

		Course title: <i>High Voltage Techniques</i>		
Course code	Course status	Semester	Number of ECTS credits	Lecture hours
<i>PA6102</i>	Mandatory	<i>I</i>	6	3+1+1+0(+0.5)

Study program: Master studies, ELECTRICAL ENGINEERING, study program: Power systems and Control, department: Power systems (studies last for 10 semesters, 300 ECTS credits) Postgraduate studies, ELECTRICAL ENGINEERING, study program: Power systems and Control, department: Power systems (studies last for 8 semesters, 240 ECTS credits)	
Prerequisites: No prerequisites required.	
Course aims: Students will be introduced with basic definitions, physical laws and characteristics of high voltage techniques by means of causes, origins and effects of high intensity electric fields and different types of overvoltages, as well as with methods and procedures for high voltage measurement and overvoltage protection.	
Teacher(s) first and last names: PhD Sreten Škuletić – professor, MSc Snežana Vujošević - assistant	
Studying method: Lectures, exercises, laboratory exercises, video and CD presentations, visits of power substations, consultations.	
Course synopsis:	
Preliminary week	Preparation and semester enrolment.
I week	Basic definitions and problems of high voltage techniques. Accurate and approximate methods for calculation of electric field intensity.
II week	Experimental definition of shape and intensity of electric field.
III week	Dielectrics. Division, features, electric characteristics and discharge in dielectrics.
IV week	Possible influences on flashover or breakdown of insulation.
V week	Dimensioning insulation
VI week	I colloquium
VII week	Free week
VIII week	Basics about origin and nature of overvoltages. Types, characteristics and effects of overvoltages.
IX week	Atmospheric and inner overvoltages. Propagation of overvoltages surges.
X week	Methods for overvoltages calculations. Application of computers for calculations.
XI week	Types and principles of overvoltage protection. Protection devices. Protection zones.
XII week	II colloquium
XIII week	Methodology for arrester selection. Principles and methods for insulation coordination.
XIV week	Devices and apparatus of high voltage laboratories. Generation of high voltage and current tests.
XV week	Measurement in high voltage techniques. Protection devices and manuals for work in high voltage laboratories.
XVI week	<i>Final exam</i>
Final week	Administrative procedures
XVIII-XXI week	Additional lessons, correction of the final exam and administrative procedures.
STUDENT WORKLOAD	
<u>per week</u>	<u>per semester</u>
Working hours: 6 credits x 40/30 = 8 hours. Working hours structure: 3 hours for teaching 1 hour for exercises 1 hour for laboratory exercises 3 hours for individual work, including consultations.	Teaching and the final exam: (8hours) x 16 = 128hours. Necessary preparation (before semester): 2 x (8hours) = 16hours. Total work hours for the course: 176hours Additional hours for preparing correction of the final exam, including the exam taking: up to 36hours. Work hours structure: 128hours (lectures) + 16hours (preparation) + 36hours (additional work)
Lessons attendance is mandatory for students, as well as doing homework, colloquiums and laboratory exercises.	
Literature: 1. Milanković Lj.: Tehnika visokog napona, ETF, Beograd, 1981. 2. Škuletić S.: Tehnika visokog napona , UCG UR, Titograd, 1989. 3. Škuletić S. Vujošević S. Radulović V.:Praktikum za laboratorijske vježbe iz TVN, ETF, Podgorica, 2004	
The forms of knowledge testing and grading: - Homework carries 10points. - I colloquium carries 12 points; II colloquium carries 13 point (25 points total). - Laboratory exercises carry 10 points - Attendance to lessons carries 5 points. - Final exam carries 50 points. Student gets the passing grade by collecting 55 points at least.	
Special remarks for the course: If needed, the course can also be taught in English.	
Teacher(s) who provided the information: PhD Sreten Škuletić	
Note: -	