.
Assessment of system behavior in transient and stationary regimes.
10. The root-locus method of Evans-Teodorchik. Rules for the construction of GMK.
11. Integral criteria of system quality. Sensitivity. Robustness. Invariance.
12. Synthesis of compensators of simple control loops. Synthesis of differential
compensator. Synthesis of integral and differential-integral compensator and PI/PID
controller.
13. Controller design by pole placement technique by closing the feedback loop via states
and outputs of the system.
14. Basic terms in digital control systems, Nyquist-Shannon discretization theorem and
discretization procedures, Z-transform.
15. Basic concepts of non-linear systems, methods of their linearization and on-off
controllers.

Compulsory literature									
Author(s)	1	Publication title, publisher	Year	Pages (from-to)					
K. Ogata		Modern control engineering, Fifth edition, Prentice Hall	2010.						
R.C. Dorf, R.H. Bish	пор	Modern control systems, Pearson Prentice Hall	2008						
		Additional literature							
Author(s)		Publication title, publisher	Year	Pages (from-to)					
K.J. Åström, R.M. I	Murray	Feedback systems, Princeton University Press	2008.						
G.F. Franklin, J.D. Powell, A. Emami-Naeini, J.D. Powell		Feedback control of dynamic systems (Vol. 4), Upper Saddle River: Prentice hall	2002.						
D. Xue, Y. Chen, D.P. Atherton		Linear feedback control: analysis and design with MATLAB. Society for Industrial and Applied Mathematics.	2007.						
		Type of student work evaluation	Points	Percentage					
	Pre-exar	nination obligations							
Obligations,		attendance at lectures/exercise	s 5	5%					
forms of		1 st tes	st 25	25%					
knowledge		2 nd tes	st 25	25%					
assessment and		midterm exam	S						
grading									
		final exam (written/ora	l) 45	45%					
	TOTAL		100	100%					
Web page									
Certification date									

ALCONTROL OF		UNIVERSITY OF EAST SARAJEVO Faculty of Electrical Engineering						S ^D S
		Study progra	m: Electri	c Power	Enaineerina	1		
		First study cy	st study cycle Third year of study					$\mathcal{O} \oplus \mathcal{O}$
Full name of the								
course				ELECTRI		NES – 2		
Subject	code	Su	bject statu	IS	Semes	ter		ECTS
		ompulsory	,	VI			6	
Teacher(s)	Petar Mati	ć, PhD, full p	, full professor				0	
Associate(s)	Srđan Jokić	ź, PhD, assist	ant profes	sor				
Number of lesso	ns/teaching	workload	Individ	ual stud	ent workloa	ad (in ho	ours	Student workload
(\	weekly)			per	a semester)		coefficient S _o
L	AE	LE	L		AE	LI	E	So
2	2	1	42		42	2	1	1.4
total teaching w	orkload (in h	ours, per ser	nester)	tota	al student w	orkload	l (in hou	urs, per semester)
W=2*	15+2*15+1*	*15=75 h		n+). In -	$1=2^{15^{15}}$	0+2*15	$^{*}S_{0}+1^{*}1$	$15^{\circ}S_0=105$ h
	1 Underst	anding the w	orking priv	nciples o	- $VV + I = 75$		and syr	ars per semester
Learning outcomes	 2. Ability to estimate the parameters and characteristics of the electrical machines. 3. Understanding the control principles and starting of the electrical machines. 4. Understanding the integration and operation of the electrical machines in electric power systems. 5. Understanding the operating modes of the electrical machines. 6. Derivation of the basic theoretical considerations in the functioning of the electrical machines. 						rical machines. machines. hines in electric g of the electrical	
Prerequisites	There are r knowledge circuits the	no requireme from the su eory 1 and 2 a	ents for reg bjects: Fur and Electro	gistering ndamenta omagnet	and listenin als of electr ics-1.	ng to the ical eng	e course ineering	e. Required prior g 1 and 2, Electric
methods	lectures, au	uditory exerc	ises, labor	atory exe	ercises, sem	inar wo	rk, field	teaching
Subject content per weeks	 Commutating machines: Coil with the commutator. Rotation voltage E. Rotating torque M. Armature reaction, auxiliary poles. Compensation coil, commutation. Characteristics of the generators and motors. Speed regulation with voltage and main poles field. Synchronous machines: Armature reaction. Synchronous reactances Xd and Xq, phasor diagram, synchronization of the V-curve excitation. Regulation of Q(var) and P(W), oscillations. Short circuit, asymmetries. Generalized theory of the electrical machines: Rotating machine represented as the coupled inductors. Fundamental machine with linear and transversal axis (d, q, D, Q). Transformation from two-phase in stationary system, synchronous and asynchror machine 						on of the V-curve, represented as two). chine. us and asynchronous	
	machine.		Compulse	ory litera	ture			

Author(s)		Publication title, publisher	Year	Pages (from-to)					
S. N. Vukosavić		Electrical Machines, 2013th Edition, Springer	2012						
		Electric Machines: Steady State, Transients,							
I. Boldea, L. N. Tutelea		and Design with MATLAB [®] , 1 st Edition, CRC	2009						
		Press							
		Additional literature							
Author(s)		Publication title, publisher	Year	Pages (from-to)					
		Type of student work evaluation	Points	Percentage					
Obligations	Pre-examination obligations								
forme of		attendance at lectures/exercises	s 10	10 %					
knowledge		test/midterm exan	n 30	30 %					
assessment and		lab. exercises	5 10	10 %					
grading									
graung) 50	50 %						
	TOTAL		100	100 %					
Web page									
Certification									
date									

	UNIVERSITY OF EAST SARAJEVO Faculty of Electrical Engineering									
			Study prog	, gram: Elec	tric Pov	ver Engineerin	g			
100 100 100 100 100 100 100 100 100 100		F	First study cycle Third year of study							
Full name of the				ŀ		OLTAGE TECHI	NIQUE – 1			
course							•			
Subject code			Sub	ject status	s	Seme	ster	ECTS		
EE-08-1	со	mpulsory		V		6				
Teacher(s)	(s) associate pro			sor Mladen Banjanin, PhD						
Number of les	sons/te	eaching w	orkload	Individu	u al studi	ent workload	(in hours ne	r a Student workload		
Number of les	(week	ly)	onnouu	marriad	ai stud	semester)	(in nours pe	coefficient So		
L	AE		LE	L		AE	LE	So		
3	1		1	63		21	21	1.4		
total teaching	worklo	ad (in hou	urs, per sem	ester)		total student	workload (in	hours, per semester)		
W=3	*15 + 1 [otal.w/	*15 + 1*1	15 = 75 h	tosching	t stud	$I=3^{15^{\circ}5_{0}}$	$\frac{1}{2} + 1^{15} + 5_{0} + \frac{1}{2}$	$+ 1^{15}S_{0} = 105 h$		
	By	bassing th	is subject, t	he student	t will be	$e_{\text{able to:}}$.80 110ui s pe	Semester		
	1. A	nalyzes li	ghtning, sw	itching and	d temp	orary overvolta	ages in the e	lectric power system, and		
Learning	pro	poses app	propriate pr	otection sy	stems.					
outcomes	2. T	o recogni	ze, analyze	and solve p	probler	ms caused by d	lifferent type	es of overvoltages that		
Droroquisitos	app	ear in the	e electric po	wer systen	n.	ad passing the	course			
Teaching	The	ere are no	requiremen	its for liste	ening ai	nu passing the	course.			
methods	Lec	tures, auc	litory exerci	ses, nume	rical ex	ercises.				
Subject content per weeks	 proposes appropriate protection systems. 2. To recognize, analyze and solve problems caused by different types of overvoltages that appear in the electric power system. There are no requirements for listening and passing the course. Lectures, auditory exercises, numerical exercises. 1. Introduction. Rules of work on the subject. Definitions and classification of overvoltages. Causes and basic characteristics. 2. Lightning transients. Formation of thunder clouds. Development of lightning discharge. Electrical and meteorological parameters of lightning discharges. 3. Modeling of electric power system elements in calculation of lightning transients. (lightni strike, overhead line, HV cable, overhead line tower and its grounding). 4. Flashover models of line insulators. Model of operating voltage on phase conductors. Modeling of high voltage equipment. Surge arrester model. 5. Metal oxide surge arresters. 6. Calculations of lightning transients in the electric power system. Analytical calculations (Thevenen's method, lattice diagram, Bergeron's method). Numerical calculation of lightning transients. 7. Lightning protection of overhead lines (lines with and without ground wire, induced volta on phase conductors). 8. Lightning protection of high voltage substations (strikes into impigning transmission lines direct strikes into the substation, HVDC substations). 9. Voltage distribution along the transformer windings and overvoltage transfer through the transformer. 10. Internal overvoltages. Modeling of transmission lines. Overvoltages during automatic reclosure operation. 13. Overvoltages during the switching of transmission lines. Overvoltages during automatic reclosure operation. 13. Overvoltages during the switching of transmission lines. Overvoltages due to intermittent electric arc earth faults. 15. Overvoltages due to resonance and ferroresonance. Overvoltages							cation of overvoltages. of lightning discharge. ching transients. (lightning hg). In phase conductors. analytical calculations al calculation of lightning und wire, induced voltages gning transmission lines, age transfer through the on of internal overvoltages. acitive and inductive tages during automatic voltage. Modeling of the voltages due to es caused by inadequate		

	Compulsory literature									
Author(s)		Publication title, publisher	Year	r Pages (from-to)						
A. R. Hileman		Insulation Coordination for Power Systems, Taylor & Francis Group.	1999)						
R.Smeets, L. van der Sluis, M. Kapetanovic, D. F. Peelo, A. Janssen		Switching in Electrical Transmission and Distribution Systems, John Wiley & Sons.	2014	l						
		Additional literature								
Author(s)		Publication title, publisher	Year	r Pag	es (from-to)					
		Type of student work evaluation		Points	Percentage					
	Pre-exan	nination obligations								
Obligations,		attendance at lectures/exe	rcises	5	5%					
forms of		I colloc	uium	12,5	12,5%					
knowledge		II colloc	uium	12,5	12,5%					
assessment and		numerical exe	rcises	25	25%					
grading										
	final exam (written/oral) 45 45%									
	Total 100									
Web page										
Certification date										

