

## Specification for the book of courses

<b>Study program</b>		Electrical Engineering and Computer Science		
<b>Module</b>		Electrical Power Engineering		
<b>Type and level of studies</b>		Undergraduate Academic Studies		
<b>The name of the course</b>		High Voltage Substations		
<b>Lecturer (for lectures)</b>		Korunović M. Lidija		
<b>Lecturer/associate (for exercises)</b>		Anastasijević B. Ivan, Radić M. Milan		
<b>Lecturer/associate (for OFE)</b>		Anastasijević B. Ivan, Radić M. Milan		
<b>Number of ECTS</b>		6	<b>Course status (obligatory/elective)</b>	Obligatory
<b>Prerequisites</b>				
Introducing the elements of high voltage substations to the students and the role of these substations in electric power systems. Calculation of short-circuit currents and their characteristic values necessary for the selection and testing of equipment and apparatus. Introducing the standards and recommendations for design of high voltage substations, and their application to concrete substations.				
<b>Course objectives</b>				
Students gained the knowledge of high voltage substations necessary for the dimensioning of equipment and design of high voltage substations, as well as for their maintenance and operation.				
<b>Course outcomes</b>				
Students gained the knowledge of high voltage substations necessary for the dimensioning of equipment and design of high voltage substations, as well as for their maintenance and operation.				
<b>Course outline</b>				
<b>Theoretical teaching</b>				
Transformer - the element of high voltage substations. Economic aspects of transformer operation. Heating of transformer. Selection of transformer. Time-dependent change of short-circuit current, ac and dc component. Calculation of short-circuit current in radial networks. Influence of loading, resistance and induction motors on short-circuit current. Characteristic values of short-circuit currents. Thermal and mechanical calculations of elements in high voltage substations. Selection and testing of elements and equipment in high voltage substations. Main and auxiliary schema of high voltage substations. Distribution TS HV/MV and MV/LV. Disposition of high voltage substations. Grounding of high voltage substations.				
<b>Practical teaching (exercises, OFE, study and research)</b>				
Practical lectures include solution of computational tasks in the areas of theoretical teaching and visiting high voltage substations.				
<b>Textbooks/references</b>				
1	J. Nahman, V. Mijailović, High Voltage Substations (in Serbian), Beopress, Belgrade, 2000.			
2	J. Nahman, D. Salamon, V. Mijailović, High Voltage Substations - Workbook with Solved Problems with Appendixes (in Serbian), Academic mind, Belgrade, 2002.			
3	M. Đurić, V. Ilić, High Voltage Substations (in Serbian), AGM book, Belgrade, 2017.			
4	M. Đurić, V. Ilić, J. Krstivojević, Handbook for MV and LV Substations - license 350 (in Serbian), KIZ center, Belgrade, 2016.			
5	G. Dotlić, Electrical Power Engineering through Standards, Laws, Rule Books and Technical Recommendations (in Serbian), sixth modified and extended edition, SMEITS, 2013.			
<b>Number of classes of active education per week during semester/trimester/year</b>				
<b>Lectures</b>	<b>Exercises</b>	<b>OFE</b>	<b>Study and research work</b>	<b>Other classes</b>
2	2	1	0	0
<b>Teaching methods</b>				
Theoretical teaching includes classic lectures and lectures in electronic form. Practical teaching includes solution of computational tasks and visiting high voltage substations.				
<b>Grade (maximum number of points 100)</b>				
<b>Pre-exam duties</b>		<b>Points</b>	<b>Final exam</b>	<b>Points</b>
<b>Activity during lectures</b>			<b>Written exam</b>	25
<b>Exercises</b>		5	<b>Oral exam</b>	25
<b>Colloquia</b>		40		
<b>Projects</b>		5		