STUDY MODULE DESCRIPTION FORM

Name of the module/subject		Code
Mathematics		**1010101121010340004**
Field of study	Profile of study (general academic, practical)	Year /Semester
Civil Engineering First-cycle Studies	**general academic**	**1 / 2**
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: **30** Classes: **15** Laboratory: **-** Project/seminars: **-**		**5**
Status of the course in the study program (Basic, major, other)	(university-wide, from another field)	
other	**university-wide**	
Education areas and fields of science and art		ECTS distribution (number and %)

Responsible for subject / lecturer:

dr Jarosław Mikołajski
email: jaroslaw.mikolajski@put.poznan.pl
tel. +48 61 665 2712
Faculty of Electrical Engineering
ul. Piotrowo 3A 60-965 Poznań

Prerequisites in terms of knowledge, skills and social competencies:

1	**Knowledge**	Mathematical knowledge from the first semester.
2	**Skills**	Application of the knowledge to mathematical problems.
3	**Social competencies**	Inquisitiveness and perseverance.

Assumptions and objectives of the course:

Giving of mathematical knowledge in the range of Course description, teaching of applications and preparing to further studies.

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

Knowledge:

1. Student has knowledge in the range of Course description. - [K_W01]
2. He knows rules of drawing in space. - [K_W02]
3. He knows calculate mechanical quantities in space. - [K_W04]

Skills:

1. Student can define complex mathematical models in technical sciences. - [K_U03]
2. He can calculate static moments and moments of inertia of sets in space. - [K_U04]
3. He uses Internet to seek needed informations. - [K_U17]

Social competencies:

1. Student is able to work independently and in a team. - [K_K01]
2. He takes responsibility for his results. - [K_K02]
3. He can supplement his mathematical knowledge. - [K_K03]

Assessment methods of study outcomes

1. Sistematically, marks in solution of mathematical problems.
2. In the semester, two written tests on the basis of Classes.
3. After finishing the semester, written and oral exam on the basis of Lectures.

Course description

1. Plane in space. Quadrics.
2. Differential calculus of functions of two and three variables.
3. Double and line integrals.
4. Number and power series.
5. Differential equations of the first order. Orthogonal trajectories.
6. Differential equations of the second order. Systems of differential equations.
7. Calculus of probability.

Basic bibliography:

1. M. Mączyński, J. Muszyński, T. Traczyk, W. Żakowski, Matematyka - podręcznik podstawowy dla WST, PWN, t.I - Warszawa 1979, t.II - Warszawa 1981.
2. J. Mikołajski, Z. Sołtysiak, Zbiór zadań z matematyki dla studentów wyższych szkół technicznych, Wydawnictwo PWSZ w Kaliszu, cz. I - Kalisz 2009, cz. II - Kalisz 2010, cz.III - Kalisz 2008, cz.IV - Kalisz 2014.

Additional bibliography:

1. C. L. Mett, J. C. Smith, Calculus with applications, McGraw-Hill Book Company, New York ... 1985.
2. W. Żakowski, Ćwiczenia problemowe dla politechnik, Wydawnictwa Naukowo - Techniczne, Warszawa 1991.

Result of average student's workload

Activity	Time (working hours)
1. Active participation in meetings (lectures and classes).	45
2. Active participation in consultations with posing questions.	10
3. Solving exercises designed for independent work.	30
4. Independent studying theoretical questions (notions, algorithms, theorems, proofs).	15
5. Preparing to get credits for the second semester.	30

Student's workload

Source of workload	hours	ECTS
Total workload	125	5
Contact hours	55	2
Practical activities	70	3