FOURTH YEAR – COMPULSORY SUBJECTS

			UNIVERSITY OF EAST SARAJEVO Faculty of Electrical Engineering						
		Stu	idy progra	m: Electri	ic Power	Engineering	1		
101 15 15 15 10 JO	Ì	Fire	st study cycle Fourth year of study				tudy		$\mathcal{O}_{\square} \mathcal{O}$
Full name of	the								
course				FUNDAIV					N3
Subject code			Su	bject statı	us	Semes	ter		ECTS
EE-08-1-041-7			0	ompulsory	/	VII			5.0
Teacher(s)		, Iirjana Maks	imović, Pl	nD, Associ	, ate Prof	essor			5,0
Associate(s)	N	liodrag Forc	an, PhD, A	ssistant P	rofesso				
Number of	lessons/	teaching w	orkload	Individ	dual stu	dent worklo	ad (in ho	ours	Student workload
	(wee	ekly)			pe	a semester)		coefficient S _o
L	A	E	LE	L			LE		S₀
2 total toachiu	1 ng work	load (in hou	1 rs_por_sor	45	to	22.5	22. vorklaad	.5 (in hou	1.5
W=2	*15 + 1	*15 + 1*15 :	=60 hours	nesterj		Γ= 2*15*S ₀ +	· 1*15*S	₀ + 1*1	$5^*S_0 = 90$ hours
Total w	orkload	of the subje	ect (teachi	ng + stude	ent): In _{or}	t = W + T = 6	0+90 = 1	50 hou	rs per semester
	T	ne course ai	ms to tead	ch student	:s:				
Learning		basic proce	dures for	analyzing	analog a	and digital sig	gnals,		
outcomes	3	the princip	les of tran	smission o	of analog	g and digital	signals i	n the b	asic and transposed
	ra	inges, and					-		
	4	working in	the labora	atory and I	becomir	g familiar w	ith pract	ical cor	nmunication systems.
Prerequisites		nere are no is necessary	prerequisi / to have p	to have prior knowledge of the following subjects: Fundamentals of neering Analysis of Signals and Systems Mathematics L. II. and III.					
	T	eaching is co	nducted i	n the forn	n of lect	ures. auditor	v and la	borato	ry exercises. The
Teaching	N	loodle platfo	orm is use	d to creat	e the co	ntent of tead	, ching uni	its, stor	, e teaching materials
methods	a	nd results of	pre-exam	n obligatio	ns and f	inal exams, a	as well as	s for co	mmunication with
	st	udents.							
	1	Introductio	n. Model	of the tele	ecommu	nication syst	em.		
	2	Classificatio	on of signa	als. Analys	is of det	erministic si	gnals: Fo	ourier s	eries (periodic
	si	gnals) and F	ourier tra	nsform (ap	periodic	signals).			ing an and the second of
	3	. Signai char V image)	acteristics	of real mo	essages	(telegraphy,	data tra	nsmiss	ion, speech, music,
	4	Signal trans	smission t	hrough lin	ear and	non-linear s	vstems (linear a	and non-linear
	d	istortions).					/ (
Subject conte	ent 5	Modulatio	n and dem	odulation	of anal	og signals: ar	nplitude	(KAM,	AM-DSB, AM-SSB,
per weeks	A	M-NSB, QAN	и). 6. Moo	lulation ar	nd demo	dulation of a	analog si	gnals:	phase modulation
	a	and frequency modulation.							
	7	Principles o	of frequen	cy multipl	exing.				
	8	Sampling t	neorem. C	uantizatio	on.	DCM			
	9	. impulse mo	with time	distributi	IVI, PPM	, PCIVI.			
	1	1 Model of	the digital	transmiss	sion syst	em and haci	c charac	torictio	s of digital signals
11. Model of the digital transmission system and basic characteristics of digital sig						s of ulgital signals.			

	12. Mod	12. Model of the transmission system in the baseband frequency range.								
	13. Sign	al transmission in the baseband frequency range. I	nfluence of	f noise and						
	intersym	bol interference.								
	14. Nyqu	uist's criteria.								
	15. Modulation and demodulation of digital signals: ASK, PSK, FSK.									
Compulsory literature										
Author(s)	1	Publication title, publisher Year Pages (from-to)								
M. Maksimović	Lecture presentations available on the Moodle									
		platform								
R. I. Freeman		Fundamentals of Telecommunications,	1999.							
		Wiley								
R. G. Gallager		2012.								
	MIT, Cambridge University Press									
V. Milosević, ivi.	Fundamentals of Telecommunications – 2013.									
Waksimovic										
Author(s)		Publication title nublisher	Vear	Pages (from-to)						
			i Cui	ruges (nom to)						
		Type of student work evaluation	Points	Percentage						
	Pre-exar	nination obligations	1 01110	i ci centage						
Obligations		attendance at lectures/exercise	s 5	5%						
forms of		midterm exam	1 20	20%						
knowledge		midterm exam	1 20	20%						
assessment and										
grading										
	final exam (written/oral) 45 45%									
	TOTAL 100 100%									
Web page										
Certification										
date										

				UNIV Facu	ERSITY OF	EAST	SARAJEVO			SOC.		
	E.		S	tudy pro	gram: Elec	tric Pov	ver Engineerin	q				
10 C C C C C C C C C C C C C C C C C C C	Ì		First	study cy	cle		Fourth year of	study		$\Im \square \Diamond$		
Full name of t	he				ŀ	IIGH V	OLTAGE TECHI	NIQUE – 2				
Sub	ject co	ode		Subject status Ser			Seme	ster		ECTS		
EE-0	8-1-17	'4-7		СС	mpulsory		VI	1		5		
Teacher(s)		associate professor Mladen Banjanin, PhD										
Associate(s)		assistant	profes	sor Srdja	n Jokić, Ph	D, MSc	Bojana Novak	ović, senior	teach	hing assistant		
Number of	lesson	s/teachir	ng wor	kload	Individu	al stud	ent workload ((in hours pe	ra	Student workload		
	(w)	<u>eekiy)</u> ΔF	[IF	1		ΔF	IF	_	So		
2		1		1	45		22.5	22.5		1.5		
total teachi	ing wo	- rkload (in	hours	 . per sem	ester)		total student v	workload (in	hour	rs. per semester)		
v	N=2*1	5 + 1*15 ·	+ 1*15	= 60	,		T=2*15*	S₀ + 1*15 [*] S₀	+ 1 *	*15*S _o = 90		
	Tota	al workloa	nd of th	e subjec	t (teaching	+ stud	ent): W + T = 1	.50 hours pe	r sen	nester		
		By passin	g this s	subject, t	he student	t will be	e able to:					
Learning		1. Recogn	hize the	e various	problems	that oc	cur in the insu	lation of hig	h-vol	Itage devices.		
outcomes		2. Analyz	es and	understa	inds the pr	ocesse	s that take pla	ce inside gas	seous	s, liquid and solid		
		3. Perfor	.s. ms sim	ple high y	voltage tes	ts and	measurement	s.				
Prerequisites		There are	e no re	quiremer	nts for liste	ening ar	nd passing the	course.				
Teaching		Lectures	audito	ry everci	ses labora		vercises numer					
methods		Lectures,	auunt				ercises, numer					
		1. Introdu	uction.	Rules of	work on th	ne subj	ect. Dielectrics	and high vo	Itage	e insulation. Gaseous,		
		2 Dielect	ric los	alelectric ses Sneci	ific electric	al resis	tance and insu	lation resist	ance	1		
		3. Dielect	ric stre	ength. Ele	ectrical bre	akdow	n of gaseous d	ielectrics.	unce			
		3. Electri	cal bre	akdown d	of liquid an	nd solid	dielectrics. Th	ermal break	dowr	n of liquid and solid		
		dielectric	s.									
		4. Electro	chemi	cal break	down of so	olid die	lectrics. Electro	omechanical	brea	akdown of solid		
		Gielectric	S.	the surf	ace of noll	utod in	sulation Impu	rities in diel	octric	rs (SE6 gas and		
		transforn	ner oil)			uteu m			ectric	cs (5) 0 gas and		
		6. Labora	tory te	sting of I	nigh voltag	e equip	oment. Dielect	ric testing of	equi	ipment. Testing of		
		equipme	nt with	high pov	wer freque	ency vo	ltage.					
		7. Testing	g of eq	uipment	with impul	lse volt	ages. Testing e	quipment w	ith h	igh DC voltage.		
Subject conte	nt	8. Testing	g of equir	uipment	on partial (dischar	ges. Generatio	on of high vo	Itage	e with high frequency.		
per weeks		9 Therm	i equip al and	electrody	namic tes	ting of	equinment Te	ges. Isting of equ	inme	ent with impulse		
		currents.	Equip	nent test	ting with ra	ated op	erating curren	it.	ipine			
		10. Testir	ng equi	pment w	ith short c	ircuit c	urrent. Testing	, equipment	in hi	gh power		
		laborator	ries.									
		11. Mech	anical,	chemica	l and therr	mal tes	ting of power e	equipment. I	Field	tests of power		
		equipme	nt. uromo	nt of unc	listorted a	nd dist	orted signals	Apacuramar	t of l	high voltages. Voltage		
		instrume	nt tran	sformers	. Electrost	atic vo	ltmeter.	vieasureniei		ingli voltages. voltage		
		13. Amm	eter in	series w	ith a resist	or or ca	apacitor. Meas	uring sphere	gap	s. High voltage		
		dividers.										
		14. Devic	es for	measurin	g the maxi	imum v	oltage value. (Dscilloscope	s, hig	h-voltage probes and		
		digital me	easurir	g system	is. Measur	ement	ot high current	ts.	A -	unter destara la d		
		15. Curre	nt inst all effe	rument t rt	ransforme	rs. Kog	owski coll. Cur	rent shuht. I	vieas	suring devices based		
		on the Ha	all effe	ct.								

