

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: 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 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. 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 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] 6. Student knows basic programming in Visual Basic (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]
4. Student can create a macro in Excel (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_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.</p>		
Course description		
<p>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:</p> <ul style="list-style-type: none"> - 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, - basics of programming languages. <p>Laboratory classes mainly include the practical use of spreadsheets, engineering calculations through the project method and case studies.</p>		
Basic bibliography:		
<p>1. Geographic Information Systems and Science 2nd Edition, Paul A. Longley, Michael F. Goodchild, David J. Maguire, David W. Rhind, Wiley, 2005</p> <p>2. Excel 2013 Power Programming with VBA, J. Walkenbach, Wiley, 2013</p>		
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	48	
Student's workload		
Source of workload	hours	ECTS
Total workload	100	4
Contact hours	34	2
Practical activities	18	1