SYLLABUS

Basic data of the subject	
University	**University of Applied Sciences in Ferizaj**
Academic unit	**Faculty of Engineering and Informatics**
Program	**Industrial Engineering with Informatics**
Title of the subject	**Basics of Electrotechics with Electronics**
Level	**Bachelor**
Course Status	**Elective**
Year of studies	**II, Semester IV**
Number of hours per week	**3**
Value of Credits - ECTS	**5**
Time / location	
Course lecturer	
Contact details	
Course Description	*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.* *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.* *Electric current in liquids; Electric current in gas* *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 instrumets of electricity and tension.* *General information on alternating-current circuits, controlling alternating-current circuits three-phase electric power systems.* *P-N connection, bipolar transistors; Working principle of transistors. Static characteristics of transistors, Transistors with electrical field effect FET, Transistors JFET and MOSFET, Thyristor.*
Objectives of the course	Introduce students to the general laws of electrical technology and make opportunities to have access to industrial technology that is related to electrical technology and electronics.
Expected learning outcomes	Upon completion of this course students will be able to: • Recognize the physical properties of electricity, • Recognize various schemes of electrical technology, energetics and electronics.

	• Recognize the processes of modern automation, regulation and conduction of electronic and electric systems. • Conduct various measurements of electric and electronic sizes.
Prerequisites	*N/A*

Contribution to the student load (which must correspond with learning outcomes)			
Activity	**Hour**	**Day/Week**	**In total**
Lectures with numerical exercises	2	15	30
Internship	2	10	20
Contacts with teacher / consultations	2	3	6
Field exercises	2	3	6
Midterm, seminars and projects.			
Homework	2	2	4
Self-learning time student (at the library or at home)	2	5	10
Final preparation for the exam	2	15	30
Time spent on evaluation (tests, quiz and final exam)	3	5	15
Projects and presentations.	2	2	4
Total			**125**

Teaching methodology	*Lectures, seminar paper, exercises, measurement of different electric sizes, group work, as well as active collaboration in student teams.*
Assessment methods	*The student can choose to be assessed one of the two forms of assessment, given below:* *1. Form 1: Evaluation with two tests and the Project* *2. Form 2: Evaluation of the final exam.* ***Form 1:*** *In the first form of assessment "Assessment with two tests and project" the student is assessed in four activities that are carried out during the lectures:* *1. Test 1 (30%), individual assessment* *2. Test 2 (30%), individual assessment* *3. Class activity (10%), individual assessment* *4. Project (30%), group assessment.* ***Additional clarification:*** *If the student in each activity above reaches the maximum points, then he will be evaluated with 100 points.* *Students who pass the exam according to Form 1 of the assessment, are released from the obligation to take the final exam. Only if the student is not satisfied with the grade achieved*

	according to form 1, then he can undergo the final exam to obtain a higher grade. ***Form 2:*** *In the second form of evaluation, "Evaluation with the final exam", the student will undergo the exam which will be held after the end of the course lectures and is organized in the exam deadlines, determined by the University Senate.* *Through the final exam, the student can achieve a maximum of 70% of the points from the total of 100 points.* *The rest of the 30% points must be completed through group work on the Project, an activity carried out during the lectures.* *In Test 1, Test 2, and the final exam, the evaluation of the students will be done through an evaluation form, which must be completed individually by the student. The evaluation form will contain objective and subjective questions through which the student's learning outcomes will be evaluated:* • *The objective questions will be of the following types: (1) Multiple choice questions, (2) True/False, (3) Completion, and (4) Composition/Matching; questions that will be used to assess the student's abilities to recall and recognize the concepts and material of the course.* • *The subjective questions will be of the Essay/written task type that will be used to assess the student's understanding and abilities to apply the knowledge gained in the analysis, synthesis, and evaluation of the problem, from the answers prepared by the student to the question of submitting.* *Activity in the class means the student's engagement in dealing with the issues discussed in the class, during the lectures* *Project (30%), group assessment: it is an activity in which students apply the acquired knowledge in a concrete project. It is carried out in groups of 2 or 3 students who are obliged to carry out the activity, document it, and present it to the subject professor.* *For the form of realism and documentation of the activity, all members of the group will be evaluated with the same point (20%), while the evaluation of the presentation skills of the activity is individual and includes 10%.* ***Rating:*** *91-100 points – graded 10 (ten)*

	81-90 points – graded 9 (nine) *71-80 points – grade 8 (eight)* *61-70 points – grade 7 (seven)* *51-60 points – grade 6 (six)* *0-50 points – The student repeats the exam.*
The ratio of theory and practice	70% theory with exercises and 30% laboratory work.
Literature	
Basic Literature	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
Additional Literature	1. *Prof.Dr. Nenad Marinoviq,, Eletroteknika e* përgjithëshme dhe Elektronika" Skolska Kniga, Zagreb; 2. Bozo Luboja, Senad Cetic dhe Zivko Marjanoviq, Bazat e Elektronikës, telekomunikacionit dhe Automatikës
Designed learning plan	
Week:	**Lectures and exercises to be held**
Week one	*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 elctrostatic field. Electric tension.*
Week two	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.
Week three	*Electrostatic field in dielectric meter. Dielectric polarization, Energy of electrostatic field, forces in electrostatic field.*
Week four	*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;*
Week five	*Electrical resistance and resistors, Resistor circuit. Jaoul's law. Simple electric circuit. Elctric work and power.*
Week six	*Electric work and power; Complex electrical circuit, Kirchhoff's second law;* *Electric current in liquids; Electric current in gas*
Week seven	*First test*
Week eight	*Basic understanding of magnetization. Magnetic fields; Electromagnetic force, magnetic induction and magnetic flux. Biot-Savart law. Ampere's law.*

Week nine	*Magnetic properties of matter. Magnetic field in matter. Magnetisation of matter, generalized law of Ampere, magnetic premeability, magnetic separation.* *Electromagnetic induction. Application of electromagnetic induction. Measurement instruments of tension and power.*
Week ten	*General information on alternating-current circuits, controlling alternating-current circuits three-phase electric power systems.*
Week eleven	*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,*
Week twelve	*Transistors with electrical field effect FET, Transistors JFET and MOSFET, Thyristor*
Week thirteen	*Study visits to a company*
Week fourteen	*Test 2*
Week fifteen	*Project presentation*
Academic policies and rules of conduct	
Regular attendance of lectures and exercises is necessary, as well as active participation with discussion and solution of tasks. Not impeding the progress required for learning using mobile phones turned off or in silent mode.	