

DESCRIPTION OF THE COURSES

- Course code: ELR2510
- Course title: POWER SYSTEMS OPERATION AND CONTROL 2
- Language of the lecturer: polish

<i>Course form</i>	<i>Lecture</i>	<i>Classes</i>	<i>Laboratory</i>	<i>Project</i>	<i>Seminar</i>
<i>Number of hours/week*</i>			2		
<i>Number of hours/semester*</i>			30		
<i>Form of the course completion</i>			<i>positive note of all exercises and reports</i>		
<i>ECTS credits</i>			2		
<i>Total Student's Workload</i>			60		

- Level of the course (basic/advanced): second level
- Prerequisites: Electrical Power Systems, Power Systems Operation and Control (lecture)
- Name, first name and degree of the lecturer/supervisor:
Prof. Marian Sobierajski, Ph.D., D.Sc
- Names, first names and degrees of the team's members:
 1. Mieczysław Biniek Ph.D.
 2. Robert Lis Ph.D.
 3. Mirosław Łabuzek Ph.D.
- Year:.....1..... Semester:.....2.....
- Type of the course (obligatory/optional): obligatory
- Aims of the course (effects of the course): **practical making of thesis of lecture**
- Form of the teaching (traditional/e-learning): traditional
- Course description: The modern electric power systems characteristics. Power system co-operation, a large scale power system analysis. Classification and characteristic of a power system operating condition (steady state, transient state). Power system regulation and control in various operating states. Power system frequency control. Frequency and load control in large and isolate interconnected power systems – mathematical model. Power system steady state – short-term load forecasting, fast load flow calculation methods, power systems optimization, fast security assessment methods, power systems reliability. Power system operation in transient states, modeling of power systems dynamics, the methods of power system security assessment.
- Lecture:

<i>Particular lectures contents</i>	<i>Number of hours</i>
<i>I.</i>	

- Classes – the contents:
- Seminars – the contents:
- Laboratory – the contents:
 1. Individual preparation of the power system diagram for operating conditions

2. Load flow calculation in multi voltages power system
3. Voltage regulation and reactive power in multi voltages power system
4. Load flow calculation using hybrid method
5. Effectiveness ground in 110 kV network
6. Limitation of power short circuits
7. Influence of transformer ratio for short circuits calculation
8. Individual preparation of the power system diagram for stability analysis
9. Dumping a little hunting using power system stabilizer
10. Analysis of transient stability by equal area method
11. Analysis of transient stability by numerical integration
12. Analysis of generator voltage control on dynamic stability
13. Voltages stability in generator – system configuration
14. Primary control of frequency in power system

- Project – the contents:

- Basic literature:

1. Kremens Z., Sobierajski M., Analiza systemów elektroenergetycznych. Warszawa. WNT 1996
2. Kacejko P., Machowski J., Zwarcia w sieciach elektroenergetycznych, WNT 1993
3. Kacejko P., Machowski J., Zwarcia w systemach elektroenergetycznych, WNT 2002
4. Kinsner K. i inni , Sieci elektroenergetyczne. Wrocław, Wyd. PWr, 1993

- Additional literature:

An academic book on Electrical Power System Analysis

- Conditions of the course acceptance/creditation:

positive note of all exercises and reports

* - depending on a system of studies