STUDY MODULE DESCRIPTION FORM

Name of the module/subject **Engineering Drawing and CAD**		Code **1010101211010134899**
Field of study **Environmental Engineering First-cycle Studies**	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) **full-time**	
No. of hours Lecture: **15** Classes: **-** Laboratory: **-** Project/seminars: **15**		No. of credits **4**
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 %) **4 100%**

Responsible for subject / lecturer:

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Prerequisites in terms of knowledge, skills and social competencies:

1	**Knowledge**	Principles of freehand drawing Knowledge of a set of drawing instruments
2	**Skills**	Sketch objects of different shapes and sizes while maintaining proper proportions Spatial imagination
3	**Social competencies**	Awareness of the need to constantly update and supplement knowledge and skills Able to share their skills with people in the group

Assumptions and objectives of the course:

Purchase by the students skills of making schemes and drawings for design purposes in accordance with the principles of mechanical engineering drawing, structural technical drawing and HVAC installation engineering drawing

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

Knowledge:

1. 1. Basic rules in mechanical engineering (sections, dimensioning , drawing of machine parts connections). Rectangular projection [-] - [-]
2. 2 General rules in construction and architectural drawings (projection, degree of accuracy, graphical notations) - [-] - [-]
3. 3 Graphical notations and rules in installation drawings. - [-] - [-]

Skills:

1. Execution of construction drawings of single parts and assembly drawing of simple devices, [-] - [-]
2. Execution of drawings of buildings in sections and rectangular projections in accordance with the applicable rules and graphical notations, [-] - [-]
3. Execution of installation drawings on rectangular projection construction layouts as well as in axonometric. [-] - [-]

Social competencies:

1. The student understands the importance of engineering and its impact on the environment - [-] - [-]
2. The student is able to think and act in an enterprising way - [-] - [-]

Assessment methods of study outcomes

Lectures: Written final test
Project: Execution and completion of 5÷6 drawings.

Course description

Mechanical drawings. Formats. Scale. Drawing lines. Orthogonal projection. Cross sections, partial views. Dimensioning. Tolerance in dimensioning. Drawings of uncoupled and coupled connections. Execution of complex drawings. Building construction drawings. Graphical notations. Cross section drawings. Degree of accuracy. Graphical notations of construction materials. Dimensioning. Building installation drawings. Drawings of heating, water supply and sewage systems with the application of installation drawing elements.

Basic bibliography:

1. Dobrzański T.: Rysunek techniczny maszynowy. WNT Warszawa
2. Rysunek techniczny i rysunek techniczny maszynowy. Zbiór Polskich Norm. Wyd. Normalizacyjne ALFA
3. . Rysunek techniczny i rysunek techniczny maszynowy. Zbiór Polskich Norm. Wyd. Normalizacyjne ALFA

Additional bibliography:

1. Polish design codes for construction drawings

Result of average student's workload

Activity	Time (working hours)
1. Participation in lectures	15
2. Participation in project exercises	15
3. Execution of drawings (student individual work)	30
4. Preparation (at home) for the project exercises	7
5. Participation in consultations related to the project exercises	2
6. Participation in consultations related to the project exercises	5
7. Final test	1

Student's workload

Source of workload	hours	ECTS
Total workload	100	4
Contact hours	32	1
Practical activities	68	3