		Compulsory literature							
Author(s)		Publication title, publisher	Yea	r	Pages (from-to)				
E. Kuffel, W.S. Zaen J. Kuffel	ıgl,	High Voltage Engineering Fundamentals, second edition, Butterworth-Heinemann.	2000.		-				
R. Arora, W. Mosch	I	High Voltage and Electrical Insulation Engineering, second edition, John Wiley & Sons.	2022.		-				
Author(s)		Publication title, publisher	Yea	r	Pag	es (from-to)			
		Type of student work evaluation		Poi	nts	Percentage			
	Pre-examination obligations								
Obligations		attendance at lectures/exe		5	5%				
forms of		I colloc	1	12,5	12,5%				
knowledge		II colloc	1	12,5	12,5%				
assessment and		laboratory exe	rcises		13	13%			
grading		numerical exe	rcises		12	12%			
Broomb									
		final exam (written		45	45%				
	Total				100	100%			
Web page									
Certification date									

ALCO Y NCTO Y			UNIV Facu	ERSITY OF I	EAST : ical Fr	SARAJEVO		\bigcirc		
Super-			Study prod	aram: Electr	ric Po	wer Enaineering	7	\supset	u \$	
5 45 to 30	Ì		First study cy	cle		Fourth year of	study	\bigcirc		
Full name of t	he			PO	WERI		FACILITIES			
Subj	ject co	de	Sub	ject status		Seme	ster		ECTS	
EE-0	8-1-128	8-7	со			7				
Teacher(s)	á	associate	professor Mlac	len Banjanir	n, PhC)				
Associate(s)		assistant	professor Nada	Cincar, PhD) Latud	ant workload (in hours no	co Ctud	ant workload	
	(we	ekly)		marviada	istuu	semester)			efficient So	
L		AE	LE	L		AE	LE		S₀	
3		2 klaad (in		81		54	U vorklaad (in	hours por	1.8	
iotai teachi W	/=3*15	6 + 2*15 +	+ 0*15 = 75	ester)		T=3*15* S	o + 2*15* So	+ 0*15* So	= 135	
	Tota	l workloa	d of the subject	t (teaching +	+ stud	ent): W + T = 2	10 hours pe	r semester		
	E	By passin	g this subject, t	he student v	will be	e able to:				
Learning	-	1. Analyz	es different con	figurations	and r	ecognizes elem	ents of high	voltage sub	stations.	
outcomes	4	2. Unders	stands and calcu	llates the pa	arame	eters required f	or dimensio	ning of high	voltage	
		3. Perfori	ms simplified ca	lculations a	nd de	sign of the mai	n circuits of	high voltag	e substations.	
Prerequisites	1	There are	e no requiremer	nts for listen	ning ai	nd passing the	course.	0 0		
Teaching methods	I	Lectures, auditory exercises.								
methous		1. Introduction. Rules of work on the subject. Three phase short circuit. Characteristic periods								
	0	of three phase short circuit current: subtransient, transient and steady-state period of short								
	0	circuit cu	rrent.							
	4	2. Dynam	ic and thermal	short circuit	t curre	ents. Breaker in	iteruption c	urrent.		
		3. Unsym 4. Flectro	imetrical short o othermal calcula	tion Therm	and s	uilibrium equat	mponents. ion Heating	of the con	ductor in	
	r	normal a	nd intermittent	operation,	and ir	the period of	short circuit	. Conductor	cooling.	
	5	5. Calcula	tion of the forc	e acting on	the su	ubstation eleme	ents. Force b	petween co	nductors. The	
	f	force bet	ween a conduct	or and a fer	rroma	ignetic materia	l. Forces bet	ween cond	uctors of a	
Subject conter	nt t	three-pha	ase system duri	ng a short ci ated condui	ircuit.	Inculators				
per weeks		7. Main s	chemes and dis	positions of	^f high	voltage substat	tions.			
	8	8. Power	cables. Breaker	s.						
	9	9. Switch	es. Disconnect s	witches. Hi	gh vo	ltage fuses. Rec	closers and o	disconnecto	rs.	
	-	10. Instru	ments transfor	mers (curre	nt and	d voltage).				
		11. Powe 12. Lightr	ning protection	of high volt	or iim age si	ubstations, SF6	high voltage	e substation	s.	
		13. Earth	ing of high volta	ige substati	ons.			Substation		
	1	14. Basics	s of high voltage	substation	is relia	ability. Basics of	f high voltag	e substatio	ns protection.	
		15. Single	e line diagrams o	of high volta	age su	bstations.				
Auth	or(s)	Compulsory literature Publication title publicher Vear Vear Vear Vear Vear Vear Vear								
	51(5)	Electric Power Substations Engineering. third								
J. D. McDonald	ג 	edition 2012								
Δu+b	or(s)		Du	Additiona	al lite	hlisher	Vea	r Dag	es (from-to)	
Obligations.	51(3)		Type of	student wo	ork ev	aluation	Tea	Points	Percentage	
forms of	F	Pre-exam	ination obligati	ons						
knowledge				at	ttenda	ance at lectures	/exercises	5	5%	

assessment and	I colloquium	15	15%
grading	II colloquium	15	15%
	seminary work	20	20%
	final exam (written/oral)	45	45%
	Total	100	100%
Web page			
Certification date			

			UNIVER Faculty	SITY OF E	AST SAF	AJEVO neering			
		Stu	dv proard	m: Flectri	c Power	Fnaineerina			
		Firs	st study cy	cle	Fou	rth year of stu	dv	$\Im \square \Diamond$	
Full name of the					FLECT			4~~h	
course					ELECT				
Subject	code		Subject status			Semeste	r	ECTS	
EE-08-1-	044-7		compulsory VII					5	
Teacher(s)	Petar Ma	atić, F	hD, full p	rofessor					
Associate(s)	Marko II	kić, M	Sc, senior	teaching	assistan	t			
Number of lesso	ons/teachi	ng wo	orkload	Individ	lual stud	lent workload	l (in hours	Student workload	
		[IE		per		IE		
2	1		1	45		22.5	22.5	1.5	
total teaching w	orkload (ir	n hou	rs, per ser	nester)	to	al student wo	rkload (in h	ours, per semester)	
W=2 ³	*15+1*15+	-1*15	=60 h			T=2*15*S₀	+1*15*S _o +:	L*15*S₀=90 h	
Total workl	oad of the	subje	ect (teachi	ng + stude	ent): In _{op}	_t = W + T = 60+	•90 = 150 h	ours per semester	
Learning outcomes	 Understanding the role and significance of the electric drives, their types, and structures. Ability to analyse of the electric drives in static and dynamical regimes. Ability to choose the components of the electric drives. Ability to perform modelling of the electric drives. 								
Prerequisites	knowled circuits t machine	ge fro heory s 1 ar	om the sul y 1 and 2, nd 2.	bjects: Fur Electroma	ndamen Ignetics	tals of electrica 1 and 2, Electr	al engineeri onics 1 anc	ng 1 and 2, Electric 2, and Electrical	
Teaching methods	lectures,	audi	tory exerc	ises, labor	atory ex	ercises, semin	ar work, fie	ld teaching	
methods I. General features of electric motor drive (EMP), nature of EMP problems, mechanica characteristics of working machines, general equation of motion and basic operating states of EMP. Subject content 2. EMP with direct current motors: independent, parallel, sequentially excited motors with direct currents, static electromechanical characteristics. Subject content 9. Braking states of EMP with DC motors. Per weeks 6. Commissioning of EMP. 7. Static stability of EMP. 8. Multi-motor drives, electric shafts, cascade connections of asynchronous motors. 9. Regulation of the rotation speed of EMP with DC motors. 10. Regulation of the rotation speed of EMP with asynchronous motors. 11. Dynamic operating modes of EMP with asynchronous and synchronous motors. 11. Dynamic operating modes of EMP with asynchronous motors. 12. Dynamic operating modes of EMP with DC motors. 12. Dynamic operating modes of EMP with asynchronous and synchronous motors. 13. Reduction of losses in dynamic modes, heating of EMP. 14. Choice of engine for EMP. 14. Choice of engine for EMP. 15. Overload network interference explosion protection								roblems, mechanical nd basic operating ally excited motors nical characteristics. ors. chronous motors. otors.	
				Compuls	ory liter	ature			
Author(s)		Pub	lication ti	tle, pub	lisher	Year	Pages (from-to)	

S. N. Vukosavić		Electrical Machines, 2013th Edition, Springer	2012		
l. Boldea, L. N. Tut	elea	Electric Machines: Steady State, Transients, and Design with MATLAB [®] , 1 st Edition, CRC	2009		
		Press			
		Additional literature			
Author(s)	Year	Page	es (from-to)		
A. Hughes, B. Drur	γ	Electric Motors and Drives: Fundamentals, Types and Applications, 5th Edition, Newnes,	2019		
		Type of student work evaluation	Points		Percentage
Ohlisstians	Pre-exar	nination obligations			
obligations,		attendance at lectures/exercise	es 5		5 %
knowledge		seminar pape	er 10		10 %
assessment and		test/midterm exar	n 50		50 %
grading					
Proving		final exam (written/ora	l) 35		35 %
	TOTAL		100		100 %
Web page					
Certification					
date					

				UNIV Facu	ERSITY OF	EAST	SARAJEVO				
				Study pro	g ram: Elec	tric Pov	ver Engineerin	g			
01 CT	Ì		Fir	st study cy	cle	1	Fourth year of	study		$\Im \cap \Diamond$	
Full name of t	he			POWER SYSTEM PROTECTION							
course											
Sub	ject coc	e		Sub	ject status	S	Seme	ster		ECTS	
EE-0	8-1-136	-8		compulsory VIII					7		
Teacher(s)	a	sst. prof	essor	PhD Mioc	Irag Forcar	1					
Associate(s)	lessons	/teachir		rkload	Individu	ן al stud	ent workload (in hours ne	ra	Student workload	
	(we	ekly)	15 110	INIOUU	marriad	ui stuu	semester)	in nours per	ä	coefficient So	
L	A	E		LE	L		AE	LE		So	
3		2		1	60		40	20		1.33	
total teachi	ing worl	load (in	hour	s, per sem	lester)		total student v	vorkload (in	hou	irs, per semester)	
	3*15 + 2	2*15 + 1	*15 =	= 90 h			3*15*S₀ ·	+ 2*15*S ₀ +	1*15	5*S _o = 120 h	
	101	al subjec	nowl	rkload (tea	iching + sti	udent):	90 + 120 = 210) nours per s	seme	ester	
	2	. Basic k	nowl	edge of pr	merical re	lavs. si	gnal processing	z, and protect	ctior	algorithms.	
Learning	3	. Basic k	nowl	edge of pr	otection of	f powe	r system eleme	ents (lines, g	ener	rators, transformers,	
outcomes	b	usbars,	and n	notors).							
	4	. Basic k	nowl	edge of re	ay protect	ion tes	ting procedure	s.			
Prerequisites	T	here is r		nditionalit	y related to	o other	subjects (no p	rerequizites) <u> </u>	-) -	
		lybrid te lasses/e	achin vercie	ig method: ses (I C /F)	seminar n	(L), the aners	and consultation	s/exercises (ons are narti	ally i	c), laboratory	
	v	av (svn	chron	ous learni	ng - live), a	and par	tially done elec	ctronically (s	vncł	hronous and	
	a	synchro	nous	distance le	earning).		,	7.	,		
							_				
	L	ectures	are ca	arried out	in the form	n of fac	e-to-face and g	group work.	Tead	ching is organized in	
Teaching	d	nintera	clive	way with r	eguiar disc	cussion	5.				
methods	Т	heoretic	al an	and numerical exercises are carried out in the form of interactive solving of						ctive solving of	
	e	xamples	i.							_	
	т	ha sami	narn	anor is roa	lized base	d on ar	individual stu	dont work w	uith r	ogular consultations	
		ne senn		aperisiea		u on ai				egular consultations.	
	Т	he Moo	dle p	latform is	used to cr	eate th	e content of t	eaching unit	s, st	ore teaching materials	
	a	nd resul	ts of	pre-exam	obligations	s and fi	nal exams, as v	vell as comm	nuni	cation with students.	
	1	. Introdi rotectiv	action e rela	i to protec	tive relayii	ng. Pov : Basic	objectives of s	its and abno vstem prote	rma	n conditions. Typical	
	2	. Relay c	pera	ting princi	ples. Prote	ction o	of individual po	wer system	elen	nents. Protection	
	с	oordina	tion.	01			·				
	3	. Relay p	orote	ction schei	nes within	substa	ations. Supply s	ources and	circu	uit breaker	
Subject conta	C	onnectio	ons.	tion in a start	Dotort	اممط -	urront too of -				
ner weeks		. Relay (Classifi	catio	n of relave	S. Potentia	ai anu c echania	cal static and	numerical re	alave		
per weeks	6	. Signal	proce	ssing for r	umerical r	elavs. I	Protection algo	rithms.	Jays		
	7	. Line pr	otect	ion. Equip	ment for li	ne pro	tection. Coordi	nation fund	ame	ntals and general	
	S	etting cr	iteria	•							
	8	. Nonpil	ot ov	ercurrent	protection	of trar	ismission lines.	Ground fau	lt pr	otection.	
	9	. Nonpil	ot dis	tance prot	tection of t	ransm	ission lines.				
	1	u. Pilot	orote	ction of the	ansmission	i imes.					

