

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: mgr inż. Rafał Brodziak email: rafal.brodziak@put.poznan.pl tel. 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	The basic of mathematics, logic, computer science. Good knowledge of MS Excel
2	Skills	Ability to work with personal computer, including Excel.
3	Social competencies	Awareness of the need to continually update and supplement knowledge and skills.
Assumptions and objectives of the course: Education in student formalized thinking adapted to the needs of the opportunities of computer tools in the context of applications in environmental engineering. To familiarize students with the environment and programming languages.		
Study outcomes and reference to the educational results for a field of study		
Knowledge:		
1. Student has basic programming skills concerning Visual Basic - [K_W07]		
2. Student knows how to create and use macros in Excel - [K_W07]		
3. Student knows how to create and use interactive formants - [K_W07]		
4. Students knows the basics of programming in VBA extension for Excel - [K_W07]		
Skills:		
1. Basic programming skills in Visual Basic - [K_U02, K_U07, K_U09]		
2. The student can write user functions in Excel VBA - [K_U02, K_U07, K_U09]		
3. Student is able to create forms and interactive elements in Excel spreadsheet - [K_U02, K_U07, K_U09]		
Social competencies:		
1. The student is aware of the value of information and knowledge - [K_K07]		
Assessment methods of study outcomes		
Basic method for checking the effects of education: (lecture) multiple choice test performed on the last class, (laboratory exercises) ability test performed on the last class.		

Course description		
Basic information on programming, in particular in Visual Basic for Applications (Microsoft), with particular emphasis on techniques that can be used for engineering calculations and creating advanced sheet calculation. Range of issues Development Environment, Windows applications, elements of the programming language, decision-making structures, loops, arrays, procedures and functions, External files - reading and writing, Debugging.		
Basic bibliography:		
1. Treichel Wiktor, Visual basic dla studentów. Podstawy programowania w Visual Basic 2010. Wydawnictwo WITKOM 2. John Walkenbach, Excel 2013 PL. Programowanie w VBA dla bystrzaków. Wydawnictwo Helion		
Additional bibliography:		
1. Jacek Matulewski, Visual Basic .NET w praktyce. Błyskawiczne tworzenie aplikacji, Wydawnictwo Helion 2. John Walkenbach, Excel 2013 PL. Programowanie w VBA. Vademecum Walkenbacha. Wydawnictwo Helion		
Result of average student's workload		
Activity	Time (working hours)	
1. Lectures	15	
2. Laboratory classes	20	
3. Preparation for laboratory classes	10	
4. Preparation for final tests	5	
Student's workload		
Source of workload	hours	ECTS
Total workload	50	3
Contact hours	35	2
Practical activities	15	1