STUDY MODULE DESCRIPTION FORM

Name of the module/subject **Physics**	Code **1010324211010410037**

Field of study **Electrical Engineering**	Profile of study (general academic, practical) **(brak)**	Year /Semester **1 / 1**

Elective path/specialty **-**	Subject offered in: **polish**	Course (compulsory, elective) **obligatory**

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

No. of hours				No. of credits **5**
Lecture: **22**	Classes: **12**	Laboratory: **-**	Project/seminars: **-**	

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 %**)** **5 100%**

Responsible for subject / lecturer:

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Prerequisites in terms of knowledge, skills and social competencies:

1	**Knowledge**	Gradient of scalar field. Divergence and curl of vector field. Coulomb?s law, electric field and electric potential. Dipole and quadruple ? their fields. The field inside a dielectric. Capacitor with a dielectric. The classical theory of conductance of metals. Electromagnetic induction Free electrical oscillations in a circuit . Maxwell equations and electromagnetic waves. Bohr?s hydrogen atom. Electronic, oscillation and rotation energetic levels in molecules.
2	**Skills**	Derivation of a basic physical laws. Developing of a competence In using them for solving a real physical problems. Indication for powerful tools one has in solving physical and technical problems, like: operation research and a method of finite elements.
3	**Social competencies**	Students understand the importance of effective using of mathematics in other areas of science

Assumptions and objectives of the course:

-The aim of subject is introduction to complex numbers and their some practical applications. Differential and integral calculus of one variable are presented together with their applications in mathematics and physics.

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

Knowledge:

1. Basic knowledge of elementary physics. - [-]

Skills:

1. Derivation of a basic physical laws. Developing of a competence In using them for solving a real physical problems. Indication for powerful tools one has in solving physical and technical problems, like: operation research and a method of finite elements. - [-]

Social competencies:

1. Students understand the importance of effective using of mathematics in other areas of science - [-]

Assessment methods of study outcomes

-final test at the end of the term.

Course description

Gradient of scalar field. Divergence and curl of vector field. Coulomb?s law, electric field and electric potential. Dipole and quadruple ? their fields. Ostrogradski ? Gauss theorem.   The field inside a dielectric. Capacitor with a dielectric. The classical theory of conductance of metals. Electromagnetic induction Free electrical oscillations in a circuit. Maxwell equations and   electromagnetic waves. Bohr?s hydrogen atom. Electronic, oscillation and rotation energetic levels in molecules. Frauenhoffer?s diffraction on a single slit and a gitter.

Basic bibliography:

1. 1.   R. Resnick, D. Holliday, Fizyka tom I i II, PWN, Warszawa 1979.

2. 2.   I.V. Savelyev, Physics Volume I, II, III, Mir Publishers, Moscow 1978.

Additional bibliography:

1. 3.   Internet.

Result of average student's workload

Activity	Time (working hours)
1. 1. Lectures 2. Tutorials 3. Homeworks preparing for tutorials and exams 4. Meetings with the lecturer	100

Student's workload

Source of workload	hours	ECTS
Total workload	54	5
Contact hours	34	3
Practical activities	12	2