	 Rotating machinery protection. Generator protection/intertie protection for distributed generation. Transformer protection. Busbars protection. Load protection. Motor protection. Testing of relay protection devices. Monitoring performance of power systems. 										
	Mandatory literature										
Authors		Title of publication, publisher Year Pages									
S. H. Horowitz, A. G	6. Phadke	Power System Relaying, Third Edition, John Wiley & Sons Ltd., Chichester, England	3	/							
J. L. Blackburn, T. J.	. Domin	Protective Relaying Principles and Applications, Third Edition, CRC Press, Taylor & Francis Group, London	2006	5	/						
M. Forcan		Presentations from lectures and exercises available on the platform Moodle LMS	2021	L	/						
M. Đurić, Z. Stojano	nović Relejna zaštita, KIZ centar, Beograd 2014 /										
	Additional literature										
Authors		Title of publication, publisher	Year	r	Pages						
M. Alkalaj, F. Božut	a	Zbirka zadataka iz relejne zaštite elektroenergetskih postrojenja, ETF Sarajevo	1986	j.	/						
		Types of student work evaluation		Points	Percentage						
	Pre-exam	obligations									
		attendance at lectures/exe	rcises	5	5%						
Obligations,		I partial exam (collo	oquia)	20	20%						
forms of		II partial exam (collo	oquia)	20	20%						
knowledge		laboratory exe	rcises	10	10%						
testing and	seminar paper 10 10%										
evaluation	Final exam										
	test paper 15 15%										
		oral examination 20 20%									
	TOTAL			100	100%						
Web page											

C VICTOR NO			UNIVER	SITY OF E	AST SAR	AJEVO		S ^{II} S	
		C 1 · · ·	Faculty	of Electric					
		Stu	ay progra	im: Electri	c Power	Engineering			
Full name of the		Firs	st study cy	cle	Four	th year of stud	ly	×∭×	
course			CC	OMPUTER	AIDED D	ESIGN IN ELEC	TROENERG	ETICS	
Subject	code		Subject status Semester					ECTS	
EE-08-1-	132-8		C	ompulsory		6			
Teacher(s)	Nada Cir	ncar, F	PhD, assis	tant profe	ssor				
Associate(s)	Goran V	ukovid	ć, MSc, se	nior teach	ing assis	tant			
Number of less	ons/teachi	ng wo	orkload	Individ	lual stud	ent workload	(in hours	Student workload	
(weekly)	1			per	a semester)		coefficient So	
				L		AE		S _o	
2	2		1	42		42	21	1.4	
total teaching w	/orкioad (in *15.2*15.		rs, per ser	nester)	τοτά	al student wor	KIOAO (IN NO	urs, per semester)	
	*15+2*15+	·1 · 15:	= /5 11	ag Listudo	nt). In -	$1=2^{+}15^{+}5_{0}+$	$2^{15} \cdot 5_{0} + 1^{1}$	15°S ₀ =105 h	
Learning outcomes	 Detaile through Training Getting Getting Impleid 	 Detailed introduction to the implementation of the modeling and simulation procedure through the development process. Training for creating reports using certain software tools. Getting to know aspects of project management and using the MS PROJECT program for that purpose. Implementation of all acquired knowledge on certain practical examples. 							
Prerequisites	There ar	e no r	requireme	ents for re	gistering	and listening t	o the cours	e.	
Teaching methods	lectures,	audit	tory exerc	ises, labor	atory exe	ercises			
Subject content per weeks	 lectures, auditory exercises, laboratory exercises 1. Introduction. Student obligations and assessment. Computer modeling and simulation 2. Definition, motivation, role of computers in modeling and simulations. 3. Formation of a mathematical model and a computer program. Simulations, goal and examples. 4. Development of a program for impact characteristics of grounding devices. Elements of MATLAB and the GIC program. 5. Forming examples of modeling and simulation of impulse characteristics of grounding devices. 6. Basics of the EMTP/ATP + ATPDRAW program. 7. Examples and applications of the EMTP/ATP + ATPDRAW program. Examples and applications of Excel in calculations. 8. Creating macros in Excel. Principles of working with databases and application in the power industry. 9. Creation of graphic documentation of the project. Basics and application of AUTOCAD. 10. Advanced AUTOCAD techniques. Program for creating action and binding schemes (EPLANCADdy++). 11. Project management. Project definitions. 12. Phases of the project. Participants in the implementation of the project. 13. Types of project. Project content, terms of reference and contract. 14. Project management using the MS PROJECT program. 								
				Compuls	ory litera	ture			
Author(s)		Puk	olication ti	tle, publ	isher	Year	Pages (from-to)	

Z. Stojkovic		Computer- Aided Design in Power Engineering, Application of Software Tools, Springer, Academic Mind	2012			
		Additional literature				
Author(s)	1	Publication title, publisher	Year	Pag	ges (from-to)	
		Type of student work evaluation	Points		Percentage	
	Pre-exar	nination obligations				
Obligations,		attendance at lectures/exercise	s 5		5 %	
forms of		midterm exam	I 20		20 %	
knowledge		midterm exam	1 20		20 %	
assessment and		laboratory exercise	s 10		10 %	
grading						
		final exam (written/oral) 45		45 %	
	TOTAL		100		100 %	
Web page				•		
Certification						
date						

THIRD YEAR – ELECTIVE SUBJECTS

			UNIVI Facult	RSITY OF E	AST SAR	AJEVO eering				
ANC			Study prog	ram: Electr	ic Power	Engineering	1			
1919 15 4.5V 3 4 5V 3 4 5V	Ì		First study	cvcle	Thir	d vear of st	udv		$\Im \cap \Diamond$	
Full name	of th	ne								
course				ELECTRICAL APPLIANCES – 2						
Sub	ject co	de	s	ubject stat	us	Semes	ter	ECTS		
EE-0	8-2-03	6-6		elective VI					5.0	
Teacher(s)		PhD Srđa	an Jokić, assis	tant profes	sor					
Associate(s)		Bojana Č	olić, MSc, ser	ior teachin	ig assistai	nt				
Number of	esson	s/teachir	ng workload	Indivi	dual stud	ent worklo	ad (in ho	urs	Student workload	
	(we	eekly)			per	a semester)		coefficient S _o	
L		AE	LE	L		AE	LE		So	
2		0	2	45		0	45		1.5	
total teaching	ng wor	kload (in	hours, per se	emester)	tot	al student v	vorkload	(in hou	urs, per semester)	
W= 2	2*15 +	0*15+2	*15 =60 hou	S	T=	= 2*15*So +	0*15*Sc	+2*1	.5*So = 90 hours	
Total work	load o	f the sub	ject (teaching	g + student,): Inopt=	w+i=Uopt=	60 + 90	= 1501	nours per semester	
		1. Introd 2. Gettin	g to know the	s to the ad	vantages esting of	of monitori electrical de	ing the st wices	late of	electrical appliances	
Learning		3. Monite	oring of stand	lards and re	egulation	s that defin	e the pro	cedure	es for testing	
outcomes		electrical	l appliances.						-	
		4. Observ	vance of safe	y measure	s when p	erforming t	ests			
		5. Selecti Thoro ar	ion of electric	al devices i	rogistori	specific cor	nditions.	tho cu	biact Paguirad prior	
Prerequisites	;	knowled	ge from Elect	n Electrical appliances 1.						
Teaching		lectures	and laborato	rv exercise	ç					
methods		Lectures		ry exercise.	5.					
		1. Introd	duction. Mo	nitoring of	f the co	ndition of	electrica	al app	liances. Selection of	
		paramet	ers for monit	oring.						
		2. Selecti	ion of monito	ring param	eters. Sig	nal process	ing.			
		3. Intelli	gent switchir	g operatio	ns (on, c	ff). Require	ements to	o be fi	ulfilled for the power	
		switch.	aloc of applic	ation of in	talligant	owitching a	noration		acts of roliability and	
		4. Examp	,	ation of in	teingent	switching c	peration	is. Asp	ects of reliability and	
		5 Short-	,. circuit and cir	cuit tests	Division c	flahoratori	es High i	nower	laboratories	
Subject cont	ent	6. Direct	examination	s. Svnthetic	tests. Ex	amples of t	ests. Type	e tests		
per weeks		7. Dielect	tric tests. Rac	lio frequen	cv interfe	rence volta	ge testing	g.		
		8. Heatin	ng test.	•				0		
		9. Measu	uring the resis	tance of th	e main ci	rcuit.				
		10. Testii	ng with short	-term toler	able curr	ent and tole	rable pea	ak curr	rent value.	
		11. Piece	e tests. Select	on of elect	rical appl	iances.				
		12. Selec	tion of indica	ted charact	teristics.	Choice of op	perating o	conditi	ions.	
		13. Norm	nal operating	conditions.						
		14. Speci	ial operating	conditions.						

