

Manufacturing Processes I.

Code: MK3GYT1G04GX17-EN

ECTS Credit Points: 4

Evaluation: exam

Year, Semester: 2nd year, 1st semester

Its prerequisite(s): Materials Technology and Testing

Further courses are built on it: Yes/No

Number of teaching hours/week (lecture + practice): 2+2

Topics:

During this semester the students learn the types of cutting machines, devices and tools. The edge geometry of the cutting tool is important for the surface quality of the workpiece and the selection of the appropriate technological parameters. The students will know the types of basic cutting technologies (turning, drilling, milling, planning, grinding, etc.) and their characteristics. After that they will know designing basic manufacturing tasks and calculate the necessary technological parameters for a given workpiece. At the end of the semester they can practice the basic measuring methods and solve measuring tasks.

Literature:

Compulsory:

- Dudás I.: Gépgyártástechnológia I. A gépgyártástechnológia alapjai. Műszaki Könyvkiadó, 2011., p. 583
- Dudás I.: Gépgyártástechnológia II. Forgácsoláselmélet, technológiai tervezés alapjai., Műszaki Könyvkiadó, 2011., p. 313, ISBN 978-963-16-6003-6
- Bali J.: Forgácsolás, Tankönyvkiadó, Budapest, 1988., p. 538.
- Fritz Klocke: Manufacturing Processes I, Cutting, RWTH Edition, RWTH Aachen University, p. 524, ISBN 978-3-642-11978-1
- John A. Schey: Introduction to Manufacturing Processes, McGraw – Hill Book Company, 1977., p. 392., ISBN 0-07-055274-6
- J. T. Black, Ronald A. Kohser: Materials and Processes in Manufacturing, Tenth Edition, United States of Amerika, p. 1033, ISBN 978-0470-05512-0
- Mikel P. Groover: Fundamentals of Modern Manufacturing, Materials, Processes and Systems, Third Edition, United States of Amerika, p. 520, ISBN 978-0-471-74485-6

Recommended:

- James G. Bralla: *Handbook of Manufacturing Processes*, First Edition, Industrial Press Inc., New York, 2007, ISBN 0-831 1-3179-9
- Helmi A. Youssef, Hassan El – Hofy: *Machining Technology, Machine tools and operations*, CRC Press, United States of Amerika, p. 672, ISBN 978-1-4200-4339-6
- J. Beddoes, M. J. Bibby: *Principles of Metal Manufacturing Processes*, 1999, p. 337, ISBN 0 340 73162 1

Schedule

1st week Registration week

2nd week:

Lecture: The basic definitions of manufacturing processes, the types of machine tools

3rd week:

Lecture: Basic studies of cutting, the quality of the cutting surface

Practice: Introducing of the cutting laboratory and machine tools (*cutting laboratory*)

4th week:

Lecture: The edge geometry of cutting tools

Practice: Construction of the edge geometry of cutting tools

6th week:

Lecture: Process of chip formation, tool wear and tool life

Practice: Calculation tasks for tool wear and tool life

8th week: 1st drawing week

9th week:

Lecture: The process and tools of drilling and counterbore technologies

Practice: Designing of drilling and counterbore technologies

11th week:

Lecture: The process and tools of grinding technologies

Practice: Designing of grinding technologies

13th week:

Lecture: The basic studies of measuring methods

Practice: Measuring technique practice I. (SKF laboratory)

15th week: 2nd drawing week

Practice: Analysis of manufacturing technologies (*cutting laboratory*)

5th week:

Lecture: Dimension chains, locating elements, calculation of allowance for machining

Practice: Task solutions for dimension chains

7th week:

Lecture: The process and tools of turning technologies

Practice: Designing of turning technology

10th week:

Lecture: The process and tools of milling technologies

Practice: Designing of milling technologies

12th week:

Lecture: The process and tools of planning, slotting and pull broaching technologies

Practice: The basic studies of manufacturing operation planning

14th week:

Lecture: Text for the signature

Practice: Measuring technique practice II. (SKF laboratory)

Requirements

A, for a signature:

1. Students have to create an own technical drawing for the edge geometry of cutting tool and they have to solve an easy measuring task.
2. Students have to visit the lectures and seminars. Three misses are permissive for the seminar.
3. At the end of the semester they have to write a test from the seminar tasks (technological calculations).

B, for grade:

Students have to take a written and oral exam for the lecture. They will receive the questions topics. They will get the final grade on the exam (1 - 5).