

## SYLLABUS

Basic data of the subject	
University/Faculty:	University of Applied Sciences in Ferizaj/ Faculty of Engineering and Information Technology
Title of the subject:	Basics of Electrotechics with Electronics
Level:	Bachelor
Course Status:	Elective
Year of studies:	2
Number of hours per week:	4
Value of Credits - ECTS:	5
Time/ location:	
Course lecturer:	Prof. As. Dr. Fakije Zejnullahu
Contact details:	<a href="mailto:Fakije.zejnullahu@ushaf.net">Fakije.zejnullahu@ushaf.net</a>
Course description	
Course description	<p>Understanding electricity and the electrical properties of matter. Electrostatic field in empty space and in transmitting and dielectric matter; Coulomb's Law; Electrical condenser; Series, parallel and mixed capacitor circuits.</p> <p>Basic notions of electrical current; Electrical current in metals; Intensity and density of electrical currents; Basic laws; Kirchhoff's current law (1st Law), Ohm's law and Joule's law; Electrical resistance and resistors; Simple electric circuit; Electric work and power; Complex electrical circuit, Kirchhoff's second law;</p> <p>Electric current in liquids; Electric current in gas</p> <p>Basic understanding of magnetisation. Magnetic fields; Electromagnetic force, magnetic induction and magnetic flux. Biot-Savart law. Ampere's law. The impact of matter in the magnetic field. Magnetic separation. Measuring instruments of electricity and tension.</p> <p>General information on alternating-current circuits, controlling alternating-current circuits three-phase electric power systems.</p> <p>P-N connection, bipolar transistors; Working principle of transistors. Static characteristics of transistors, Transistors with electrical field effect FET, Transistors JFET and MOSFET, Thyristor.</p>
Course objective:	Introduce students to the general laws of electrical technology and make opportunities to have access to industrial technology that are related to electrical

	technology and electronics.		
<b>Expected learning outcomes:</b>	Upon completion of this course students will be able to: <ul style="list-style-type: none"> <li>• Recognize the physical properties of electricity,</li> <li>• Recognize various schemes of electrical technology, energetics and electronics.</li> <li>• Recognize the processes of modern automation, regulation and conduction of electronic and electric systems.</li> <li>• Conduct various measurements of electric and electronic sizes.</li> </ul>		
<b>Contribution to the student load (which must correspond with learning outcomes)</b>			
<b>Activity</b>	<b>Hours</b>	<b>Days/weeks</b>	<b>Total</b>
Lectures	2	15	30
Theoretical exercises / laboratory	2	15	30
Internship	2	2	4
Contacts with teacher / consultations			
Field exercises			
Midterm, seminars and projects.	2	4	8
Homework	2	2	4
Studying (at the library or at home)	2	15	30
Final preparation for the exam	3	5	15
Time spent on evaluation (tests, quiz and final exam)			
Projects and presentations	2	2	4
<b>Total</b>			
<b>Teaching methodology:</b>	<i>Lectures, seminar paper, exercises, measurement of different electric sizes, group work etc.</i>		
<b>Assessment methods:</b>	<i>Assignment project as a seminar paper and final exam</i> <ul style="list-style-type: none"> <li>• Attendance: 10%</li> <li>• Test 1: 30%</li> <li>• Test 2: 30%</li> <li>• Project: 30%</li> </ul> <i>Total: 100%</i>		
<b>Literature</b>			
<b>Basic literature:</b>	1. Prof. Dr. Sc Nexhat Orana, Bazat e Elektroteknikës I dhe II , Fakulteti i Elektroteknikës Prishtinë, 2. Prof.Mr. Sc. Isa Haxhiu, ELEKTRONIKA I dhe II, Fakulteti i Elektroteknikës Prishtinë		
<b>Additional literature:</b>	1. Prof.Dr. Nenad Marinoviq „Eletroteknika e		

	<p>përgjithëshme dhe Elektronika” Skolska Kniga, Zagreb</p> <p>2. Bozo Luboja, Senad Cetic dhe Zivko Marjanoviq, Bazat e Elektronikës, telekomunikacionit dhe Automatikës</p>
<b>Theory to practice ratio:</b>	<i>80% Theory; 20% Practice</i>
<b>Designed learning plan:</b>	
<b>Week</b>	<b>Lecture</b>
<b>Week one:</b>	Course objectives – Syllabus Understanding electricity and the electrical properties of matter. Electrostatic field in empty space; Coulomb’s Law; Definition of intensity of electric field. Electric potential, the work of forces on the electrostatic field. Electric tension.
<b>Week two:</b>	Electrostatic field in transmission line. Condition of electrostatic equilibrium in transmission bodies. Electrostatic induction, electricity of transmission bodies. Electrostatic generator. Electric capacity and capacitors. Capacitor circuits: Series, parallel and mixed capacitor circuits.
<b>Week three:</b>	Electrostatic field in dielectric mater. Dielectric polarization,. Energy of electrostatic field, forces in electrostatic field.
<b>Week four:</b>	Basic notions of electrical current; Electrical current in metals; Intensity and density of electrical currents; Basic laws; Kirchhoff’s current law (1st Law), Ohm’s law; Electrical resistance and resistors; Simple electric circuit;
<b>Week five:</b>	Electrical resistance and resistors, Resistor circuit. Jaoul’s law. Simple electric circuit. Electric work and power.
<b>Week six:</b>	Electric work and power; Complex electrical circuit, Kirchhoff’s second law; Electric current in liquids; Electric current in gas
<b>Week seven:</b>	<b><i>First mid-term test</i></b>
<b>Week eight:</b>	Basic understanding of magnetization. Magnetic fields; Electromagnetic force, magnetic induction and magnetic flux. Biot-Savart law. Ampere’s law.
<b>Week nine:</b>	Magnetic properties of matter. Magnetic field in matter. Magnetisation of matter, generalized law of Ampere, magnetic permeability, magnetic separation. Electromagnetic induction. Application of electromagnetic induction. Measurement instruments of tension and power.
<b>Week ten:</b>	General information on alternating-current circuits, controlling alternating-current circuits three-phase electric power systems.
<b>Week eleven:</b>	Lidhja P-N, Transistorët bipolar; Principi i punës së transistorëve. Karakteristika statike e transistorit P-N connection, bipolar transistors; Working principle of transistors. Static characteristics of transistors,

<b>Week twelve:</b>	Transistors with electrical field effect FET, Transistors JFET and MOSFET, Thyristor.
<b>Week thirteen:</b>	<i>Study visit to a company</i>
<b>Week fourteen:</b>	<i>Second mid-term test</i>
<b>Week fifteen:</b>	<i>Project presentation</i>
<b>Academic policies and rules of conduct</b>	
Attendance, appropriate behavior in class, participation in class activities, as well as visits to enterprises are mandatory. Students are also requested to either turn off their mobile phones or put them on silent mode, so as not to interrupt the learning process.	