	15. Auto	15. Automation of the selection procedure of electrical appliances.										
	Compulsory literature											
Author(s)	1	Publication title, publisher	Year	Pages (from-to)								
M. Kapetanović		Visokonaponski prekidači, ETF Sarajevo	2002									
		Additional literature										
Author(s)	1	Publication title, publisher	Year	Pages (from-to)								
Bharat Heavy Elec	tricals	Handbook of Switchgears, 1st Edition, The	2007									
Limited		McGraw-Hill Companies, Inc	2007									
		Type of student work evaluation	Points	Percentage								
Obligations	Pre-examination obligations											
forms of		attendance at lecture	s 5	5%								
knowledge		seminar pape	r 15	15%								
assessment and		midterm exam	I 15	15%								
grading		midterm exam	II 15	15%								
graung	Final exa	m	50	50%								
	TOTAL		100	100%								
Web page												
Certification												
date												

A CONTRACTOR	OT CO			UNIVER	SITY OF E	AST SAR	AJEVO				
			_	Faculty	of Electric	cal Engin	eering				
82°			Stu	dy progra	im: Electri	c Power	Engineering	1			
15 4 58 30 X	III III		Firs	t study cy	·cle	Thi	d year of st	udy			
Full name of	the										
course											
Sub	iect co	de		Subject status Semester				ter		ECTS	
			•••								
										_	
EE-08-2-090-6				× .	elective		VI			5	
Teacher(s)	F	Prof. dr N	1ilorr	nir Soja, fu	ull profess	or					
Associate(s)	ľ	ASc Mark	ko iki	ć, senior	teaching a	ssistant					
Number of I	lessons	/teachin	g wo	orkload	Individ	lual stud	ent worklo	ad (in he	ours	Student workload	
	(we	ekly)				per	a semester)		coefficient S _o	
L	A	Æ		LE	L		AE	L	E	So	
2		D		2	45		0	4	5	1.5	
total teachi	ng worl	kload (in	hour	rs, per ser	nester)	tot	al student w	vorkload	l (in hou	urs, per semester)	
v	N=2*15	5+0*15+2	2*15	=60 h			T=2*15	*S₀+0*1	.5*S₀+2	*15*S₀=90	
Tot	tal wor	kload of t	the s	ubject (te	aching + s	tudent):	In _{opt} = W + 1	۲ = 150 ł	nours p	er semester	
	ι	Jpon suc	pon successful completion of the course the students will be able to:								
	1	1. Understand the specifics of particular usage of power converters, including applicable									
Learning	S	tandards	and	regulatic	on,						
outcomes	2	2. More d	etail	knowled	ge in the f	unctiona	l and techn	ical char	racteris	tics of power	
	e	3. Select the optimal converter for the specific application,									
		4. Start up the specific converter and adjust its parameters.									
	F	Prerequisites require knowledge of power electronics (course: Power Electronics I), while									
Prerequisites		passing the exam requires \geq 50% points in each forms of knowledge assessment.									
Teaching											
methods	L	Lectures, auditory practical lectures, labs.									
	1	Modul: In	trod	uction							
	1	. Studer	nt ob	oligations	and asse	essments	. Applicatio	on of po	ower e	lectronics converters.	
	5	tandards	5.	-							
	1	Modul: Se	emic	onductor	switches						
	2	AC, DC	swit	ches. Soli	d-state rel	ay. Hybr	id switches.				
	1	Modul: A	C-AC	converte	rs						
	3	Static s	WITCI	nes. Statio	c VAR com	ipensato	rs.				
	1	Modul: A	סוט א ר-חר	C motor : Converte	starters. Prs (rectifie	erc)					
Cubic de conte		Batterv	c bc	rgers.							
Subject conte	ent	. DC mot	tor co	ontrol.							
per weeks	7	.1 Multi-	quad	drant rect	ifiers, HVI	DC.					
	7	.2 Harmo	onics	generati	on in recti	fiers. Ide	al rectifier.				
	1	Modul: D	C-DC	converte	ers (chopp	ers)					
	8	B. Power:	supp	lies.							
		n Topol	Juddi	ant chop	pers. DC N		ILIUI. C convertor	rs in ron	owablo	anargy systems	
	1	1. Unint	errur	otible DC	nower sur	on DC-L		is in rell	ewable	energy systems.	
	1	Modul: D	C-AC	converte	ers (invert	ers)					
	1	2. Uninte	errup	otible DC	power sup	oply.					
	1	3. AC mo	otor (control.		-					

	14. Topc	14. Topologies and characteristics of inverters in renewable energy systems.											
	Modul –	Specialized power systems											
	15. Elect	ric vehicles. Power supplies in aviation. Power sup	plies in me	dicine	2.								
		Compulsory literature											
Author(s)		Publication title, publisher	Year	Ра	ges (from-to)								
		POWER ELECTRONICS, Converters,											
Mohan, N.		Applications, and Design, John Wiley & Sons,	2001.										
		Inc											
Additional literature													
Author(s)		Publication title, publisher	Year	Ра	ges (from-to)								
Skvarenina, T.		The Power Electronics Handbook, CRC Press	2001.										
		Type of student work evaluation	Points		Percentage								
	Pre-exar	nination obligations											
Obligations,		attendance at lectures/exercise	s 5		5 %								
forms of		homewor	k 5		5 %								
knowledge		lab. exercises/practical wor	k 10		10 %								
assessment and		midterm exam	s 25+25		25 %+25 %								
grading													
		final exam (written/ora	I) 30		30 %								
	TOTAL		100		100 %								
Web page													
Certification													
date													

ALC TOWOT			UNIVER Faculty	RSITY OF E	AST SAR	AJEVO eering					
	(ERY + 0	Stu	dv progra	m: Electri	ic Power	Enaineering	Y				
1.500 JO 1.50		Firs	st study cy	/cle	Thir	d year of st	udv		$\mathcal{O} \mathcal{O} \mathcal{O}$		
Full name of th	e		, ,	ГІГСТР							
course			ELECTR					>			
Subje		Su	bject statı	JS	Semes	ter		ECTS			
EE-08-2	2-038-6) D Alaliaa is d	Cias i	elective		VI			5		
Teacher(s)	Phi	D Aleksand	ar Simovi	c, associat	e protess	or					
Number of les	sons/t	eaching wo	orkload		lual stud	ent worklo	ad (in h	ours	Student workload		
	(week	ly)	, includ		per	a semester)	Juit	coefficient S _o		
L	AE		LE	L		AE	L	E	S₀		
2	2		0	45		45	0)	1.5		
total teaching	worklo	ad (in hou	rs, per ser	nester)	tot	al student v	vorkload	l (in hou	urs, per semester)		
	W=2*1	5 + 2*15 =	60			T=2*	*15* S ₀ -	+ 2*15*	⁵ S _o = 90		
lotai	WORKIC	ad of the s	lodgo of a	eaching + s	tudent):	In _{opt} = VV +	r = 150 r	hoir pr	er semester		
	eng	1. Basic knowledge of applied materials and technologies of their production in electrical engineering.									
	2. [Detailed kn	owledge	of degrada	ation me	chanisms ar	nd comp	onent f	ailures in the power		
Learning	sys	tem.	U	0			·				
outcomes	3. [3. Detailed knowledge of application technologies of gaseous, liquid and solid dielectrics.									
	4. [4. Detailed knowledge of procedures for development and operational testing of electrical									
	ma	cerials and determination of their characteristics.									
Prerequisites	The	ere is no pr	rerequisites for other subjects.								
methods	Lec	tures, aud	auditory exercises, laboratory exercises, seminar papers.								
	1.1	1. Introduction. Student obligations and assessment. Basics of materials science. structure									
	of	matter, str	ess and er	nvironmen	ital influe	ence.					
	2.1	The most c	ommonly	used mate	erials in e	electrical en	gineerir	ıg, semi	iconductor materials:		
	bas	sic properti	ies.			_					
	3.1	Fechnology	of produ	ction and	processi	ng of semico	onducto	r mater	ials, construction		
		Magnetic n	naterials a	nd nerma	nent ma	nets: nron	erties of	nroces	sing technologies		
	use	e of materia	als.	na perma	inerit ind			proces			
Cubicat contain	5.1	nsulating r	naterials:	gaseous, l	iquid and	l solid, prop	perties, p	product	ion, use of insulating		
Subject conten	ma	terials.									
per weeks	6.1	Mechanism	is that lea	d to failur	e in pow	er system co	ompone	nts, me	echanisms after		
	ele	ctrical stre	SS.		- t ' - u / - I		1		in a mantial		
	/. ľ	viecnanism charges)	is of gradi	uai degrad	ation (er	ectrochemi	cal, wate	er track	ing, partiai		
	8. /	Application	of variou	s technolo	ogies in tl	ne executio	n of con	nponen	ts.		
	9. /	Application	of air, SF	6 and othe	er gases.						
	10.	Applicatio	n of plast	ic and liqu	id insula [.]	ting materia	als.				
	11.	Applicatio	n of solid	dielectrics	5.						
	12.	Applicatio	n of diele	ctric comp	ositions	in cables, ca	apacitor	s, cond	uctive insulators, etc.		

	13. Development and exploitation testing of electrical materials and components.											
	14. Dete	rmination of characteristics of electrical materials,	resistance	e to de	gradation							
	processe	·S.										
	15. Spec	ific dielectric tests, lifetime assessment, aging proc	esses.									
Compulsory literature												
Author(s)		Publication title, publisher	Year	ear Pages (from-to)								
P. Nikolić, D. Rako	vić	Electrotechnical materials, Scientific book Belgrade	1987.									
K. Sokolija		Practicum of laboratory exercises in insulation technique, ETF Sarajevo	1989.	.989.								
Additional literature												
Author(s)		Publication title, publisher	Year	Ра	Pages (from-to)							
		Type of student work evaluation	Points		Percentage							
Obligations	Pre-examination obligations											
Obligations,												
forms of		attendance at lectures/exercise	s 5		5%							
forms of		attendance at lectures/exercise lab. exercises/practical wor	s 5 k 10)	5% 10%							
forms of knowledge assessment and		attendance at lectures/exercise lab. exercises/practical wor midterm exam	s 5 k 10 s 40)	5% 10% 40%							
forms of knowledge assessment and grading		attendance at lectures/exercise lab. exercises/practical wor midterm exam	s 5 k 10 s 40)	5% 10% 40%							
forms of knowledge assessment and grading		attendance at lectures/exercise lab. exercises/practical wor midterm exam final exam (written/oral	s 5 k 10 s 40)	5% 10% 40% 45%							
forms of knowledge assessment and grading	TOTAL	attendance at lectures/exercise lab. exercises/practical wor midterm exam final exam (written/oral	s 5 k 10 s 40) 45 100)) ; 0	5% 10% 40% 45% 100%							
forms of knowledge assessment and grading Web page	TOTAL	attendance at lectures/exercise lab. exercises/practical wor midterm exam final exam (written/oral	s 5 k 10 s 40) 45 100)) ; 0	5% 10% 40% 45% 100%							
forms of knowledge assessment and grading Web page Certification	TOTAL	attendance at lectures/exercise lab. exercises/practical wor midterm exam final exam (written/oral	s 5 k 10 s 40) 45 100)) ; 0	5% 10% 40% 45% 100%							

