STUDY MODULE DESCRIPTION FORM

Name of the module/subject **Physical Education**		Code **1010101221010920006**
Field of study **Environmental Engineering First-cycle Studies**	Profile of study (general academic, practical) **general academic**	Year /Semester **1 / 2**
Elective path/specialty **-**	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: **-** Classes: **30** Laboratory: **-** Project/seminars: **-**		No. of credits **0**
Status of the course in the study program (Basic, major, other) **other**	(university-wide, from another field) **university-wide**	
Education areas and fields of science and art **technical sciences**		ECTS distribution (number and %) **0 100%**

Responsible for subject / lecturer:

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Prerequisites in terms of knowledge, skills and social competencies:

1	**Knowledge**	Basic knowledge of the geometry defined by the core curriculum of mathematics education at the advanced level in secondary school.
2	**Skills**	The ability to reason and the ability to reflect.
3	**Social competencies**	Focus on increased knowledge and new skills in order to more fully participate in professional and social life.

Assumptions and objectives of the course:

1. Equipment student's ability to visualize the spatial formations of an engineering and geometrical methods to solve some of the problems in the field of engineering.
2. Developing the capacity of spatial vision.

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

Knowledge:

1. The student knows the rules on the presentation of spatial formations on the plane using method projection into planes perpendicular. - [K_W01]
2. The student knows the rules of reading drawings received by this method. - [K_W01]
3. The student knows the rules on the presentation of spatial formations on the plane by axonometry. - [K_W01]

Skills:

1. Students are able to present on the plane data explicitly or created imaginary geometric figures. - [K_U01, K_U02]
2. Students are able to imagine a spatial solution on the basis of flat image. - [K_U02, K_U07]
3. Students can construct sections, penetration lines and development of the surfaces and polyhedrons. - [K_U02, K_U07]
4. Students are able to perform axonometric projections solid figures taken from the practice of engineering. - [K_U02, K_U07]

Social competencies:

1. The student is aware of the importance of technical drawing as a way to communicate relevant technical sciences. - [K_K07]
2. The student has the habit of thorough and careful execution drawings and critically evaluate solutions to the problems. - [K_K02]
3. The student has the ability to work in a team. - [K_K03]

Assessment methods of study outcomes

Lecture.

Valuation of knowledge and skils during written test.

Evaluation method: The test is evaluated in a scoring system using a scale of 0-10 points.

Practical lessons:

- two written tests during the semester (7 and 14 weeks) to verify the practical skills, each test is evaluated based on a point scale of 0-20 points.

- continuous evaluation for each course.

Course description

1. Projections point, straight line and plane into two mutually perpendicular projection planes.
2. Sections and developed polyhedrons.
3. Conical constructions. The rules for determining sections of the cone. Sections and developed conical and cylindrical surfaces.
4. Intersection of surfaces.
5. Axonometry.

Applied learning methods.

Lecture.

1. Lecture with multimedia presentation (including: drawings, animations) supplemented by examples on board.
2. Student activity is taken into account during class give a final grade.

Practical lessons.

1. Exercises complemented by multimedia presentations (including: drawings, animations).
2. Detailed review of task solutions and discussion of comments.

Basic bibliography:

1. B. Grochowski, Geometria wykreślna z perspektywą stosowaną, Wydawnictwo Naukowe PWN, 2010
2. J. Korczak, Cz. Prętki, Przekroje i rozwinięcia powierzchni walcowych i stożkowych, Wydawnictwo Politechniki Poznańskiej, 2007

Additional bibliography:

1. W. Mierzejewski, Geometria wykreślna, Oficyna Wydawnicza Politechniki Warszawskiej, 2006
2. W. Jankowski, Geometria wykreślna, Wydawnictwo Politechniki Poznańskiej, 1999

Result of average student's workload

Activity	Time (working hours)
1. Taking part in lectures	15
2. Taking part in practical lessons	15
3. Preparing for classes	10
4. Preparing for written tests	20

Student's workload

Source of workload	hours	ECTS
Total workload	30	0
Contact hours	30	0
Practical activities	30	0