Linnæus University

Jnr: 2019/1458-3.1.2.2

Course syllabus

Faculty of Technology
Department of Mechanical Engineering

4MT319 CAE-driven produktutveckling, 10 högskolepoäng
CAE driven Product Development, 10 credits

Main field of study
Mechanical Engineering

Subject Group
Mechanical Engineering

Level of classification
Second Level

Progression
A1N

Date of Ratification
Approved by Faculty of Technology 2019-04-24
The course syllabus is valid from spring semester 2020

Prerequisites
Bachelor in Mechanical engineering or Industrial engineering or equivalent.

Objectives

After completing the course, the students should be able to:

- understand and explain theory and current research results in product development
- understand design and product development processes including implementation of the right CAE tools for each phase of the process
- define design problems and develop solutions based on theories learned about product design and development; and apply CAE tools in a systematic way
- understand and apply model-based product development
- understand and apply simulation based product development
- understand and apply optimization in product development
- understand and explain how model based and simulation driven design are linked to concurrent design and to lean product development and how they contribute to achieve increased product development efficiency.

Content

The course comprises of the two parts theory and project/seminars:

Part 1 - Theory
The theoretical part comprises of following elements:

- presents different theories and current research results about product development processes;
- theories about Model based and Simulation driven product development; presents how and where, in the product development process, different CAE techniques can be used to make the process more efficient;
- Examples from the practice are to be presented for demonstrating the theories.
- In workshops, different CAE tools in product development, will be presented and applied.

Part 2 – Project
The project part of the course comprises of the following elements:

- The project is based on critical evaluation and application of the theories presented in the lectures;
- An optimized concept solution should be generated by using the proper approach, tools and techniques; the work is to be present.
- The planned Seminars are given by the students to summarize and discuss the theory applied and the result;
- For accomplishing the design project skills in working in design teams have to be developed.

Type of Instruction

Teaching consists of lectures, workshops, seminars and project assignments. Examples, projects and guest lectures from the industry will have a key role in the course.

Examination

The course is assessed with the grades A, B, C, D, E, Fx or F.
The grade A constitutes the highest grade on the scale and the remaining grades follow in descending order where the grade E is the lowest grade on the scale that will result in a pass. The grade F means that the student's performance is assessed as fail (i.e. received the grade F).

Course examination consists of two moments- written exam and project/seminars.
Written exam, 5.0 credits, grading scale: A-F
Project/seminars, 5.0 credits, grading scale: U/G

Repeat examination is offered in accordance with Local regulations for courses and examination at the first and second-cycle level at Linnaeus University.
If the university has decided that a student is entitled to special pedagogical support due to a disability, the examiner has the right to give a customised exam or to have the student conduct the exam in an alternative way.

Course Evaluation

During the implementation of the course or in close conjunction with the course, a course evaluation is to be carried out. Results and analysis of the course evaluation are to be promptly presented as feedback to the students who have completed the course. Students who participate during the next course instance receive feedback at the start of the course. The course evaluation is to be carried out anonymously.

Credit Overlap

The course cannot be included in a degree along with the following courses of which the content fully, or partly, corresponds to the content of this course: 4MT016 (Product development a life cycle approach, 7.5 credits) overlaps with 3 credits.

Other

Grade criteria for the A–F scale are communicated to the student through a special document. The student is to be informed about the grade criteria for the course by the start of the course at the latest.

Required Reading and Additional Study Material

Required reading

Provided by the department / Lectures – approximately 300 pages.

Reference literature

Karl T. Ulrich, Steven D. Eppinger, Product Design and Development, Sixth edition, 2016, Mc Graw Hill, ISBN 978-0-07-802906-6, 415 pages.