

Study program / course: Mechanical engineering			
Type and level of study: Bachelor academic studies			
Course: Electrical and electronics engineering			
Lecturers: Radulović J. Jasna			
Status of course: Joint for all modules, II semester			
Number of ECTS: 6			
Precondition: None			
The objective of course During this course students are introduced to the fundamental theoretical laws of electrical engineering and electronics. Laboratory practices include training for the application of various electric measurement devices.			
The outcome of course This course will give students a comprehension of the fundamental principles and practical knowledge of the electrical and electronics engineering.			
Syllabus Theoretical study Electrostatics. Coulomb's law. Electric field. Gauss's law. Electrostatic induction. Capacitors. Dielectrics in the electrostatic field. Direct current. Electricity. Electrical circuits. Kirchhoff's circuit laws. Nodal and mesh analysis. Electromagnetism. Electromagnetic force. Biot–Savart law. Ampère's circuital law. Magnetization. Magnetic field in the material environment. Magnetic circuits. Faraday's law of induction. Alternating current. Complex and phasor representation of voltage and current. RLC circuit. Nodal and mesh analysis. Three-phase systems. Electrical machines. Transformers. Electric generators. Electric motors. Electronics. Semiconductor. p-n junction. Diodes. Transistors. Integrated circuits. Electronic amplifiers. Rectifiers. Voltage stabilizer. Operational amplifiers. The basic logic circuits.			
Practical classes Ohm's law, Kirchhoff's circuit laws, Induction motors, Basic electronics elements and circuits.			
Recommended reading <ol style="list-style-type: none"> 1. Petronijević Ž.: " Electrotechnique", Naučna knjiga, Belgrade, 1986. 2. Radulović, J.J.: " Electrotechnique with electronic – Laboratory practicum exercises ", 115 pages, ISBN: 86-80581-83-6, Faculty of Mechanical Engineering from Kragujevac, 2005. 3. Radulović, J. J.: " Electrotechnique with electronic – Collection of examples", 230 pages, ISBN: 86-80581-89-5, Faculty of Mechanical Engineering from Kragujevac, 2006. 			
The number of hours of active teaching:			Other classes:
Theory: 2	Practical classes: 1.6	Other forms of teaching: 0.4	Research study: 0
Methods of teaching Lectures, auditory exercises, laboratory exercises.			
Evaluation of knowledge			
Pre-final exam obligations	points	Final exam	points
Activities during the classes:	5	Final exam:	30
Practical classes:	20		
Colloquiums(s) :	45		
Seminar(s) :			