

Study Programme: Power, Electronic and Telecommunication Engineering			
Course Unit Title: Fundamentals of Electrical Engineering 2			
Course Unit Code: E110			
Name of Lecturer(s): Nikola Đurić			
Type and Level of Studies: Bachelor level			
Course Status (compulsory/elective): compulsory			
Semester (winter/summer): summer			
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 electric and magnetic field terminology, to basic laws of electromagnetics and to enable students to analyze electric circuits of time-varying currents. In addition to analysis of simple sinusoidal current circuits, the objective is to enable students to analyze balanced three-phase networks. Also, the objective is to teach the students to calculate impedance and the basic parameters of the loads in such networks, resistors, coils, capacitors and coupled coils			
Learning Outcomes: The students who successfully complete the course are able to calculate magnetic field of simple symmetrical structures, to calculate the inductance of simple structure with the coils, to solve simple electric and magnetic circuits of sinusoidal currents, to calculate instantaneous, active, reactive and apparent power of the elements in the circuits and to correct power factor in singlephase and balanced three-phase circuits.			
Syllabus: Time-invariant magnetic field, (Magnetic flux density vector, Biot-Savart Law, Magnetic flux, Ampere's Law, Ferromagnetic materials, Magnetic properties of materials, Boundary conditions, Magnetic circuits). Slowly time-varying electromagnetic field (Electromagnetic induction, Faraday's Law, Lenz's Law, Eddy currents, Skin effect and proximity effect, Self inductance and mutual inductance, Transformers, Energy and forces in magnetic field). Electric circuits of time-varying current (Simple sinusoidal current circuits, Impedance, Circuit analysis in frequency domain, Complex power, Maximum average power transmission, Power factor correction, Simple resonant circuits, Magnetically coupled circuits, Balanced three-phase systems).			
Required Reading: Relevant literature in English TBD			
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		Final exam	
	points		points
Test	10	Written part of the exam	70
Test	10		

Test	10		

The methods of knowledge assessment may differ; the table presents only some of the options: written exam, oral exam, project presentation, seminars, etc.