

<b>STUDY MODULE DESCRIPTION FORM</b>		
Name of the module/subject <b>Method of Calculation</b>		Code <b>1010101141010110574</b>
Field of study <b>Civil Engineering First-cycle Studies</b>	Profile of study (general academic, practical) <b>general academic</b>	Year /Semester <b>2 / 4</b>
Elective path/specialty <b>-</b>	Subject offered in: <b>Polish</b>	Course (compulsory, elective) <b>obligatory</b>
Cycle of study: <b>First-cycle studies</b>	Form of study (full-time, part-time) <b>full-time</b>	
No. of hours Lecture: <b>15</b> Classes: <b>-</b> Laboratory: <b>15</b> Project/seminars: <b>-</b>		No. of credits <b>2</b>
Status of the course in the study program (Basic, major, other) <b>major</b>		(university-wide, from another field) <b>university-wide</b>
Education areas and fields of science and art <b>technical sciences</b> <b>Technical sciences</b>		ECTS distribution (number and %) <b>2 100%</b> <b>2 100%</b>
<b>Responsible for subject / lecturer:</b>  dr Albert Kubzdela email: albert.kubzdela@put.poznan.pl tel. 61 6652686 Faculty of Civil and Environmental Engineering ul. Piotrowo 5 60-965 Poznań		
<b>Prerequisites in terms of knowledge, skills and social competencies:</b>		
1	<b>Knowledge</b>	Basic knowledge on linear algebra, mathematical analysis and probability theory.
2	<b>Skills</b>	Computer skills, familiarity with matrix calculus
3	<b>Social competencies</b>	Feeling the need to raise their professional and personal competences, knowledge and skills. Ability to work in team.
<b>Assumptions and objectives of the course:</b> Theoretical background and knowledge of numerical methods used in engineering practice. Develop programming skills, get basic experience in creating computing applications.		
<b>Study outcomes and reference to the educational results for a field of study</b>		
<b>Knowledge:</b>		
1. The student knows basic numerical methods, used in engineering practice - [K1_W01, K1_W11]		
2. The student knows the possible use of selected computer programs to realize specific numerical algorithms - [K1_W01, K1_W11]		
3. The student knows the basic ways to design numerical algorithms - [K1_W11]		
<b>Skills:</b>		
1. Student is able to choose proper computational model to solve specific engineering tasks - [K1_U03, K1_U05]		
2. Students can select the right algorithm needed to solve the numerical tasks - [K1_U03, K1_U05, K1_U06]		
3. Students can make a critical evaluation of the results of numerical analysis - [K1_U06]		
<b>Social competencies:</b>		
1. The student can work independently and in the team on the specific task - [K1_K01]		
2. Students can formulate conclusions - [K1_K02, K1_K09]		
<b>Assessment methods of study outcomes</b>		

Lecture: check test knowledge through a written test,		
Laboratory: test the knowledge and skills by:		
a) assessment of student activity in the classroom,		
b) an assessment of the project tasks performed during the course during the semester (standalone, or in small teams) involving the preparation of a brief application executing indicated numerical algorithm,		
c) ending course test - working alone at the computer.		
<b>Course description</b>		
Computational methods of basic numerical tasks, in particular the		
- Solve systems of linear and nonlinear equations,		
- Problem solving interpolation and approximation, determine the regression model		
- Optimization tasks,		
- Numerical differentiation and integration,		
- The use of Monte Carlo methods.		
<b>Basic bibliography:</b>		
1. D. Kincaid, W. Cheney, Analiza Numeryczna, WNT, Warszawa 2006		
2. Z. Fortuna, B. Macukow, J. Wąsowski, Metody Numeryczne, WNT, Warszawa 2005		
<b>Additional bibliography:</b>		
1. A. Brozi, SciLab w przykładach, NAKOM, Poznań 2007		
2. E. Magnucka-Blandzi, Metody Numeryczne w MatLabie, Wyd. PP, Poznań 2013		
<b>Result of average student's workload</b>		
<b>Activity</b>	<b>Time (working hours)</b>	
1. participation in class	30	
2. consolidate the knowledge acquired in lectures	5	
3. preparation to the laboratory	15	
4. to prepare for the final test	20	
<b>Student's workload</b>		
<b>Source of workload</b>	<b>hours</b>	<b>ECTS</b>
Total workload	50	2
Contact hours	30	1
Practical activities	25	1