STUDY MODULE DESCRIPTION FORM

Name of the module/subject		Code
Exploitation of technical systems		**1010324381010322644**

Field of study	Profile of study (general academic, practical)	Year /Semester
Electrical Engineering	**(brak)**	**4 / 8**
Elective path/specialty	Subject offered in:	Course (compulsory, elective)
Electrical and Computer Systems in	**Polish**	**obligatory**

Cycle of study:	Form of study (full-time,part-time)
First-cycle studies	**part-time**

No. of hours					No. of credits
Lecture: **18**	Classes: **-**	Laboratory: **9**	Project/seminars: **-**		**2**

Status of the course in the study program (Basic, major, other)	(university-wide, from another field)
(brak)	**(brak)**

Education areas and fields of science and art	ECTS distribution (number and %)
technical sciences	**2 100%**
Technical sciences	**2 100%**

Responsible for subject / lecturer:

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Prerequisites in terms of knowledge, skills and social competencies:

1	**Knowledge**	Basic knowledge in the field of theoretical electrical engineering, electric machines, metrology, electrical power engineering, computerization in designing.
2	**Skills**	Skill in effective knowledge acquiring in the domain related to the chosen line of studies and cooperation within a team (laboratory group).
3	**Social competencies**	Consciousness of the need for widening own competences.

Assumptions and objectives of the course:

Recognition of theoretical and practical problems related to operation of technical objects. Acquisition of the skill in using legal deeds allowing for admittance of the technical system for operation. Practical skill in choosing basic devices making a part of electrical engineering systems.

Study outcomes and reference to the educational results for a field of study

Knowledge:

1. to describe the structure and operation principle of a technical system, to explain various energy processing processes undergoing in the technical system - [K_W04+]
2. to indicate calculation methods helpful in choosing the driving machine suitable for various loads and operating conditions of the technical system - [K_W11+]
3. to formulate theoretical equation of motion and apply it in engineering (motion of traction vehicle) - [K_W13++]

Skills:

1. to apply the knowledge in the scope of operation of technical objects, to use calculation methods necessary for proper selection of the elements of the technical system, analysis and assessment of its operation - [K_U22++]
2. to work individually and in teams, to make use of catalogue cards with a view to proper choosing the parts of the technical system - [K_U17++]

Social competencies:

1. ability in independent thinking and creative activity in order to improve engineer effectiveness - [K_K01+]

Assessment methods of study outcomes

Lecture:

? assessment of the knowledge and skill presented at written credit of overall-problem type,

? permanent assessment during each lesson based on student?s activity.

Laboratory exercises:

? checking and promoting the knowledge of the problems necessary for carrying out the exercises in the sphere of definite laboratory tasks,

? assessment of the knowledge and skill related to fulfilling the exercise, assessment of the exercise report.

Additional points may be achieved for activity during the classes, particularly for:

? proposal of discussion of additional solution of the problem,

? ability for cooperation in teams.

Course description

Basic operational notions. Operational models and systems. Standard and legal deeds, dispositions, and catalogue cards. Statics and dynamics of selected electrical technical systems. Power engineering of technical systems. Choice of the power of driving machine. Designing fundamentals of the electrical technical systems. The drive of selected mechanical devices. Principles of calculation and simulation of selected drive systems of mechanical equipment. Execution of a selected simulation task.

Basic bibliography:

1. M. Hebda, Elementy teorii eksploatacji systemów technicznych, MCNEMT, Radom, 1990

2. Z. Stein, Eksploatacja maszyn elektrycznych, WUPP, Poznań, 1991

3. Z. Gogolewski, Z. Kuczewski Napęd elektryczny WNT Warszawa 1972

Additional bibliography:

1. J. Konieczny, Sterowanie eksploatacją urządzeń, PWN, Warszawa, 1975

2. Praca zbiorowa pod kierunkiem Z. Grunwalda: ?Napęd elektryczny? WNT Warszawa 1987

3. Drozdowski P. ? Wprowadzenie do napędów elektrycznych? Politechnika Krakowska; skrypt dla studentów wyższych uczelni technicznych Kraków 1998

Result of average student's workload

Activity	Time (working hours)
1. participation in lectuares	18
2. participation in laboratory lessons	9
3. participation in consultations for lectures	3
4. crediting the classes	2
5. preparation to laboratory lessons	9
6. drawing up the reports	9
7. preparation to crediting the classes	14
8. participation in consultations for laboratory	2

Student’s workload

Source of workload	hours	ECTS
Total workload	66	2
Contact hours	34	1
Practical activities	27	1