STUDY MODULE DESCRIPTION FORM

Name of the module/subject **Information Engineering**	Code **1010604221010631297**

Field of study **Transport**	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	No. of credits **4**
Lecture: **15** Classes: **-** Laboratory: **15** Project/seminars: **-**	

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**	ECTS distribution (number and %**)** **4 100%**

Responsible for subject / lecturer:

dr hab. inż. Andrzej Frąckowiak, prof. PP
email: andrzej.frackowiak@put.poznan.pl
tel. 61 6652779
Chair of Thermal Engineering (Faculty of Working Machines and Transportation)
Poznan, 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.
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.
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.

Assumptions and objectives of the course:

The aim of this course is to provide students with information on the software used for the scientific and technical calculations: EXCEL, ANSYS, LabVIEW. Students gain knowledge and skills related to the performance of scientific and engineering calculations, modeling, simulation, data analysis and graphical visualization of data and calculations results.

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

Knowledge:

1. Has a basic knowledge in the field of informatics, is familiar with operating systems, programming languages at a basic level, information technology, multimedia technology, graphics, animation, databases, computer methods to support the preparation of reports and presentations. - [K1A_W06]

Skills:

1. Is able to obtain information from the literature, internet, databases and other sources in Polish and English. Can integrate the information to interpret and learn from them, create and justify opinions. - [K1A_U01]

2. Has the ability to self-educate using modern teaching tools such as remote lectures, webpages and databases, educational software, electronic editions. - [K1A_U06]

Social competencies:

1. Understands the need and knows the possibilities of lifelong learning, knows the need for acquiring new knowledge for professional development. - [K1A_K01]

2. Is able to think and act in an entrepreneurial manner, make decisions, work for the development of the employer and the society. - [K1A_K07]

3. Is aware of the transfer of knowledge to society, takes steps to ensure that the information is understandable. - [K1A_K08]

Assessment methods of study outcomes

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

Course description

Creating macros in Excel. Basics of Visual Basic. Simple examples of solving numerical problems by creating macros: the algorithm for solving a quadratic equation, the algorithm for searching zeros of functions of one variable using Newton's method, square root algorithm. Overview of ANSYS. Sample analyses of engineering problems for flow issues and heat transfer in ANSYS: static mixer, flow around solid, heat transfer in a ribbed pipe. Overview of LabVIEW. Sample solutions to the control and measurement systems, encountered in engineering practice, using LabVIEW.

Basic bibliography:

1. Bill Jelen, Tracy Syrstad, Microsoft Excel 2010 PL. Język VBA i makra. Akademia Excela, HELION, 2011

2. Dokumentacja programu Ansys. Tutoriale

3. Marcin Chruściel, ?Labview w praktyce?, Wydawnictwo BTC, Legionowo 2008

4. Dariusz Świsulski, Komputerowa technika pomiarowa Oprogramowanie wirtualnych przyrządów pomiarowych w LabView, Wydawnictwo PAK, 2005

Additional bibliography:

1. ?ke Björck, Germund Dahlquist: Metody numeryczne, PWN, Warszawa 1983

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	20
6. Participation in the pass	1
7. Preparation for the laboratory classes	15
8. Participation in the laboratory classes	15
9. Consultation	10
10. Preparation for the pass	10
11. Participation in the pass	1

Student's workload		
Source of workload	**hours**	**ECTS**
Total workload	108	4
Contact hours	48	2
Practical activities	50	2