

| STUDY MODULE DESCRIPTION FORM | | |
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| Name of the module/subject Electric power system operation | | Code 1010311261010316898 |
| Field of study Electrical Engineering | Profile of study (general academic, practical) (brak) | Year /Semester 3 / 6 |
| Elective path/specialty Electric Power Systems | Subject offered in: polish | Course (compulsory, elective) obligatory |
| Cycle of study: First-cycle studies | Form of study (full-time, part-time) full-time | |
| No. of hours Lecture: 1 Classes: 1 Laboratory: 1 Project/seminars: - | | No. of credits 3 |
| Status of the course in the study program (Basic, major, other) (brak) | | (university-wide, from another field) (brak) |
| Education areas and fields of science and art technical sciences | | ECTS distribution (number and %) 3 100% |
| Responsible for subject / lecturer: dr hab. inż. Ryszard Frąckowiak, prof. nadzw. email: ryszard.frackowiak@put.poznan.pl tel. 61 6652294 Wydział Elektryczny ul. Piotrowo 3A 60-965 Poznań | | |
| Prerequisites in terms of knowledge, skills and social competencies: | | |
| 1 | Knowledge | Fundamental knowledge on electrical energy generation, transmission and distribution as well as on the AC circuits analysis and modeling. |
| 2 | Skills | Skills to model the electric power network components and simple electric networks and to use computer simulation in electric calculations. |
| 3 | Social competencies | Is aware of responsibility for his actions and is ready to conform to the team co-operation rules. |
| Assumptions and objectives of the course: -Cognition of basic questions related to the electric power system modeling and analysis under normal and disturbed operating conditions and of chosen questions related to the transmission line construction. | | |
| Study outcomes and reference to the educational results for a field of study | | |
| Knowledge: | | |
| 1. Has acquired a basic knowledge on the transmission systems? designing, construction and operation. - [K_W08++] 2. Has acquired a knowledge on electric power system fundamentals in the scope of modeling and analysis of the normal and disturbed system conditions. - [K_W24+++] | | |
| Skills: | | |
| 1. Can carry out basic calculations of the electric power networks under normal and disturbed conditions using suitable computer programs; can present obtained results in the numerical and graphic forms as well as interpret it and properly conclude - [K_U02++] 2. Can prepare and show a draft presentation on the chosen topics related to the transmission system analysis and designing. - [K_U08++] | | |
| Social competencies: | | |
| 1. Is aware of the engineer's importance and responsibility for decisions he undertakes in the scope of the electric power system operation design and management. - [K_K02+] | | |
| Assessment methods of study outcomes | | |

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| <p>--Lecture ?Assessment of knowledge and skills presented in the exam in writing at the term 7, ?Bonus for activity and perception quality during lectures.</p> <p>-Sections ?Continuous grading, at each section ? bonus for increase in skills of dealing with acquired rules and methods, ?Test in writing in 14th week</p> <p>-Lab sections: ?Assessment of knowledge and skills related to the lab experiments run, grading of the report from the carried-out lab experiments, ?Bonus for dealing with acquired rules and methods at each class.</p> <p>-Acquisition of additional marks for in-class activity, especially for: ?Effective application of acquired knowledge when solving the indicated problem; ?Cooperation skills within the team carrying out the specific lab task; ?Accuracy and esthetic form of the report prepared in the framework of the individual work.</p> | | |
| Course description | | |
| <p>-General characteristics of topics related to the electric power system operation; basic knowledge on : power flow analysis, calculation of the short-circuit currents in the system, electric power system?s local and global stability studies; fundamentals of the transmission line modeling and design. Topics of the section and lab classes correspond to the content of lectures.</p> | | |
| Basic bibliography: | | |
| <p>1. Kujaszczyk Sz. i inni: Elektroenergetyczne układy przesyłowe, WNT, Warszawa 1997. 2. Kacejko P., Machowski J.: Zwarcia w systemach elektroenergetycznych, WNT, Warszawa 2002. 3. Mitkowski E., Grządzielski I., Marszałkiewicz K.: Praca i sterowanie systemów elektroenergetycznych zbior zadań, Wydawnictwo Politechniki Poznańskiej, Poznań 1985</p> | | |
| Additional bibliography: | | |
| <p>1. Kremens z., Sobierajski M.: Analiza systemów elektroenergetycznych, WNT, Warszawa 1996. 2. Machowski J., Bernas S., Stany nieustalone i stabilność systemu elektroenergetycznego, WNT, 1989 3. Bernas S.: Systemy elektroenergetyczne, Warszawa, 1982. 4. Praca zbiorowa - Napowietrzne linie elektroenergetyczne wysokiego napięcia, WN-T 1973</p> | | |
| Result of average student's workload | | |
| Activity | Time (working hours) | |
| 1. taking part to the lectures | 15 | |
| 2. participation in sections | 15 | |
| 3. participation in labs | 15 | |
| 4. participation in discussions with lecturer | 8 | |
| 5. preparation to the lab classes and elaboration of reports | 20 | |
| 6. examination | 2 | |
| Student's workload | | |
| Source of workload | hours | ECTS |
| Total workload | 75 | 3 |
| Contact hours | 55 | 2 |
| Practical activities | 35 | 1 |