Kielce University of Technology

FACULTY OF MECHATRONICS AND MECHANICAL ENGINEERING

Annex 9
to the Rector's Ordinance No. 35/19
of 12 June 2019

COURSE SPECIFICATION

Course code	**M#1-S1-ME-503**
Course title in Polish	**Komputerowe wspomaganie procesów technologicznych**
Course title in English	**Computer-Aided Manufacturing**
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 Manufacturing Engineering and Metrology**
Course leader	**Łukasz Nowakowski, BEng, PhD**
Approved by	

COURSE OVERVIEW

Course type	**basic**
Course status	**compulsory**
Language of instruction	English
Semester of delivery	**semester 5**
Pre-requisites	**None**
Examination required (YES/NO)	NO
ECTS value	**3**

Mode of instruction	**lecture**	**class**	**laboratory**	**project**	**seminar**
No. of hours per semester	**15**		**30**		

LEARNING OUTCOMES

Category of outcome	Outcome code	Course learning outcomes	Corresponding programme outcome code
Knowledge	W01	They will have knowledge of computer-aided technologies used to design and manufacture machines and mechanical systems.	MiBM1_W12
	W02	They will have a fundamental knowledge of machining processes and equipment, including the design and kinematics of threading machine tools and CNC programming.	MiBM1_W15
Skills	U01	They will be able to select the right method and parameters to suit a manufacturing task.	MiBM1_U02
	U02	They will be able to use CAD/CAM software to design and manufacture products.	MiBM1_U08
Competence	K01	On completion of this programme students will understand the need for and know the opportunities of gaining further professional qualifications (second cycle programmes, third cycle programmes, postgraduate non-degree courses, training courses) to enhance their professional, personal and social development.	MiBM1_K01
	K02	They will be aware of and understand the relationships between engineering and non-engineering activities, including their impact on the environment and the responsibility for decision-making.	MiBM1_K02

COURSE CONTENT

Type of instruction*	Topics covered
lecture	As part of the lectures, the following content will be provided, including: the basics of operating selected computer systems supporting the creation of technological processes. Students will be familiarized with the operation of selected CAD programs for computer-aided design, CAM programs for computer-aided manufacturing processes and the capabilities of numerically controlled machine tool control systems that support the work of an engineer.
laboratory	As part of the laboratory classes, 15 exercises will be performed to familiarize students with the structure and technological possibilities of selected computer systems supporting the creation of technological processes. The scope of the laboratory classes will include: • the basics of part modelling in CAD programs, • development of two 3D models of parts (for turning and milling) in a selected CAD program, • basics of creating a technological process in CAM programs - turning module, • development of turning machining technology in the selected CAM program, • basics of creating a technological process in CAM programs - milling module, • development of milling machining technology in the selected CAM program, • basics of creating a technological process on a lathe controller simulator, • development of lathe machining technology on a lathe controller simulator, • basics of creating a technological process on a milling machine controller simulator, • development of a turning machining technology on a milling machine controller simulator.

*) 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		X	
U02			X		X	
K01						X
K02						X

ASSESSMENT TYPE AND CRITERIA

Mode of instruction*	Assessment type	Assessment criteria
lecture	**examination assessment**	The pass mark is a minimum of 50 points out of a possible 100 for the final in-class test.
laboratory	non-examination assessment	Regular class attendance. The pass mark is a minimum of 50 points out of a possible 100 for each post-lab report and the final in-class test.

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

OVERALL STUDENT WORKLOAD

ECTS weighting								
	Activity type	**Student workload**					**Unit**
1.	Scheduled contact hours	L	C	Lab	P	S	h
		30		15			
2.	Other contact hours (office hours, examination)	2		2			h
3.	**Total number of contact hours**	**49**					h
4.	**Number of ECTS credits for contact hours**	**0,2**					ECTS
5.	**Number of independent study hours**	**26**					h
6.	**Number of ECTS credits for independent study hours**	**0,1**					ECTS
7.	**Number of practical hours**	**25**					h
8.	**Number of ECTS credits for practical hours**	**0,1**					ECTS
9.	**Total study time**	**75**					h
10.	**ECTS credits for the course** *1 ECTS credit = 25-30 hours of study time*	**3**					ECTS

READING LIST

1. Mastercam X Mill Training Tutorials by In House solutions Mastercam
2. Mastercam X Lathe Training Tutorials by In House Solutions Mastercam
3. Mastercam - Mill 2D Training Guide
4. Mastercam - Mill 3D Training Guide
5. Mastercam -Lathe with C&Y Training Guide

6. Mastercam - 4 Axis Training Guide
7. Mastercam - 5 Axis Training Guide
8. Mastercam - Solids Training Guide