

Study program: Electrical and Computing Engineering				
Type and level of studies: Doctoral studies (third level of studies)				
<b>Course unit: High voltage substations</b>				
<b>Teacher in charge: Vladica Mijailović</b>				
Language of instruction: English				
ECTS: 15				
Prerequisites: -				
Semester: Summer				
<b>Course unit objective</b>				
The aim of the course is to introduce students to modern methods for calculation of characteristic substation parameters in case of arbitrary faults with inclusion of all relevant factors, without simplifying.				
<b>Learning outcomes of Course unit</b>				
Acquired knowledge should enable students to select and design elements of the high voltage substation with the inclusion of all influential factors in the power system, in order to obtain accurate technical and economic solutions				
<b>Course unit contents</b>				
<i>Theoretical classes</i>				
Unsymmetrical faults in the substation. Modern methods for calculation of fault currents and their effects. Grounding systems. The mutual influence of the grounding systems. Impact of impedance grounding system. Modeling the grounding with the computer. Reliability of the substation. Calculation methods and models of the systems: conventional, gas-insulated and hybrid.				
<i>Practical classes</i>				
Solving practical problems. Writing scientific paper, as a possible theme for doctoral dissertation.				
<b>Literature</b>				
[1] A. Shenkman, <i>Transient Analysis of Electric Power Circuits Handbook</i> , Springer, 2005.				
[2] J. C. Das, <i>Transients in Electrical Systems</i> , McGraw Hill, 2010.				
<b>Number of active teaching hours</b>				<b>Other classes</b>
Lectures: 3	Practice: 5	Other forms of classes	Independent work: 2	
<b>Teaching methods Lessons, consultations, study and research work</b>				
<b>Examination methods ( maximum 100 points)</b>				
<b>Exam prerequisites</b>	<b>No. of points:</b>	<b>Final exam</b>	<b>No. of points:</b>	
Student's activity during lectures	<b>5</b>	oral examination	<b>50</b>	
Practical classes/tests	<b>15</b>	written examination		
Seminars/homework	-	.....		
Project	<b>30</b>			
Other				
<b>Grading system</b>				
<b>Grade</b>	<b>No. of points</b>	<b>Description</b>		
<b>10</b>	<b>91-100</b>	Excellent		
<b>9</b>	<b>81-90</b>	Exceptionally good		
<b>8</b>	<b>71-80</b>	Very good		
<b>7</b>	<b>61-70</b>	Good		
<b>6</b>	<b>51-60</b>	Passing		
<b>5</b>	<b>less than 50</b>	Failing		