Kielce University of Technology

FACULTY OF MECHATRONICS AND MECHANICAL ENGINEERING

COURSE SPECIFICATION

Course code	**M#1-S1-ME-304**
Course title in Polish	**Podstawy informatyki**
Course title in English	**Fundamentals of Computer Science**
Valid from (academic year)	**2019/2020**

GENERAL INFORMATION

Programme of study	**MECHANICAL ENGINEERING**
Level of qualification	**first-cycle**
Type of education	**academic**
Mode of study	**full-time**
Specialism	**all**
Department responsible	**Department of Applied Computer Science and Weapons Engineering**
Course leader	**dr hab. inż. Izabela Krzysztofik, prof. PŚk**
Approved by	

COURSE OVERVIEW

Course type	**basic**
Course status	**compulsory**
Language of instruction	English
Semester of delivery	**semester 3**
Pre-requisites	**calculus**
Examination required (YES/NO)	NO
ECTS value	**4**

Mode of instruction	lecture	class	laboratory	project	seminar
No. of hours per semester	**15**		**45**		

LEARNING OUTCOMES

Category of outcome	Out-come code	Course learning outcomes	Corresponding programme outcome code
Knowledge	W01	Have a basic knowledge of the Scilab environment. Know basic operations, functions and statements.	MiBM1_W05
	W02	Know the basic function blocks of the Scilab/Xcos environment.	MiBM1_W05
Skills	U01	Create simple scripts using conditional and interrupt statements and loops, including operations on matrices and vectors.	MiBM1_U01 MiBM1_U02
	U02	Be able to build scripts used to solve polynomials, non-linear equations and ordinary differential equations.	MiBM1_U01 MiBM1_U02
	U03	Be able to build models in Scilab/Xcos environment.	MiBM1_U01 MiBM1_U12
Competence	K01	Understand the need and know the possibilities of continuous education and raising professional competence in the field of computer science.	MiBM1_K01

COURSE CONTENT

Type of instruction*	Topics covered
lecture	Introduction to Scilab environment: data types, expressions, operators. Operations on matrices. Scripts, conditional and interrupt statements and loops – examples. Graphics – plotting two and three dimensional graphs, creating histograms and curves in space. Solving linear equations and systems of equations and the basics of solving nonlinear equations. Polynomials – definitions, operations and matrices of polynomials. Methods of solving equations and systems of ordinary differential equations. Modelling of systems in Scilab/Xcos environment – basic function blocks and operations, examples.
laboratory	Conduct laboratory exercises in Scilab and Scilab/Xcos environment in the following topics: Matrix operations. Simple programs. Conditional and interrupt statements. Loops. Defining functions. Plotting 2D and 3D graphs. Solving equations and systems of nonlinear equations. Working with polynomials. Solving equations and systems of ordinary differential equations. Simple models and graphics in Xcos package. Modelling and simulation of motion of mechatronic systems in Xcos package.

*) Please delete rows in the table above that are not applicable.

ASSESSMENT METHODS

Outcome code	Methods of assessment *(Mark with an X where applicable)*					
	Oral examination	Written examination	Test	Project	Report	Other
W01			x			
W02			x			
U01			x			
U02			x			
U03			x			
K01						x

ASSESSMENT TYPE AND CRITERIA

Mode of instruction*	Assessment type	Assessment criteria
lecture	non-examination assessment	The pass mark is a minimum of 50 points out of a possible 100.
laboratory	non-examination assessment	Regular class attendance. The pass mark is a minimum of 50 points out of a possible 100 for all in-class tests.

*) Please delete rows in the table above that are not applicable.

OVERALL STUDENT WORKLOAD

	Activity type						Unit
	ECTS weighting						
	Activity type	Student workload					Unit

	Activity type	L	C	Lab	P	S	Unit
1.	Scheduled contact hours	15		45			h
2.	Other contact hours (office hours, examination)	2		2			h
3.	**Total number of contact hours**	**64**					h
4.	**Number of ECTS credits for contact hours**	**2,6**					ECTS
5.	**Number of independent study hours**	**36**					h
6.	**Number of ECTS credits for independent study hours**	**1,4**					ECTS
7.	**Number of practical hours**	**75**					h
8.	**Number of ECTS credits for practical hours**	**3,0**					ECTS
9.	**Total study time**	**100**					h
10.	**ECTS credits for the course** *1 ECTS credit = 25-30 hours of study time*	**4**					ECTS

READING LIST

1. S. Annigeri, An Introduction to Scilab, B. V. Bhoomaraddi College Of Engineering & Technology, 2009.
2. M. Baudin, , Introduction to Scilab, The Scilab Consortium - Digiteo, 2010.
3. S. L. Campbell, J. P. Chancelier, R. Nikoukhah, Modeling and Simulation in Scilab/Scicos with ScicosLab 4.4, Springer 2010.
4. J. P.Chancelier, F. Delebecque, C. Gomez, Introduction a Scilab, Springer, 2010.
5. S. Nagar, Introduction to Scilab for Engineers and Scientists, Apress, 2017.
6. Scilab documentation: http://www.scilab.org.