

Course description

1 General information

Course name	Operation and recycling of machines
Course code	
Level of study (B.Sc, M.Sc., Ph.D.)	M.Sc.
ECTS	5
Course manager	Ph.D. Eng. Magdalena NIEMCZEWSKA-WÓJCIK, Institute of Production Engineering M6
Course length	One (1) semester
Coordinator for international programs	erasmus@mech.pk.edu.pl

2 Prerequisites

- Basic knowledge of physic, materials, metrology, tribology, machine building and manufacturing process.

2 Program

Type	Lectures	Classes	Labs	Computer labs	Project	Seminar
Hours	30		15		15	

3 Contents

Lectures		
No.		Hours
1	Machine operation process. The main forms of wear in the machines. Methods of studies of the machined and operation objects (tools and machines).	10
2	Diagnostics and monitoring of tools and machines.	10
3	Management of the operation process - use and operation of the machines. Basics of the waste management. Recycling.	10

Labs		
No.		Hours
1	Preparation of the plan of the studies and selection of the devices. Complex studies of the surface characteristics forming in the subsequent steps of manufacturing process.	6
2	Tribological studies (operation process) and the surface characteristics forming in the subsequent parts of the operation process.	6
3	Individual work – report of the results analysis.	3

Project		
No.		Hours
1	Designing of monitoring system in manufacturing processes.	6
2	Conception of disassembling and recycling of selected components and machine parts. The role of recycling in enterprises from different industrial branches.	6
3	Individual work – presentation	3

3 Learning Outcomes (skills and knowledge):

- Student knows the basic issues of the operation and recycling process.
- Student knows the methods of studies of the machined and operation objects.

- Student knows the main issues of the diagnostic and monitoring system of technical objects
- Student can to plan the surface studies and choose the studies equipment.
- Student has experience in interpretation of the results.

4 Assessment policy (examination):

- Report
- Individual work

5 Literature

1. Whitehouse D.J., Handbook of Surface Metrology, 2nd ed. CRC Press, 2011
2. Nee A., Yeh Ching (Ed.), Handbook of Manufacturing Engineering and Technology, Springer, 2015.