Course Unit Descriptor

Study Programme: Power, Electronic and Telecommunication Engineering (Power Engineering-Systems)

Course Unit Title: Power Electronics 2

Course Unit Code: EE308

Name of Lecturer(s): Vladimir Katić

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:5

Prerequisites: Power Electronics 1

Course Aims:

Power Electronics 1 course objective is to enable the student to design and apply devices for converting parameters of electrical energy using the powerful electronic switching components and methods of digital control, that is, in addition to the theoretical studying of strong semiconductors and modes of all kinds of converters (AC/DC, DC/DC, DC/AC and AC/DC), students acquire the necessary practical experience to apply the acquired knowledge in the economy.

Learning Outcomes:

After mastering the course Power Electronics 1, students will be able to understand the principles and operation methods of power electronic conversions with strong semiconductor components, to solve and calculate simple solutions of power converters, as well as to apply commercial industrial power converters to electromotive drives and similar applications. They will be able to calculate methods of protection of these devices, as well as to predict their negative impact on network and fed consumers.

Syllabus:

Subject and the importance of the power electronics. Introduction to power converters. Components of power electronics. Structure and the operation principles. Safe operation field. Calculation of losses. Adjusters (AC/DC). Inverters (DC/AC). Alternating power suppliers (AC/AC). Power converters and the power quality. Converters for compensation and improvement of the power quality. Excitation circuit for switching components. Methods of control and regulation of power converters. Application examples of the power electronic devices.

Required Reading: Relevant literature in English TBD

Weekly Contact Hours:3	**Lectures:2**	**Practical work:1**

Teaching Methods:

Lecturing theoretical operational principles of strong electronic components and power electronic converters, Auditory Practice where problems of calculation of the power converters and their protective circuits are solved, Laboratory Practice where students gain practical proof of the theoretical knowledge and gain necessary practical experience and confidence using modular approach and independent work.

Knowledge Assessment (maximum of 100 points):100

Pre-exam obligations	points	**Final exam**	points
Lecture attendance	5	Practical part of the exam	50

Laboratory exercise attendance	5		
Laboratory exercise defense	20		
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.			