

CAM systems

Code: MK3CAMRG04G317-EN

ECTS Credit Points: 4

Evaluation: mid-semester grade

Year, Semester: 3rd year, 2nd semester

Its prerequisite(s): manufacturing Processes II

Further courses are built on it: Yes/No

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

Topics:

The aim of the subject is to know the technological process of the workpiece production. The examination of the technical drawing is important before production. Knowing of the manufacturing process of typical machine workpieces is important for the technological designing of the complex workpiece and the type- and group technological process. Based on more technological variation the selection of the optimal technological possibility is important because of the tool wear, the norm time and manufacturing costs, etc. The real production has to be organized for the optimal technological process.

During the seminars the students creates the total technological plan of a concrete workpiece and the necessary manufacturing operations. The modern manufacturing softwares will be used for the task solution (SolidWorks, SolidCAM).

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
- Pálinkás S., Balogh G., Gyönyörű A.: Számítógéppel segített gyártás (CAM), Debreceni Egyetem Műszaki Kar, ISBN 978-963-473-911-1, 2015. (elektronikus jegyzet)
- Mátyási Gy., Sági Gy.: Számítógéppel támogatott technológiák, CNC, CAD, CAM, Műszaki Kiadó, Budapest, 2012, 3. kiadás, ISBN 978-963-16-6048-7
- Medland, A.J.: CAD/CAM in Practice, A Manager's Guide to Understanding and Using CAD/CAM, Springer Verlag, 2012, ISBN 9789401171229
- Kim, Yong Soo, Ryoo, Young J., Chang, Moon-soo, Bae, Young-Chul: Advanced Intelligent Systems, Springer Verlag, 2014, ISBN 9783319054995

Recommended:

- Grabowski, Hans, Anderl, Reiner, Pratt, Michael J.: *Advanced Modelling for CAD/CAM Systems*, Springer Verlag, ISBN 9783540539438
- Wang, P.C.C.: *Advances in CAD/CAM Workstations, Case Studies*, Springer Verlag, ISBN 9781461294030
- Gardan, Y., Lucas: *Interactive Graphics in CAD*, Springer Verlag, 2012, ISBN 9789401089586

Schedule

1st week Registration week

2nd week:

3rd week:

Lecture: The aim of technological designing, technological documents

Practice: Task edition. Examination of the technological conditions of the given workpiece. Working out of the technological process.

4th week:

Lecture: Analysis of the functional and technological corrective of production, selection of the blank type

Practice: Blank selection. CAD modeling of the blank. Determination of the technological parameters of the cutting and the rough-cutting operations.

6th week:

Lecture: Production of typical machine workpieces

Practice: CAM simulation of rough – cutting turning operation.

8th week: 1st drawing week

9th week:

Lecture: Position determination of workpieces, the device elements

Practice: CAM simulation of finishing turning operation.

11th week:

Lecture: The structure of the norm time, cost calculation

Practice: CAM simulation of drilling and milling operations.

13th week:

Lecture: Examination of constructions in assembly case

Practice: Creation of the technological documentations.

15th week: 2nd drawing week

Lecture: Working out of the technological process of workpiece production, determination of the production quantity

Practice: Determination of the operation ranking. Calculation of allowance for machining.

5th week:

Lecture: Type- and group technological processes, selection of measuring devices

Practice: Cutting tool selection from tool standard.

7th week:

Lecture: Determination of the ranking of technological operations and manufacturing steps

Practice: Determination of the technological parameters of finishing cutting operations.

10th week:

Lecture: Determination of the operation structure in more variations

Practice: Determination of the technological parameters of drilling and milling operations.

12th week:

Lecture: Technological process planning for complex workpieces

Practice: CAM simulations of the total manufacturing process. CNC program generation.

14th week:

Lecture: Final text

Practice: Solving of an own technological designing task.

Requirements

A, for a the practice mark:

- Students have to visit the lectures and seminars. Three misses are permissive for the seminar.
- They have to solve an own technological designing task in CAM software.
- At the end of the semester they have to write a text from the lecture. Based on these result they will get the final practice mark.