DESCRIPTION OF A STUDY COURSE – SYLLABUS

Title of a course	**Electrotechnics**				
Head of course	**Associate Professor, PhD Vitomir Komen** **MSc Zvonimir Peranić, Senior Lecturer**				
Study programme	**Professional undergraduate study Occupational Safety**				
Status of a course	Obligatory				
Year of study	1.	**Semester**	I	**ECTS credits**	6
Teaching plan (L + E + S+ Pr)	2+2+0+0				

Goals of a course

Introduce students to the physical basics, explanations and approaches for analyzing the electrical and magnetic effects of electrical circuits, and the use and application of direct current and alternating current circuits and electronic circuits. To enable students to independently analyze and determine basic electrical quantities in circuits from real drive cases. Prepare students to independently identify and analyze sources of electrical circuit hazards.

Conditions for enrolling course

No conditions

Learning outcomes on a level of a study programme which includes course

Outcome 1: Explain the basic principles of mathematics, physics, chemistry, electrical engineering and mechanics required for work in the field of occupational safety and health.
Outcome 2: Perform and interpret measurements in the field of occupational safety in a laboratory and in the work environment.
Outcome 9: Conduct training of subjects in the field of occupational safety.
Outcome 13: Use quantitative and qualitative methods in the analysis of data in the field of occupational safety.

Expected learning outcomes on a level of a course

1. Analyse electrical conditions around electrically charged bodies.
2. Define the elements and calculate the basic electrical quantities of DC circuits.
3. Explain the electrical conditions inside and around charged metal conductors and the basic magnetic effects.
4. Define the elements and calculate the basic electrical quantities of AC circuits.
5. Define the elements and calculate the basic electrical quantities of a three-phase AC system.
6. Select standard technical solutions of systems for the production, transmission, distribution and consumption of electricity in the design of three-phase systems.
7. Describe the use of modern elements and circuits of applied electronics

Content of a course

Electrostatics: Electric charge, force, field, influence. Potential electric energy. Electric potential. Tension. Electric capacity. Condensers. Electric energy: The power of electric energy, density, resistance. Activity and force of electric energy. Magnetic field: Magnetic field of electric energy, induction, magnetic flow. Permeability of the inductor through which electric energy flows within the magnetic field. Act of energy on engines. Electromagnetic induction: Induced tension. Inter-induction. Magnetic field energy. Alternating current: The real value of alternating current. Electrical circuits. Reactive resistance. Power and energy. Three-phase current transformers. Electric machines: Electric engines, generators. Safety of an electrical system: grounding of electricity. Tension of the step and tension of the touch. Fundamentals of electrotechnics: PN diode, rectifiers, regulators of tension. Transistors. Linear integrated circuits and their function.

Teaching modes	☒ lectures ☐ auditory exercises ☒ seminars and workshops ☐ distance learning ☐ field classes	☒ individual assignments ☐ multimedia and network ☐ laboratory ☐ supervisor's work ☐ other _____

Comments	

Students' obligations

Grading, evaluation and monitoring of students' work continuously during lectures and exams

Grading is based upon evaluation of course's learning outcomes' adoption. Grading is performed continuously during lectures and/or during exam, in compliance with the provisions of Regulation on the assessment of students.

Continuous check-up:

Outcomes	Pre-exam I	Pre-exam 2	Laboratory	Assignment s	Threshold	Max
Outcome 1	10%				5%	10%
Outcome 2	10%		2%	4%	8%	16%
Outcome 3	10%				5%	10%
Outcome 4	10%		2%	5%	8,5%	17%
Outcome 5		17%			8,5%	17%
Outcome 6		13%		7%	10%	20%
Outcome 7		10%			5%	10%
Percentage of ECTS	2,0	2,0	0,5	1,5		
Total	40%	40%	4%	16%	50 %	100 %

A student has passed the exam if he has acquired a percentage of credits for each learning outcome higher or equal to defined threshold.

Exam term:

Outcomes	Written exam	Oral exam	Max
Outcome 1	8%	2%	10%
Outcome 2	13%	3%	16%
Outcome 3	8%	2%	10%
Outcome 4	14%	3%	17%
Outcome 5	14%	3%	17%
Outcome 6	16%	4%	20%
Outcome 7	8%	2%	10%
Percentage of ECTS	5,0	1,0	
Total	81%	19%	100 %

A student has passed the exam if he has acquired a percentage of credits for each learning outcome higher or equal to defined threshold.

Grading:

A student has passed the exam if he has acquired at least 50% of anticipated credits of a specific learning outcome.

If a student has passed learning outcomes of all courses, the accomplished credits (percentages) of all passed learning outcomes are being added, while the final grade is defined upon following table:

Range of credits (percentages)	Numerical grade	ECTS grade
90,00 – 100,00	Excellent (5)	A
75,00 – 89,99	Very good (4)	B
60,00 – 74,99	Good (3)	C
50,00 – 59,99	Sufficient (2)	D
0,00 – 49,99	Insufficient (1)	F

Obligatory literature
1. Teaching materials 2. Brodić T.: Osnove elektrotehnike i elektronike, Veleučilište u Rijeci, 2007. god.
Additional literature
1. Brodić T.: Osnove primijenjene elektrotehnike i elektronike, Veleučilište u Rijeci, 2009. god. 2. Furčić N. i drugi: Osnove elektrotehnike 1, Osnove elektrotehnike 2, Neodidacta Zagreb, 2009. god. 3. Technical manuals