STUDY MODULE DESCRIPTION FORM

Name of the module/subject	Code
Optional CAD	**1010101231010130660**

Field of study	Profile of study (general academic, practical)	Year /Semester
Environmental Engineering First-cycle Studies	**(brak)**	**2 / 3**

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

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

No. of hours				No. of credits
Lecture: **15** Classes: **-** Laboratory: **15** 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%**

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 in mathematics, logic, computer science. Good knowledge of MS Excel.
2	**Skills**	Personal computer support, ability to use Excel
3	**Social competencies**	Awareness of the need to continually update and refine knowledge and skills.

Assumptions and objectives of the course:

Educate student in formal thinking adapted to the need to use the capabilities of computer tools in the context of applications in environmental engineering. Familiarize students with the programming environment and languages.

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

Knowledge:

1. Student knows basic programming in Visual Basic (obtained during the lecture and laboratory exercises) - [K_W07]

2. Student knows the capabilities of Excel in creating and using macros (obtained during the lecture and laboratory exercises) - [K_W07]

3. Student knows methods of creating interactive elements of the sheet and forms (obtained during the lecture and laboratory exercises) - [K_W07]

4. Student knows the basics of creating programs in Excel VBA (obtained during the lecture and laboratory exercises) - [K_W07]

Skills:

1. Student can create a macro in Excel (obtained during the lecture and laboratory exercises) - [K_U02, K_U07, K_U09]

2. Student can write user functions in Excel add-in (obtained during the lecture and laboratory exercises) - [K_U02, K_U07, K_U09]

3. Student can create forms and interactive elements of Excel sheet (obtained during the lecture and laboratory exercises) - [K_U02, K_U07, K_U09]

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_U02, K_U07, K_U09), 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 the problem lecture and multimedia presentations, presenting basic information on the subject of basic programming, especially in Visual Basic for Applications (Microsoft), with a particular emphasis on techniques that can be used for engineering calculations and creating advanced calculation sheets. Thematic scope: Programming Environment, Window Applications, Programming Language Elements, Decision Structures, Loops, Tables, Procedures and Functions, External Files - Write and Read, Debug.

Laboratory classes are conducted by means of project methods and case studies.

Basic bibliography:

1. Excel 2013 Power Programming with VBA, J. Walkenbach, Wiley, 2013

Additional bibliography:

Result of average student's workload

Activity	Time (working hours)
1. Attend lectures (hours of contact)	15
2. Participation in laboratory classes (hours of contact, practical)	15
3. Preparation for laboratory exercises (self-study)	15
4. Preparing for the final pass and credit (self-study)	5

Student's workload

Source of workload	hours	ECTS
Total workload	50	2
Contact hours	30	1
Practical activities	15	1