

STUDY MODULE DESCRIPTION FORM		
Name of the module/subject Optional CAD		Code 1010134231010130660
Field of study Environmental Engineering Extramural First-	Profile of study (general academic, practical) (brak)	Year /Semester 2 / 3
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: 12 Classes: - Laboratory: 18 Project/seminars: -		No. of credits 3
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 %) 3 100% 3 100%
Responsible for subject / lecturer: dr inż. Rafał Brodziak email: rafal.brodziak@put.poznan.pl tel. +48 61 6652443 Faculty of Civil and Environmental Engineering ul. Piotrowo 5 60-965 Poznań		Responsible for subject / lecturer: mgr inż. Jędrzej Byłka email: jedrzej.byłka@put.poznan.pl tel. +48 61 6652443 Faculty of Civil and Environmental Engineering ul. Piotrowo 5 60-965 Poznań
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		
<p>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.</p> <p>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.</p>		
Course description		
<p>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.</p> <p>Laboratory classes are conducted by means of project methods and case studies.</p>		
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)	12	
2. Participation in laboratory classes (hours of contact, practical)	18	
3. Preparation for laboratory exercises (self-study)	18	
4. Preparing for the final pass and credit (self-study)	27	
Student's workload		
Source of workload	hours	ECTS
Total workload	75	3
Contact hours	30	2
Practical activities	18	1