

Course description

1 General information

Course name	Machining
Course code	
Level of study (B.Sc, M.Sc., Ph.D.)	B.Sc.
ECTS	4
Course manager	Prof. Wojciech Zębala, Chair of Production Engineering, M-06
Course length	One (1) semester
Coordinator for international programs	erasmus@mech.pk.edu.pl

2 Prerequisites

- none

3 Program

Type	Lectures	Classes	Labs	Computer labs	Project	Seminar
Hours	15	-	15	15	0	0

4 Contents

Lectures		
No.		Hours
1	Fundamentals of machining	2
2	Tool materials	1
3	Principles of external and internal turning	1
4	Cutting data selection based on catalogue recommendation and the influence of local machining environment on this process	1
5	Principles of milling	1
6	Hole making	1
7	Thread cutting and gear manufacturing	1
8	Creation and forms of chips	1
9	Abrasive machining	1
10	Electrical discharge machining (EDM) and wire electrical discharge machining (WEDM)	1
11	Tool wear and cutting tools sharpening	1
12	Phenomena in cutting zone, process supervision	1
13	Computer aided cutting data selection for turning and milling	1
14	New trends in machining	1

Labs		
No.		Hours
1	Laboratory safety rules, external and internal turning	3
2	Principles of milling	4
3	Hole making	2
4	Abrasive machining	2
5	Wire electrical discharge machining (WEDM)	2
6	Tool wear	2

Computer Labs		
No.		Hours
1	Optimisation of costs in machining	3
2	Computer aided cutting data selection	6
3	Simulation of cutting tool strategy in turning and milling	6

5 Learning Outcomes (skills and knowledge):

- The student knows the basic issues related to the various machining processes.
- The student knows the basic factors influencing the cutting process (e.g. cutting tool geometry).
- The student knows the principles concerning cutting data selection and the influence of the local operating features on the process efficiency.
- The student can select the proper method of machining for a given task.
- The student is able to use various computer programs for tool and machining data selection.

6 Assessment policy (examination):

- Report concerning laboratory classes.
- Elaboration on a chosen topic.

7 Literature

1. Boothroyd G., Fundamentals of Metal Machining., London, 1965, Edward Arnold Ltd.
2. Sandvik, Modern Metal Cutting - a Practical Handbook, Sweden, 1994, Sandvik.
3. Grzesik W., Advanced Machining Processes of Metallic Materials, Amsterdam, 2008, Elsevier.
4. Jabłoński W., Słodki B., Machining – Reference notes for foreign students SU 1683, Kraków, 2006, AGH.