STUDY MODULE DESCRIPTION FORM

Name of the module/subject **Information Engineering**		Code **1010641261010631297**

Field of study **Mechanical Engineering**	Profile of study (general academic, practical) **general academic**	Year /Semester **3 / 6**

Elective path/specialty **Industrial Mechatronics**	Subject offered in: **Polish**	Course (compulsory, elective) **obligatory**

Cycle of study: **First-cycle studies**	Form of study (full-time,part-time) **full-time**

No. of hours				No. of credits **3**
Lecture: **1**	Classes: **-**	Laboratory: **2**	Project/seminars: **-**	

Status of the course in the study program (Basic, major, other) **other**	(university-wide, from another field) **university-wide**

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 hab. inż. Rafał Urbaniak
email: rafal.urbaniak@put.poznan.pl
tel. 61 6652331
Faculty of Transport Engineering
Poznań, Piotrowo 3A

Prerequisites in terms of knowledge, skills and social competencies:

1	**Knowledge**	The student possesses the basic knowledge of informatics and knows the software used for office work[PRK5]..
2	**Skills**	The student is able to use the software for office work (word processor, spreadsheet) and the Internet.
		The student is able to deal with specific problems that arise when using the computer[PRK5]..
3	**Social competencies**	The student is able to cooperate in a group, taking different roles.
		The student is able to define priorities in solving the tasks posed before her/him.
		The student demonstrates self-reliance in solving tasks, acquiring and improving her/his knowledge and skills[PRK5]..

Assumptions and objectives of the course:

The aim of the course is to provide students with information on software for scientific and technical calculations MATLAB, ANSYS, LABVIEW. Students acquire knowledge and skills related to the design of information systems for measuring, controlling and analyzing based on basic electronic and IT systems.

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

Knowledge:

1. Has basic knowledge of the basics of machine construction and the theory of machines and mechanisms, including mechanical vibrations - [K1_W05]

2. Has elementary knowledge of the basics of computer science, ie computer architecture, binary, decimal and hexadecimal computing system, representation of numbers and graphic characters in computer memory, variable types, general knowledge about low, medium and high level languages - [K1_W012]

3. He is familiar with the latest trends in the construction of machines, ie, automation and mechatronics, automation of design processes and machine design, increase of safety and comfort of use, the use of modern construction materials - [K1_W018]

Skills:

1. Can acquire information from literature, the internet, databases and other sources. Can integrate the information obtained and interpret conclusions and create and justify opinions - [K1_U01]

2. Is able to use computer office packages to edit technical texts, including formulas and tables, technical and economic calculations using a spreadsheet and running a simple relational database - [K1_U03]

3. Can interact with other people as part of team work (also of an interdisciplinary nature) - [K1_U26]

Social competencies:

1. Is ready to recognize the importance of knowledge in solving cognitive and practical problems and to consult experts in the event of difficulties in solving the problem - [K1_K02]

2. He is ready to think and act in an entrepreneurial way - [K1_K05]

Assessment methods of study outcomes

Written test of lectures, written and practical credit of laboratory.

Course description

Overview of the ANSYS program. Sample analysis of engineering problems for flow and heat exchange problems in the ANSYS program: static mixer, solid flow, heat exchange in a finned pipe. Overview of the LABVIEW program. Exemplary solutions of control systems and measurement systems encountered in engineering practice with the help of LABVIEW. Overview of the MATLAB program. Sample analysis of engineering problems in the Matlab program.

Characteristics of basic control and measurement systems. Characteristics of available methods of process control and available sensors and transducers.

Basic bibliography:

Additional bibliography:

Result of average student's workload

Activity	Time (working hours)
1. Preparation for the lectures	5
2. Participation in the lecture	15
3. Consolidation of the lecture content	10
4. Consultation	6
5. Preparation for the pass	10
6. Participation in the pass	1
7. Preparation for the laboratory classes	10
8. Participation in the laboratory classes	15
9. Consultation	5
10. Preparation for the pass	10
11. Participation in the pass	1

Student's workload

Source of workload	hours	ECTS
Total workload	88	3
Contact hours	43	2
Practical activities	41	2