

Course information for the subject
“Manufacturing processes and systems”
Neptun code: GEGTT800M-A

Program/Specialization: Mechanical Engineering MSc

Year: I.

Semester: 2020/21/II (Spring)

Lecturer: Dr. Csaba Felhő

Practice leader: Dr. Csaba Felhő, Mohammad Akkad Zaher

Duration: 8 Feb. 2021 – 15 May 2020

2 lectures and 2 practical classes per week (22k3)

Week 1: Lecture: Basics of production engineering.

Practical: Semester task introduction, workpiece selection for tasks

Week 2: Lecture: Cutting processes: turning, drilling

Practical: CAD modelling in the NX software

Week 3: Lecture: Cutting processes: planing, shaping and broaching

Practical: The NX Drafting module

Week 4: Lecture: Cutting processes: milling and gear manufacturing

Practical: Making of 3D models and drawings of student's workpieces

Week 5: Lecture: Cutting processes: abrasive machining, Non-traditional manufacturing processes

Practical: Production planning in practice with an example

Week 6: National holiday (15 March)

Week 7: Lecture: Production planning: basics

Practical: Making of the operation sequence plan

Week 8: Lecture: Production planning: steps, tasks, methods

Practical: Selection of cutting tools, calculation of cutting data

Week 9: Easter

Week 10: Lecture: Production planning: examples

Practical: How to use the NX CAM module

Week 11: Lecture: Manufacturing systems: basics

Practical: Making the semester task in NX (with teacher guidance)

Week 12: Lecture: Manufacturing systems: types, elements, examples

Practical: Generating of G-codes in NX CAM

Week 13: Lecture: Modern manufacturing systems: automatization, flexible manufacturing

Practical: Finishing of the semester task

Week 14: Lecture: Powerpoint presentations of semester tasks

Practical: Powerpoint presentations of semester tasks

Every student will receive a personal semester task, which consists of a technical drawing of a shaft-like part and a sheet with the description of the required tasks to be performed. The student must follow the instructions, and submit a report before the prescribed deadline according to the instructions of the lecturer. The students will learn how to solve the individual tasks during the practical classes. Therefore, the participation on these courses is strongly advised!

Method of closing of the subject at the end of the semester: signature and colloquium.

Requirements for the signature:

- Submission of the semester task report before the stated deadline. The deadline can be found on the 'Semester task description' sheet, which the student will receive together with the 'Technical drawing' on the first practical class.
- Active participation on lectures and practical classes. If a student is missing more than 50% of the classes, the signature will be denied from her/him!

The final grade for the subject can be obtained by selection of one of the following methods:

- By presenting the semester task in front of the audience of the advisor and the students of the course. The student must answer the technical questions of the lecturer as well, which cover the material of the lectures.
- By taking an oral exam from the course material (colloquium).

Recommended literature:

1. Mikell G.Groover: Fundamentals of Modern Manufacturing: Materials, Processes and Systems, John Wiley & Sons (USA), 2007
2. Peter Scallan: Process Planning: The design/manufacture interface, Elsevier Science & Technology Books, 2002
3. George Chryssolouris: Manufacturing Systems: Theory and Practice, 2nd Edition, Springer (USA), 2006, ISBN 0-387-25683-0

Miskolc, 08 February 2021

Dr. Csaba Felhő

lecturer