Computer-aided engineering

Cursus

Microtechnique

Sem. MA2, MA4 Opt.

Type

Language English

Credits 5

Session Summer

Semester Spring

Exam Oral

Workload 150h

Weeks 14

Hours 5 weekly

Lecture 2 weekly

Practical work 3 weekly

Number of positions Remarque 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

• 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