Course code C.7. **Course item** ……

1. INFORMATION ABOUT THE COURSE

A. Basic information

Course title	Computer Aided Manufacturing
Field of study	Computer Aided Engineering
Cycle	*Second*
Study profile	*Academic*
Study mode	*Full-time*
Specialisation	*Not relevant*
Unit responsible for the field of study	*Faculty of Mechanical Engineering*
Lecturer	*Robert Polasik*
Introductory courses	*Computer Aided Design in Machine Building*
Prerequisites	*Basic knowledge of CAD programs, basis of the theory of machining, practical skills of PPT of typical machine parts*

B. Semester/ weekly timetable

Semester	Lectures	Classes	Laboratories	Project classes	Seminars	Field experience	ECTS credits
III	15	-	30	-	-	-	2

LEARNING OUTCOMES (acc. to National Qualifications Framework)

No.	Description of learning outcomes	Reference to learning outcomes for the field of study	Reference to learning outcomes for the area of study
	KNOWLEDGE		
K1	Acquired programming information of technology equipment, which can be processed and used to make rational decisions about solutions of basic technology problems related to the development of machine tools.	CAE_W05	T2A_W04, T2A_W06
	SKILLS		
S1	The student should: - solve the basic tasks of programming technology equipment, Interpret the basic technology dependence used on CNC machine, put them into practice employment, particularly in matters of mechanics and engineering.	CAE_U01	T2A_U09, T2A_U17

	- analyze the technology used for the results compatible with the assumptions of the figure technical, and draw conclusions from these results in terms of cognitive and utilitarian (to measure perception of students).		
SOCIAL COMPETENCES			
SC1	Affective rating (positive or negative) issues CNC machine programming acquired and modified in the learning process.	CAE_K04	T2A_K04

2. TEACHING METHODS

multimedia lecture, laboratory, demonstration, discussion

2. METHODS OF EXAMINATION

colloquium and / or test, preparation of project, report

3. COURSE CONTENT

Specify the content separately for each type of classes in accordance with point I.B.	LECTURES: - Introduction to Programming models 2D and 3D. - Analysis of the model - Types and methods of determining the starting material. - Admission rules and working methods of defining machining coordinate system. - Definition of cutting tools, tool holders and machining parameters. - Strategies machining 2,5D, 3D - the rules of their adoption and definition. - Verification of tool paths, collision checking, specify the minimum required length of cutting tools - simulation process. LABORATORY: Practical implementation issues raised in the lectures. Programming of numerically controlled machine tools in the PC using CAM programms.

4. VALIDATION OF LEARNING OUTCOMES

(Each learning outcome from the list requires validation methods to ensure that it was achieved by a student.)

Learning outcome	Form of assessment (for example:)					
	Oral examination	Written examination	Colloquium	Project	Report	……
K1			x			
S1				x		
SC1					x	

5. LITERATURE

Basic literature	Chlebus E.: Techniki komputerowe w inżynierii produkcji. WNT. Warszawa, 2000. Podstawy obróbki CNC. Materiały MTS. Wydawnictwo Rea. Warszawa 2002. Programowanie obrabiarek CNC – frezowanie. Materiały MTS. Wydawnictwo Rea. Warszawa 2002. Programowanie obrabiarek CNC – toczenie. Materiały MTS. Wydawnictwo

	Rea. Warszawa 2002. Weiss Z.: Projektowanie technologii maszyn w systemach CAD/CAM. Wyd. Politechniki Poznańskiej. Poznań 1996.
Supplementary literature	Dul-Korzyńska B.: Obróbka skrawaniem i narzędzia. OWPRz 2009. Feld M.: Projektowanieprocesów technologicznych typowych części maszyn. WNT Warszawa 2003. Osiak A. Sobieski S.: Mastercam 9 podręcznik użytkownika. TIZ IMPLEMENTS. Warszawa 2004. Wyleżoł M.: Catia podstawy modelowania hybrydowego. Helion. Gliwice 2003.

6. TOTAL STUDENT WORKLOAD REQUIRED TO ACHIEVE EXPECTED LEARNING OUTCOMES EXPRESSED IN TIME AND ECTS CREDITS

Student's activity	Student workload– number of hours (for example:)
Participation in classes indicated in point 2.2	45
Preparation for classes	5
Reading assignments	5
Other (preparation for exams, tests, carrying out a project etc)	5
Total student workload	60
Number of ECTS credits allocated by the lecturer	**2**
Final number of **ECTS credits (determined by the Programme Council for the Field of Study)**	2