				UNIVER Faculty	SITY OF E	AST SA	RAJEVO				
E YNC			Stu	idv progra	m · Electr	ic Powe	er Engineerin	n			
1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1)		Fire	st study cy			hird year of s	tudy	-	2 + 0	
Full name of	the		1113	st study cy	cie		ind year or s	study			
course	e				ELECTRICAL NETWORKS AND SYSTEMS - 2						
Sub	liect co	do		Su	Subject status						
505	ject co	ue		50	bject stat	us	Jenne	3101		LCIS	
EE-08-2-084-6				<i>.</i>	elective		V			5	
Teacher(s)		PhD Alek	sand	ar Simovio	t, associat	e prote	ssor				
Associate(s)		PhD Nad	a Cin	car, assist	ant profes	ssor		. /			
Number of	lesson	s/teachii	ng wo	orkload	Individ	dual stu	ident workl	bad (in h)	ours	Student workload	
	(we	екіу)	1	15		pe	er a semeste	er)			
L 2					L		AE		E	S ₀	
				0	45) 		
total teaching	ng wor	KIOAU (III)*15 ± 2*	100 15 –	rs, per ser	nester)			WOI KIOA	ערו חוו) ג ג ס*15*	s = 90	
To			15 - tho (ou	aching + a	tudont	2- ۱ + ۱۸/ ما ۱۰/	T = 150		$3_0 = 90$	
10			intan	co with hi		o trans	mission lines	with in	dividual	l elements of	
		construc	tion	and electr	ical equin	ment		<i>,</i> , , , , , , , , , , , , , , , , , ,	uiviuua	relements of	
		2 Detail	ad kn	owledge v	with the c	alculati	on of overh	ead line o	leflectio	on stress line length	
		and cond	lucto	or state ch	anges cal	culatio	n of combine	ed condu	ctors c	ritical span and	
Learning		tempera	ture.	limit and	ideal spar).					
outcomes		3. Detail	ed kn	owledge o	of overvol	tages, a	atmospheric	discharg	es and	protection of	
		overhead lines from atmospheric discharges.									
		4. Detail	. Detailed analysis of route selection and construction of the overhead line, up to the								
		installati	tallation of equipment, final works, technical inspection and commissioning of the								
		overhead	d line	e.							
Prerequisites	5	There is	no pr	erequisite	s for othe	er subje	cts.				
Teaching		lectures	aud	itory ever	rises laho	ratory	evercises se	minar na	ners		
methods		Letteres	, uuu			natory			ipers.		
		1. Introd	uctio	n. Studen	t obligatic	ons and	assessment	. Electric	high-vo	oltage transmission	
		line. Fun	ction	al units, p	lanning, d	esign a	nd construc	tion.			
		2. Overv	iew o	t basic no	rms used	for des	ign, laws, re	gulations	, standa	ards.	
		3. Poles	for ov	verhead li	nes, differ	ent cor	istructions.				
		4. Condu	ctors	s and prot	ective rop	es, stru	ictural forms	s, materia	al, selec	tion of sections.	
		5. Calcul	ation	of the de	nection of	r the ov	ernead line,	stress, ii	ne ieng	th and change of	
Subject conte	ent		or coi	of combine	and condu	ictore	critical range	and tor	noratu	ro limiting and ideal	
per weeks		range						. and tell	iperatu	re, innung and ideal	
		7 Insula	tors	general no	ntes type	s mate	rial charact	eristics a	nd sizin	σ	
		8. Insula	tor cl	nains. prot	ective en	uipmer	it.	u		0.	
		9. Overv	oltag	es, atmos	oheric dis	charge	and protect	tion of ov	/erhead	l lines from	
		atmosph	eric	discharges							
		10. Grou	ndin	g and grou	Inding of o	overhe	ad line poles				
		11. Vibra	tions	s on condu	ictors of c	verhea	d lines, vibra	ation dan	npers.		

	12. Transmission conshilities of overhead lines											
	12. man	string of the neutro of the systemed line, recording a	المربحة الم	سما مم	-files							
	13. Selec	ction of the route of the overhead line, recording c	riongituai	inai pr	omes,							
	determi	nation of the position of the poles.										
	14. Cons	truction of an overhead line, general notes, stages	of work, p	orepar	ation, term of							
	the worl	c plan.										
	15. Insta	llation of overhead line equipment, finishing work	s, technica	l inspe	ection and							
	commiss	ioning.										
Compulsory literature												
Author(s)		Publication title, publisher	Year	Pa	ges (from-to)							
Č. Vujović		High-voltage transmission lines, ETF Sarajevo	2008.	2008.								
		Analysis of power systems 2, Akademsaka		2000								
N. Rajakovic		misao, Belgrade	2008.	2008.								
N. Rajaković, M. Ć	alović,	100 solved tasks from Analysis of power										
P. Stefanov, A. Sav	/ić	systems: ETF Belgrade	2002.									
,	Additional literature											
Author(s)		Publication title, publisher	Year	Pa	ges (from-to)							
		Type of student work evaluation	Points	;	Percentage							
	Pre-examination obligations											
Obligations,		attendance at lectures/exercise	s 5		5%							
forms of		lab. exercises/practical wor	k 10)	10%							
knowledge		midterm exam	s 40)	40%							
assessment and												
and din a												
grading		final exam (written/ora	l) 45	5	45%							
grading	TOTAL	final exam (written/ora	1) 45	5 0	45% 100%							
grading Web page	TOTAL	final exam (written/ora	l) 45 10	5 0	45% 100%							
grading Web page Certification	TOTAL	final exam (written/ora	1) 45	5 0	45% 100%							

A CTOWN				UNIVER Faculty	SITY OF E	AST SA	RAJEVO ineering			Stores -	
			Stu	dy progra	im: Electri	c Powe	er Engineering	7			
94 A 7 15 4 5 10 10	I		Firs	st study cy	·cle	Т	nird year of st	udy		$\langle \rangle \square \langle \rangle$	
Full name	of th	ne			MEASU						
course					IVIEASO				GETICS	•	
Sub	ject co	ode		Subject status			Semes	Semester		ECTS	
EE-0	8-2-10	6-6			elective		VI			5.0	
Teacher(s) PhD Srđan Jo			n Jol	kić, assista	int profess	sor					
Associate(s)		MA Boja	na Čo	olić, senior	teaching	assista	nt				
Number of	lesson	s/teachi	ng wo	orkload	Individ	lual stu	dent worklo	ad (in h	ours	Student workload	
	(we	eekly)	[p	er a semester	·)	-	coefficient S _o	
L 2				2 2	L			L	E	S ₀	
Z total toachi	ngwor	U kload (in	hou		45 nostor)	+		4. vorkload	J l (in hou	L.5	
W=2	*15 + i	$0*15 + 2^{3}$	*15 =	: 60 hours	nester)	U	T=2*15* S _o +		5. + 2*1	$5^* S_0 = 90 \text{ hours}$	
Total wo	orkload	of the s	ubied	t (teachin	g + studer	nt): Ino	pt = W + T = 6	$\frac{0}{0} + 90 =$	150 ho	urs per semester	
		1. Introd	ucing	g measure	ment tech	niques	and method	s in the	power s	systems.	
		2. Compl	iance	e with safe	ety measu	res wh	en performin	g measu	rement	zs.	
Looming		 Iraining for carrying out measurements. Strengthening teamwork in a multidisciplinary environment. 									
outcomes		5. Technical and economic optimization of resources when conducting measurements									
outcomes		with regard to the required accuracy of results and availability of equipment.									
		6. Monitoring the latest technical achievements in the field and recognizing the need to									
		accept, improve and apply these achievements in the environment.									
Prerequisites	5	There are no requirements for registering and listening to the subject. Required prior									
Teaching		knowledge of the subject Electrical Measurements.									
methods		to active	lv fol	low the le	rtures	ses. During the teaching process, students are encouraged					
		1. Intro	ducti	on. Meas	uring trai	nsform	ers. Inductiv	e volta	ge trar	sformers: equivalent	
		circuit, d	iagra	m, voltage	e and phas	se erro	r, Mellinger-G	Gewecke	diagra	m.	
		2. Induct	tive v	oltage tra	insformer	s: mea	sures to redu	ice erro	rs, class	sification according to	
		accuracy	, pov	ver, select	ion, casca	de trar	nsformers, de	signs.			
		3. Current transformers: current and phase error, diagrams, error reduction procedures,									
		accuracy	, pov	ver, select	ion, behav	ior at	increased pri	mary cui	rent.		
		4. Curre	nt tra	ansformer	s: cascad	e curre	ent transform	ners, de	signs. N	Marking of measuring	
Subject cont	tent	transform	ner t	erminals.	c		11				
per weeks		5. Specia	ii me	asuring tr	ansformer	rs: cap	acitive voltag	e transfo	ormers,	current transformers	
		6 Meac	irom	ent of his			suring transfo soberical co	onner el ark pluv	1015. 10 dovi	ces that measure the	
		rectified	curre	ent of can	acitors el	s using lectros	tatic voltmet	ers Mea	surem	ent of inrush currents	
		using shi	unts.	Rogowski	coil. Hall r	orobe	ferromagneti	c record	ers.		
		7. Voltag	e div	iders (mea	asurement	t with a	a divider and	an oscill	oscope).	
		8. Power	mea	surement	t in circuit	s with	direct curren	it, altern	ating c	urrent in single-phase	
		and thre	e-pha	ase system	ns, measur	rement	of reactive p	ower, se	emi-dire	ect and indirect power	
		measure	ment	ts.							

