DESCRIPTION OF THE COURSES

- Course code: ELR2514
- Course title: ELECTRIC POWER SYSTEM AUTOMATION
- Language of the lecturer: english, polish

Course form	***Lecture***	***Classes***	***Laboratory***	***Project***	***Seminar***
*Number of hours/week**	*1*		*1*		
*Number of hours/semester**	*15*		*15*		
Form of the course completion	*examination*		*exercise reports, final test*		
ECTS credits	*2(1,1)*		*1*		
Total Student's Workload	*60*				

- Level of the course (basic/advanced): advanced
- Prerequisites: Informatics, Electric Power Systems
- Name, first name and degree of the lecturer/supervisor: Prof. Marian Sobierajski, Ph.D., D.Sc. Associate Professor
- Names, first names and degrees of the team's members: Robert Lis, Ph.D, Mirosław Łabuzek, PhD
- Year:.....2..... Semester:.....3.....
- Type of the course (obligatory/optional): optional
- Aims of the course (effects of the course): Knowledge of control and regulation of voltage and frequency in transient states
- Form of the teaching (traditional/e-learning): traditional
- Course description: Exciters and voltage regulators. Dynamic stability and power system stabilizers. Transient stability in multi-machine systems. FACTS and voltage control in transmission systems. Frequency control in modern power systems.
- Lecture:

Particular lectures contents	*Number of hours*
1. Voltage control of synchronous generators in power system.	
2. Analysis of rotor swings in large power systems.	*2*
3. Power system stabilizers.	*2*
4. Transient stability in power systems in multi-machine systems.	*2*
5. FACTS and voltage stability in power systems.	*2*
6. Primary frequency control – modeling and analysis.	
7. Secondary frequency control in isolated and parallel power systems.	*2* *2* *2*

- Classes – the contents:
- Seminars – the contents:

1. Individual preparation of the power system diagram for stability analysis - per unit calculations.
2. Analysis of steady-state stability using practical criteria.
3. Evaluation of dynamic stability by eigenvalue analysis.
4. Analysis of generator voltage control on dynamic stability.
5. Analysis of transient stability by equal area method.
6. Analysis of transient stability by numerical integration.
7. Final test.

- Project – the contents:
- Basic literature:

1. Machowski J., Bialek J. W., Bumby J. R., Power System Dynamics and Stability. John Wiley and Sons 1997.
2. Sobierajski M.,Łabuzek M., Lis R., Electric Power System Analysis in Matlab, Wroclaw University of Technology, 2007.

- Additional literature:

3. Kremens Z., Sobierajski M., Electric Power Analysis. WNT 1996 /in polish/

- Conditions of the course acceptance/credition:

Positive note of exercise reports, positive note of final test.

* - depending on a system of studies