

MODULE DESCRIPTION

Module code	Z-ZIP-1010
Module name	Techniki Wytwarzania II
Module name in English	Manufacturing Techniques 2
Valid from academic year	2016/2017

A. MODULE PLACEMENT IN THE SYLLABUS

Field of study	Management and Production Engineering
Level of education	1st degree <i>(1st degree / 2nd degree)</i>
Studies profile	General <i>(general / practical)</i>
Form and method of conducting classes	Full-time <i>(full-time / part-time)</i>
Specialisation	All
Unit conducting the module	The Department of Manufacturing Engineering and Metrology
Module co-ordinator	Edward Miko, PhD hab., Eng., Professor of the University
Approved by:	

B. MODULE OVERVIEW

Type of subject/group of subjects	Major <i>(basic / major / specialist subject / conjoint / other HES)</i>
Module status	Compulsory <i>(compulsory / non-compulsory)</i>
Language of conducting classes	English
Module placement in the syllabus - semester	3rd semester
Subject realisation in the academic year	Winter semester <i>(winter / summer)</i>
Initial requirements	No requirements <i>(module codes / module names)</i>
Examination	No <i>(yes / no)</i>
Number of ECTS credit points	3

Method of conducting classes	Lecture	Classes	Laboratory	Project	Other
Per semester	15		15		

C. TEACHING RESULTS AND THE METHODS OF ASSESSING TEACHING RESULTS

Module target	The aims of the module include the following: acquiring knowledge of material removal processing; familiarising students with machining, abrasive blasting, and electrical discharge machining, acquiring practical skills as regards material removal processing, and the structure of the selected technological machines.
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Effect symbol	Teaching results	Teaching methods (l/lab/p/other)	Reference to subject effects	Reference to effects of a field of study
W_01	A student has knowledge as regards the structure, technological possibilities, and application of CNC as well as conventional machine tools.	l/lab	K_W09	T1A_W04
W_02	A student has knowledge as regards manufacturing techniques of machining and abrasive blasting.	l/lab	K_W06 K_W09	T1A_W04 T1A_W04
U_01	A student can select machining parameters and tools for a particular technological task.	l/lab	K_U01 K_U03 K_U09	TA1_U01 TA1_U03 TA1_U08
U_02	A student can select both stock and a machine tool for completing a particular manufacturing task.	l/lab	K_U01 K_U03 K_U09	TA1_U01 TA1_U03 TA1_U08
K_01	A student understands the necessity of personal development as regards manufacturing techniques connected with the constant development of this branch of manufacturing activity.	l/lab	K_K01	T1A_K01
K_02	A student is aware of the significant relationship between the activity concerning manufacturing techniques and the non-technological one concerning the influence on the natural environment and the responsibility for the decisions made.	l/lab	K_K02	T1A_K02

Teaching contents:

1. Teaching contents as regards lectures

Lecture number	Teaching contents	Reference to teaching results for a module
1	The structure, technological possibilities, and application of machine tools.	W_01 U_02 K_01
2	The structure, technological possibilities, application, and programming of CNC machine tools. Computer support in manufacturing.	W_01 W_02 U_02 K_01
3	The meaning and role of material removal processing in manufacturing processes. The essence of machining, abrasive blasting, erosive machining, hybrid machining, and the methods of material treatment. Development perspectives of material removal processing.	W_02 U_01 U_02 K_01
4	Basic technological, geometrical, and kinematic notions as well as values describing machining and abrasive blasting. The relationship between machining and technological quality of products.	W_02 U_01 U_02 K_01 K_02
5	Modern machining tools for material treatment. Modern materials for machining blades and development tendencies in machine engineering.	W_02 U_01 U_02 K_01

6	The methods and applications of machining in machine parts production and devices: turning, milling, drilling and reaming, and high speed machining.	W_02 U_01 U_02 K_01 K_02
7	The methods and applications of abrasive blasting in producing machine parts and devices: grinding, honing, superfinishing, and lapping.	W_01 W_02 U_01 U_02 K_01 K_02
8	A final test.	