	9. Electri	c meters.										
	10. Frequ	uency measurement.										
	11. Mea	surements of electrical parameters – U-I met	hods and	bridge methods for								
	measuri	ng R, L and C, measuring grounding resistance, mea	suring inte	rmediate inductance,								
	Schering	's bridge for measuring capacitance.										
	12. Mag	Magnetic measurements - measurements of magnetic flux, magnetic induction and										
	magnetio	gnetic field.										
	13. Mea	surements of non-electric quantities by electrica	al methods	: passive and active								
	measurin	ng transducers.										
	14. Dete	rmining the location of faults on lines (types of fa	ults, metho	ods for finding faults,								
	classic ar	nd modern methods for determining the location of	of faults)									
	15. Unconventional measuring devices: passive devices with optical effects, microwa											
	current r	neasuring device, active measuring devices.										
Compulsory literature												
Author(s)		Publication title, publisher	Year	Pages (from-to)								
		"Handbook of Measurement System and										
Sydenham P. H., Th	horn R.	Design", Vol. 1,2 and 3, Wiley, New York,	2005.									
		2005.										
Wright A.		"Current transformers", Pittman, London, 1968.	1968.									
E. Kuffel, W.S. Zaer	ngl	High voltage engineering, Pergamon press, 1994.	1994.									
		Additional literature										
Author(s)		Publication title, publisher	Year	Pages (from-to)								
IEC		IEC standards										
V. Bego		Mjerenja u elektrotehnici, Graphis, Zagreb	2003									
		(Original title)										
Lj. Milanković		Tehnika visokog napona, ETF Beograd (Original	1977.	373-449								
		title)										
Mihailović P., Petri	ičević S.,	Development of a portable fiber-optic current	Feb	24-30								
Stojković Z., Radun	nović J.	sensor for power systems monitoring, IEEE	2004									
		Transactions on Instrumentation and										
		Measurement, Vol. 53, No. 1										
Petričević S., Stojl	ković Z.,	Practical application of fiber-optic current	June	923-930								

		Measurement, Vol. 53, No. 1							
Petričević S., Stoj	ković Z.,	Practical application of fiber-optic current	June	923-930					
Radunović J.		sensor in power system harmonic	2006						
		measurement; IEEE Transactions on							
		Instrumentation and Measurement, Vol. 55,							
Petričević S, Stoj	ković Z,	Development of a Fibre Optic Impulse Current	Jan	1-16					
Mihailović P, Radu	nović J	Sensor for high voltage equipment tests,	2008						
		International Journal of Electrical Engineering							
		Education (IJEEE), Vol.45, No.1							
M. Popović		Сензори и мерење, Завод за уџбенике и	2004.						
		наставна средства, Српско Сарајево ((Original							
		title)							
Obligations		Type of student work evaluation	Points	Percentage					
forms of	Pre-examination obligations								
		attendance at lectures	5	5 %					
KIIOWIEuge		seminary work	15	15 %					

assessment and	midterm exam	1 15	15 %
grading	midterm exam	1 15	15 %
	Final exam	50	50 %
	TOTAL	100	100 %
Web page			
Certification			
date			

FOURTH YEAR – ELECTIVE SUBJECTS

A STATE OF CONTRACTOR			UNIVER	SITY OF E	AST SAR	AJEVO			S ^{II} S		
	-	C++	Faculty			Engineering			Ð Gur Þ C		
		Fire	at study cy		Four	th year of st	udv		$\overline{\mathbf{A}}$		
Full name of the		1113	st study cy		Tour	th year of st	.uuy				
course				DISTRIBUTION AND INDUSTRIAL NETWORKS							
Subject code			Sul	bject statı	us	Semest	ter		ECTS		
EE-08-2-202-7 EE-08-2-202-8				elective		VII, VI	11		5		
Teacher(s)	PhD	Aleksand	ar Simovid	ć, associat	e profess	or					
Associate(s)	PhD	Nada Cin	car, assist	ant profes	sor						
Number of less	ons/te	aching wo	orkload	Individ	dual stud	ent workloa	nd (in h	ours	Student workload		
	(weekl	y)			per	a semester)			coefficient S _o		
L	AE		LE	L		AE	L	E	So		
2	2	2 0 45 45 0)	1.5				
total teaching v V	vorkloa V=2*15	ad (in hou 5 + 2*15 =	rs, per sen 60	nester)	tota	al student w T=2*	orkload 15* S₀ -	l (in hours, per semester) + 2*15* S₀ = 90			
Total	workloa	ad of the s	ubject (te	aching + s	tudent):	In _{opt} = W + T	= 150 ł	nours pe	er semester		
Learning outcomes	ribution a cquaintan ctricity sup amiliarity eration or tudents w imization o	Id industrial networks. ce with the economic aspects of network operation, with the quality of ply and thermal limit regimes. with distributed generation of electricity, as well as the impact of distributed the distribution network. Il be trained to work independently on design, planning, analysis and of distribution and industrial networks.									
Prerequisites	The	re is no pr	erequisite	es for othe	er subject	s.					
Teaching					,						
methods	Lect	tures, aud	itory exerc	cises, labo	ratory ex	ercises, sem	ninar pa	ipers.			
Subject content per weeks	 1. Introduction. Student obligations and assessment. General considerations on distribution systems. 2. Characteristics of electricity consumption. 3. Principle solutions of networks of different voltage levels. 4. Forecast of electricity and power consumption. 5. Voltage drops and power losses in network lines. 6. Calculation of power flows and voltage conditions in distribution networks. 7. Losses of electricity. 8. Reconfiguration of distribution networks. 9. Short circuits. 10. Reliability and security of networks. 11. Technical and economic aspects of power grids. 12. Thermal aspects of loading network elements. 13. Compensation of reactive power. 								etworks.		

	15. Distr	15. Distributed production of electrical energy.										
		Compulsory literature										
Author(s)		Publication title, publisher	Year	P	ages (from-to)							
N. Rajaković, D. Ta	sić	Distribution and industrial networks, Akademska misao, Belgrade	2008									
N. Rajaković, D. Ta Arsenijević, M. Sto	isić, N. Djanović	A collection of assignments from distribution and industrial networks, Akademska misao, Belgrade	2005.									
D. Stojanović, L. Ko	orunović	Transmission and distribution of electricity, collection of solved tasks, SX PRINT-COPY, Niš	2004									
Additional literature												
Author(s)		Publication title, publisher	Year	P	ages (from-to)							
		Type of student work evaluation	Poi	nts	Percentage							
Obligations	Pre-examination obligations											
forms of		attendance at lectures/exercise	s	5	5%							
knowledge		lab. exercises/practical wor	k	10	10%							
assessment and		midterm exam	S	40	40%							
grading												
		final exam (written/ora)	45	45%							
	TOTAL			100	100%							
Web page												
Certification												
date												

		UNIVERSITY OF EAST SARAJEVO									
		Study program: Electric Dower Engineering							$ \Box \varphi \Box \varphi \langle \Box \varphi \rangle $		
		Eirst study cycle							2 + 0		
Full name of the		First study cycle Fourth year of study									
course	ELECTRIC POWER CONVERTERS										
Subject		Su	bject statı	ject status		Semester		ECTS			
EE-00-2-049-8		5		elective		VII, VIII		5			
Teacher(s) Pro		f. dr Milon	ull profess	fessor		·					
Associate(s)	MS	c Marko ik	ić, senior	teaching a	ssistant						
Number of less	ons/t	eaching wo	orkload	Individual student workload (in ho				ours Student workload			
	(week	kly)		per		a semester)			coefficient S _o		
L	AE		LE	L		AE	L	E	So		
2	2		0	45		45	C)	1.5		
total teaching workload (in ho			rs, per semester) total student workload (d (in ho	(in hours, per semester)			
W=	2*15+	·1*15+0*1	5=60			T=2*15	*S₀+2*1	.5*S₀+0	*15*S₀=90		
Total	ad of the s	ubject (te	eaching + s	tudent):	In _{opt} = W + 1	r = 150 ł	nours p	er semester			
Learning outcomes	1. U cor 2. k cor 3. N 4. 9 5. 9 ele	 Understand the specifics of individual topologies and applications of power electronics converters in the electric power industry, including valid standards and regulations, Know in detail the functional and technical characteristics of power electronics converters, Model the basic types of converters in the Matlab/Simulink environment, Select the optimal converter for a specific application, Select converters for use in power supply systems with renewable energy sources and electrical energy storage systems. 									
Prerequisites	Pre	Prerequisites require knowledge of power electronics (course: Power Electronics I), while									
Teaching methods		Lectures, auditory practical lectures, labs.									
	Мо	Modul: Introduction									
	1. 9	1. Student obligations and assessments. Overview of power electronics converters.									
		Modul: Devices									
	Mo	A characteristics of components used in power converters. Modul: AC switches/voltage regulators									
	3. 9	3. Static switches and compensators.									
	4.1	4. Three-phase AC motors starters									
	Мо	Modul: AC-DC									
Subject content	5.1	5. Multi-pulse diode and thyristor rectifiers. Power factor correction.									
per weeks	0.	b. Inree-phase PWIVI rectifiers.									
	Mo	Modul: DC-DC									
	8. Converters topologies in PFC circuits. Bridgeless converter.										
	9. 4Q bridge converters. DC motor control.										
	Modul: DC-AC										
	10.	10. Inverter topologies in AC uninterruptible power supply systems.									
	12.	12. Active filters.									
	Мо	Modul: Converters in renewable energy sources									

	13. Converters in PV power systems.										
	14. Converters in wind power systems.										
	15. Application of power converters in electric energy storage systems.										
Compulsory literature											
Author(s)		Publication title, publisher	Year	Pages (from-to)							
		POWER ELECTRONICS, Converters,	2001.								
Mohan, N.		Applications, and Design, John Wiley & Sons									
		Inc									
Rashid, M.H.		POWER ELECRONICS HANDBOOK, Circuits,	2011								
		Devices, and Aplications, Elsevier Inc.	2011.								
Additional literature											
Author(s)		Publication title, publisher	Year	Pages (from-to)							
Chakraborty, S., Simoes, M.G., Kramer W.E.		Power Electronics for Renewable and Distributed Energy Systems, Springer-Verlag London	2013.								
Obligations, forms of knowledge		Type of student work evaluation	Points	Percentage							
	Pre-examination obligations										
		attendance at lectures/exercises	5	5 %							
		homework	50	50 %							
		lab. exercises/practical work	15	15 %							
assessment and											
graung		final exam (written/oral)	30	30 %							
	TOTAL		100	100 %							
Web page											
Certification											
date											
A CONCEPTION	UNIVERSITY OF EAST SARAJEVO Faculty of Electrical Engineering										
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		Study program: Electric Power Engineering							$\overline{u} \phi \in \mathbb{C}$		
		Fir	First study cycle Fourth year of study						$\overline{\mathbf{A}}$		
Full name of the		ELECTRICAL INSTALLATIONS WITH LUMINANCE									
Subject	code		Subject status Semester			ster		ECTS			
EE-08-2	-087-7			a la ativa			/111	-			
EE-00-2	-087-8			elective		VII, V	/111	5			
Teacher(s)	asso	ciate prof	essor Mlac	len Banjanin,	PhD	Canan Mulaasi	(
Associate(s)	assis	stant profe	essor Nada	Cincar, PhD,	IVISC	Goran Vukovi	c, senior tea	ching assist	ant		
Number of less	ons/tea (weekly	aching wo v)	гкюаа	Individuals	stude	semester)	in nours per		efficient So		
L	AE	<i>,</i> ,	LE	L		AE	LE		So		
2	1		1	45		22.5	22.5		1.5		
total teaching	workloa	ad (in houi	rs, per sem	ester)	t	total student v	vorkload (in	hours, per s	emester)		
W=2	*15 + 1	*15 + 1*1	5 = 60			T=2*15* S	5 ₀ + 1*15* So	₀ + 1*15* S₀	= 90		
Т	otal wo	orkload of	the subject	t (teaching + :	stude	ent): W + T = 1	50 hours pe	r semester			
	By p	assing this	s subject, t	he student w	ill be	able to:	a la atriaitur				
Learning		nderstand	s the metr	iod of supply	ing co	ion and function	electricity.	ll ac protoct	ion moscuros		
outcomes	in lo	2. Understands the method of inflementation and functioning, as well as protection measures in low-voltage networks and installations									
	3. Pe	erforms ar	alysis and	design of sim	nple p	oower installat	ions.				
Prerequisites	Ther	re are no r	equiremer	nts for listenir	ng an	d passing the o	course.				
Teaching methods	Lect	ures, audi	tory exerci	ses, laborato	ry exe	ercises.					
Subject content per weeks	1. In char 2. Lc 3. Su 4. Cc). 5. Cc 6. Pr and 7. Pr 8. Lig of lig 9. Ex 10. F 11. E 12. I 13. C 14. T	 Introduction. Rules of work on the subject. Low voltage electrical installations, characteristics and terms. Low voltage electrical distribution network. Supplying objects with electricity. Components of electrical installations (electric meters, installation conductors and cables). Components of electrical installations (switches, fuses, FID, contacts, sockets and plugs). Protection measures against excessive touch voltages. Simultaneous protection from direct and indirect touch voltage. Protection against direct touch voltage. Lightning protection installations. Lightning discharges. Determination of the required level of lightning protection. External and internal lightning protection systems. Reactive energy. Reactive energy compensation. Electric lighting. Photometric quantities. Electric light sources. Interior and exterior lighting design. Communication installations. 									
	115.1				v lite	rature			csign.		
Author(s)			Pu	blication title	e, put	blisher	Yea	r Pag	es (from-to)		
J. D. McDonald		Elec	trical Insta	llation Work	, seve	enth edition	2011	L	-		
				Additional	liter	ature					
Author(5)		Pu	blication title	e, put	blisher	Yea	r Pag	es (from-to)		
Obligations,			Type of	student wor	'k eva	aluation		Points	Percentage		
forms of	Pre-	examinati	on obligati	ons	000-	nco ot locture -	lovorsisse	F	F 0/		
knowledge	-			atte	enda	nce at lectures		ך ביין ביין	5% 12 50/		
		l colloquium 12,5 12,5%									

