

ME-417

Computer-aided engineering

Cursus	Sem.	Type
Microtechnics	MA2, MA4	Opt.

Language of teaching	English
Credits	5
Session	Summer
Semester	Spring
Exam	Oral
Workload	150h
Weeks	14
Hours	5 weekly
Courses	2 weekly
TP	3 weekly
Number of positions	

Remark

pas donné en 2018-19

Summary

The course covers: Product life cycle, CAD systems, modelling, Data-structures and basic operations, CAD system operations, 2D interface, Data exchange, Geometry curves, Geometry of surfaces, Non-manifold and special modelling, Features, process planning, manufacturing, Assemblies Graphics

Content

The goal of this course is to expose the student to the basic computer-aided modelling concept, methodologies and their application in the area of CAD (computer-aided design). Feature-based modelling techniques will be presented together with their importance in the interactive design process and for manufacturing. Furthermore, students will practice their knowledge with modern interactive CAD software,

- Data structures
- Modelling operations
- Non-manifold topology
- Fundamentals of feature-based modelling
- CAD/CAM data exchange
- Mechanical assembly modelling

Keywords

CAE, boundary-representation modelling, features, data exchange

Learning Prerequisites**Recommended courses**

- Geometry

Learning Outcomes

By the end of the course, the student must be able to:

- Choose suitable methods and tools for (a) the development of, (b) the modelling and simulation of, (c) the analysis of and (d) the choice of solution for an engineering problem in the mechanical engineering domain (product design, manufacturing process and system production), CP1
- Formulate the modelling hypotheses to tackle a problem and choose the respective solution methods and tools

considering the available resources

- Realize , analyse and optimize a model: 3D complex geometries and assemblies, static, kinematic, dynamic, thermal and ultimate behaviour, life-cycle and costs of a system (product, manufacturing process or production system), CP7
- Assess / Evaluate the methodological choices for the building of a model and validate the results with respect to the analysis and modelling objectives

Teaching methods

Course, exercises, tasks and project

Assessment methods

Oral examination

Supervision

Office hours	Yes
Assistants	No
Forum	No

Resources

Bibliography

Lecture material and references

Ressources en bibliothèque

- [Solid modelling and CAD systems / Nagy](#)