

Study Programme: Power, Electronic and Telecommunication Engineering			
Course Unit Title: Fundamentals of Electrical Engineering 1			
Course Unit Code: E105			
Name of Lecturer(s): Nikola Đurić			
Type and Level of Studies: Bachelor level			
Course Status (compulsory/elective): compulsory			
Semester (winter/summer): winter			
Language of instruction: english			
Mode of course unit delivery (face-to-face/distance learning): face-to-face			
Number of ECTS Allocated: 9			
Prerequisites: none			
Course Aims: The course objective is to introduce students to the terminology of electrical engineering, the basic physical laws of electrostatics and to enable students to analyze electric circuits of time-invariant currents. Also, the objective is to teach the students to calculate basic parameters of the elements in such circuits, resistors and capacitors			
Learning Outcomes: The students who successfully complete the course are able: -to calculate the capacitance of a simple homogeneous symmetrical structure (e.g. coaxial cable with several layers of dielectrics) -to calculate the resistance of homogeneous multilayer structure - to analyze simple electric circuit of time-invariant current - to calculate maximum power of elements in the circuits and protect them from burning out.			
Syllabus: Electrostatics (Electric field strength vector, Gauss's law, Electric potential and voltage, Conductors in electrostatic field, Capacitance and capacitors, Dielectrics in electrostatic field, Boundary conditions, Energy and forces in electrostatic field). Electric circuits of time-invariant currents (Current density vector and current intensity, Ohm's law and resistors, Joule's law, Kirchhoff's Laws, Generators, Conditions of maximum power transmission, Power conservation theorem, Methods of circuit analysis, Superposition Theorem, Thevenin's and Norton's theorem, Compensation theorem, Reciprocity theorem, Electrical circuits with capacitors).			
Required Reading: Relevant literature in English			
Weekly Contact Hours: 8	Lectures: 4	Practical work: 4	
Teaching Methods: The teaching process consists of lectures and tutorials, with occasional video presentations. The inductive method is applied in the lectures. The students' knowledge grows gradually, through many simple problems solving.			
Knowledge Assessment (maximum of 100 points): 100			
Pre-exam obligations	points	Final exam	points
Test	10	Written part of the exam	70
Test	10		
Test	10		
Seminar(s)			

The methods of knowledge assessment may differ; the table presents only some of the options: written exam, oral exam,

project presentation, seminars, etc.