2. Teaching contents as regards classes

Class number	Teaching contents	Reference to teaching results for a module

3. Teaching contents as regards laboratory classes

Laboratory class number	Teaching contents	Reference to teaching results for a module
1	Introduction to classes. Discussing the principles of completing and obtaining a credit for the classes. Familiarising with the OHS regulations binding in the laboratory. Discussing the subjects of classes. The structure, technological possibilities, and application of cutting tools.	
2	The technology of turning works using conventional and CNC lathes. The technology of manufacturing threads.	
3	The technology of turning works using conventional and CNC lathes. The technology of manufacturing cones.	
4	The technology of milling works using conventional and CNC milling machines. The utilisation of milling works with the dividing head.	
5	The technology of manufacturing toothings of cylindrical gears. Manufacturing toothings with forming and envelope methods.	
6	Grinders for shafts and holes. The technology of grinding works.	
7	Grinders for planes, sharpeners. The technology of grinding planes and sharpening machining tools.	
8	A final test.	

4. The characteristics of project assignments

The methods of assessing teaching results

Effect symbol	Methods of assessing teaching results <i>(assessment method, including skills – reference to a particular project, laboratory assignments, etc.)</i>
W_01	Preparing a report from laboratory classes, and a final test.
W_02	Preparing a report from laboratory classes, and a final test.

U_01	Preparing a report from laboratory classes, a final test, and initiative.
U_02	Preparing a report from laboratory classes, a final test, and initiative.
K_01	Observing a student's involvement during the classes; a discussion while obtaining a credit for the report on laboratory classes.
K_02	Observing a student's involvement during the classes; a discussion while obtaining a credit for the report on laboratory classes.

D. STUDENT'S INPUT

ECTS credit points		
	Type of student's activity	Student's workload
1	Participation in lectures	15
2	Participation in classes	
3	Participation in laboratories	15
4	Participation in tutorials (2-3 times per semester)	10
5	Participation in project classes	
6	Project tutorials	
7	Participation in an examination	
8		
9	Number of hours requiring a lecturer's assistance	40 <i>(sum)</i>
10	Number of ECTS credit points which are allocated for assisted work <i>(1 ECTS point=25-30 hours)</i>	1.3
11	Unassisted study of lecture subjects	8
12	Unassisted preparation for classes	
13	Unassisted preparation for tests	10
14	Unassisted preparation for laboratories	12
15	Preparing reports	10
15	Preparing for a final laboratory test	6
17	Preparing a project or documentation	
18	Preparing for an examination	
19		
20	Number of hours of a student's unassisted work	46 <i>(sum)</i>
21	Number of ECTS credit points which a student receives for unassisted work <i>(1 ECTS point=25-30 hours)</i>	1.7
22	Total number of hours of a student's work	86
23	ECTS points per module <i>1 ECTS point=25-30 hours</i>	3
24	Work input connected with practical classes <i>Total number of hours connected with practical classes</i>	43
25	Number of ECTS credit points which a student receives for practical classes <i>(1 ECTS point=25-30 hours)</i>	1.5

E. LITERATURE

Literature list	<ol style="list-style-type: none"> 1. Feld M., <i>Technologia budowy maszyn</i>, PWN, Warszawa 1995. 2. Karpiński T., <i>Inżynieria produkcji</i>, WNT, Warszawa 2004. 3. Grzesik W., <i>Podstawy obróbki skrawaniem materiałów metalowych</i>, WNT, Warszawa 2010. 4. <i>Poradnik Inżyniera "Obróbka Skrawaniem"</i>. TI, TM, TIN. WNT Warszawa 1994. 5. Ruszaj A., <i>Niekonwencjonalne metody wytwarzania elementów maszyn i narzędzi</i>, I.O.S, Kraków 1999.
Module website	