STUDY MODULE DESCRIPTION FORM

Name of the module/subject **Optional CAD**		Code **1010134221010130660**
Field of study **Environmental Engineering Extramural First-**	Profile of study (general academic, practical) **(brak)**	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) **part-time**	
No. of hours Lecture: **16** Classes: **-** Laboratory: **18** Project/seminars: **-**		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** **Technical sciences**		ECTS distribution (number and %) **4 100%** **4 100%**

Responsible for subject / lecturer:

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Responsible for subject / lecturer:

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Prerequisites in terms of knowledge, skills and social competencies:

1	**Knowledge**	Basic computer science information.
2	**Skills**	Personal computer support, including basic knowledge of office programs.
3	**Social competencies**	Awareness of the need to continually update and refine knowledge and skills.

Assumptions and objectives of the course:

Familiarize students with computer aided design methods, with particular emphasis on its applications in environmental engineering.

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

Knowledge:

1. Student knows the principles of engineering design (obtained during the lecture and laboratory exercises) - [K_W07]
2. Student understands the principles of storage and processing of data in computer systems (obtained during the lecture and laboratory exercises) - [K_W07]
3. Student knows the use of a spreadsheet in engineering (obtained during the lecture and laboratory exercises) - [K_W07]
4. Student knows the general features and applications of utility programs for numerical simulations (obtained during the lecture and laboratory exercises) - [K_W07]
5. Student knows basic programs for engineering calculations in Environmental Engineering (obtained during the lecture and laboratory exercises) - [K_W07]

Skills:

1. Student is able to exchange technical information in electronic form (obtained during the lecture and laboratory exercises) - [K_U02]
2. Student is able to choose the appropriate application for the task in the field of environmental engineering (obtained during the lecture and laboratory exercises) - [K_U07, K_U09]
3. Student can use computer-aided design methods for professional activity (obtained during the lecture and laboratory exercises) - [K_U15]

Social competencies:

1. Student is aware of the value of information and knowledge (obtained during the lecture and laboratory exercises) - [K_K07]

Assessment methods of study outcomes

The basic way to check the learning outcomes: in the course of the lecture (K_W07, K_K07) the written test - multiple choice test and open questions, conducted in the last class.

As part of the laboratory exercises (K_W07,K_U02,K_U07, K_U09,K_U15), a colloquium in the form of working on a computer file in the last classes. Credit threshold: 50%. Detailed scoring criteria and scale are given before the exam.

Course description

Traditional lecture with elements of problem lecture and multimedia presentations, presenting basic information on principles of engineering design and use of computer methods in designing:

- Class computer systems,
- modeling and execution of calculations (introduction to modeling and simulation),
- storing information (introduction to database systems);
- decision support (decision support systems),
- study and evaluation of design solutions,
- creation of technical documentation.

Laboratory classes mainly include the practical use of spreadsheets, engineering calculations through the project method and case studies.

Basic bibliography:

1. Geographic Information Systems and Science 2nd Edition, Paul A. Longley , Michael F. Goodchild , David J. Maguire , David W. Rhind , Wiley, 2005

Additional bibliography:

Result of average student's workload

Activity	Time (working hours)
1. Attend lectures (hours of contact)	16
2. Participation in laboratory classes (hours of contact, practical)	18
3. Preparation for laboratory exercises (self-study)	18
4. Student's own work, preparation for the final pass (self-study)	48

Student's workload

Source of workload	hours	ECTS
Total workload	100	4
Contact hours	34	2
Practical activities	18	1