assessment and	ll col	loquium	12,5	12,5%
grading	semina	ary work	25	25%
	final exam (writt	en/oral)	45	45%
	Total		100	100%
Web page				
Certification date				

	 13. Cogeneration plants. Application examples. 14. Using biomass for electricity production. 15. Energy storage systems. Classic batteries, advanced technologies, ultracapacitors, super-conducting magnetic materials, inertial masses. Application examples. 									
		Compulsory literature								
Author(s)		Publication title, publisher	Year	Pa	Pages (from-to)					
F. Zabihian		Power Plant Engineering, CRC Press	2021							
		Additional literature								
Author(s)		Publication title, publisher	Year	Pa	Pages (from-to)					
Obligations		Type of student work evaluation	Points		Percentage					
forms of	Pre-examination obligations									
knowledge		midterm exam	I 25		25%					
assessment and		midterm exam	II 25		25%					
grading	Final exa	m	50		50%					
Brading	100		100%							
Web page										
Certification										
date										

VBC		UNIVERSITY OF EAST SARAJEVO									
2 4 5 V	Ŋ	F	rs study cv		$\overline{\mathbf{A}}$						
Full name of the											
course			N	IICROPRO	CESSOR	CONTROL C	OF ELECT	FRIC DR	RIVES		
Subject code			Subject status			Semester			ECTS		
EE-0 FF-0	8-2-105 8-2-105	·7 ·8		elective		VII, V		5			
Teacher(s)	BI	anko Blan	uša, PhD, fu	Ill professo	or						
Associate(s)	G	oran Vukov	vić, MSc, se	nior teach	ing assis	tant					
Number of	lessons/	teaching w	vorkload	Individ	lual stud	ent workloa	ad (in h	ours	Student workload		
	(wee	kly)			per	a semester))		coefficient S _o		
L	A		LE	L		AE	L	E	So		
2	1		1	45		22.5	22	.5	1.5		
total teachi W=	ng workl =2*15 +	oad (in ho 1*15 + 1*1	urs, per ser 5 = 60 h	nester)	tota	al student w T=2*15*S،	vorkload 5 + 1*15	d (in hoı .*S₀ + 1'	urs, per semester) *15*S₀ = 90 h		
Total wo	rkload o	f the subje	ct (teachin	g + studen	t): In _{opt} =	W + T = = 6	0 + 90 =	: 150 hc	ours per semester		
Learning outcomes Prerequisites Teaching methods Subject conte per weeks	1. 2. di 3. (P 4. 7. 2. 2. 7. 2. 3. 4. 5. 5. 6. 4. 5. 6. 7. 8. 9. 10 12 12	Understar gital signal Understar WM), space Implementer equired pri- proverters constructure, Overview Overview Overview Overview Overview Overview Overview Distriction Programm PWM, SVM Digital cor Digital cor Digital cor Digital cor Digital cor	Id basic typ id the struct processing id basic me e-vector me t linear spector or knowled ontrol 1 an ditory exerce peripheral and basic of and basic of and	es of elect cture, perij (DSP). (DSP). (doulation (ed and poor (ge from: E (d 2, Digita) (cises, labo) (cises, cises, cis	tric drive pherals a digital cc (SVM) a position co Electric m I control ratory ex gramming tics of th tics of th tics of th tics of th tics of th sic topol of electr anguage ue and flu que and f que and f n motors	s and their of nd program entrol of ele nd their imp ntrol metho achines and systems, ar ercises, sen g of modern e electric du e electric du e electric du ogies of pov ic drives. , examples. ux in direct of lux in induc	character ming of ctric dri olement ods on t d plants ad Micro ninar pa n DSPs. rives wir rives	eristics. f the mi ves, pul ation of he DSP. poproces opers ar th direc th induc th synch ctronics motors tors. motors	icroprocessors for Ise-width modulation n the DSP. r electronics isor systems. nd consultations. et current motors. ction motors. hronous motors. converters for		
	1:	a. vector co I. Design o	f the digital	speed an	n motors d positio	n controller	s.				
	15	15. Practical realization.									
Compulsory literature											

Author(s)		Publication title, publisher	Year	Pages (from-to)				
R. Koziol, J. Sawick Szklarski	ii, L.	Digital Control of Electric Drives (Studies in Electrical and Electronic Engineering Book 43), Elsevier Science	2013					
		Additional literature						
Author(s)		Publication title, publisher	Year	Pages (from-to)				
W. Leonhard		Control of Electrical Drives, 3 rd Edition, Springer	2001					
		Type of student work evaluation	Points	Percentage				
	Pre-exar	nination obligations						
Obligations,		attendance at lectures/exercise	s 5	5%				
forms of		test/midterm exar	n 40	40%				
knowledge		lab. exercises/practical wor	lab. exercises/practical work 15					
assessment and		seminar pape	r 10	10%				
grading								
		final exam (written/ora) 30	30%				
	TOTAL	100 100%						
Web page								
Certification								
date								

SUT WCTOWIOI			UNIVERSITY OF EAST SARAJEVO								
				Faculty		Non de					
82°			Study program: Electric Power Engineering								
F			Firs	st study cy	vcle	Four	th year of s	tudy			
course	tne				MANAGEMENT IN ENGINEERING PRACTICE						
Subject code				Subject status Semester			ter	ECTS			
EE-0 EE-0	8-2-047 8-2-047	7-7 7-8			elective		VII, V	111	5		
Teacher(s)	1	Nenad N	/larko	vić, PhD, a	assistant p	orofessor					
Associate(s)		Aiodrag	Forca	an, PhD, a	ssistant p	rofessor		1/1			
Number of I	lessons (wo	/teachii okly)	ng wo	orkload	Individ	lual stud	ent workloa	ad (in h N	ours	Student workload	
L	(we			LE	L	pei	AE	, L	E	S _o	
2		2		0	45		45	()	1.5	
total teachi	ng worl	kload (ir	hour	rs, per ser	nester)	tot	al student w	vorkload	d (in hou	rs, per semester)	
۱. V	N=2*15	5+2*15+	0*15	=60 h			T=2*15*	S₀+2*1	5*S₀+0*2	15*S₀=90 h	
Total w	orkloa	d of the	subje	ct (teachi	ng + stude	ent): In _{opt}	= W + T = 60	0+90 = 3	150 houi	rs per semester	
Learning	1	Basic l	know	wiedge about companies as business entities.							
outcomes	3	B. Knowl	edge	related to	b the quali	ity and fi	nancial feas	ibility o	f project	s.	
	4	l. Specia	ilist ki	nowledge	related to	project	control and	manag	ement.		
Prerequisites	; 1	here is	no re	quiremen	t for othe	r subject	5.				
nethods	L	ectures	, audi	tory exerc	cises, semi	inar pape	ers, tests.				
	1	. Introd 2. The co	oductory considerations. company as a business entity: company (objectives of the company; legal form of								
	t	the company).									
	3	3. Company strategy, company organization, company culture.									
		 Environment (goals; tax system; infancial markets and sources of runds). Principles of systems engineering: introductory considerations. Continuous design. 									
	e	6. Preliminary design. Detailed design.									
	5	7. Contractor engineering (services of consulting companies, contractor engineering). 8. Responsibility of consultants, selection of consultants, price for consulting services									
Subject conte	ent c	offer, contract.									
per weeks	9	9. Reengineering. The place and role of information technologies in reengineering.									
		10. Fundamentals of the quality system. Quality system and standards; Quality system documentation									
		11. Financial feasibility of the project: introduction; financial possibilities of investors.									
		12. Project profitability, project financing.									
	1	.3. Proje estimate	ect ma	anagemer	it: introdu	iction; pr	oject manag	ger and	organiza	ition; planning; cost	
		.4. Proje	ect co	ntrol; the	team; doo	cumentat	ion; approa	ich to p	roject in	plementation.	
	1	.5. Tools	s and	methods:	introduct	ion; basi	c elements (of the p	roject.		
Δuth	or(s)			Puł	dication ti	itle, nubl	isher		Year	Pages (from-to)	
			Inno	ovation m	anagemer	nt and ne	w product				
P. Trott		dev	elopment	, Pearson,	Sixth Ed	tion		2017.			

Additional literature									
Author(s)	1	Publication title, publisher	Year	Pages (from-to)					
P. O'Connor		The Practice of Engineering Management: A New Approach, 1 st Edition, Wiley	1994.						
Harvard Business	Review	Harvard Business Review Manager's Handbook: The 17 Skills Leaders Need to Stand Out (HBR Handbooks), Harvard Business Review Press	2017.						
		Type of student work evaluation	Points	Percentage					
Obligations,	Pre-exar	nination obligations							
forms of		attendance at lectures/exercise	es 10	10 %					
knowledge		midterm exar	m 30	30 %					
assessment and									
grading		final exam (written/ora	l) 60	60 %					
	TOTAL		100	100 %					
Web page									
Certification									
date									