Linnæus University

Jnr: 2017/5846-3.1.2.2

Course syllabus

Faculty of Technology
Department of Mechanical Engineering

2MT335 Produktdesign och utveckling, 15 högskolepoäng
Product Design and Development, 15 credits

Main field of study
Mechanical Engineering

Subject Group
Mechanical Engineering

Level of classification
First Level

Progression
G2F

Date of Ratification
Approved by Faculty of Technology 2017-10-09
The course syllabus is valid from autumn semester 2018

Prerequisites
At lest 60 credits within the subject including 1FY804 Mechanics, 1MT030 Introduction to Mechanical Engineering, 1MT022 3D-CAD, 1MT019 Engineering Material, 2MT330 Machine design A and 2MT020 Selection of Material Manufacturing Methods or equivalent.

Objectives

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

- describe various design disciplines and the historical role of design in the evolution of the society;
- explain the concept for the dual nature of technical artifacts – functional and structural;
- describe design and product development processes and tools;
- apply the theories of product design and product development for achievement of successful products
- apply presentation techniques in order to implement, explain and demonstrate the concepts generated
- apply the ideas about ergonomics, color and form;
- describe how to manage the product development process and skills to work and communicate in design team.

Content

The course comprises of the two parts - theory and project:

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

- The lectures present theories about the product design process, industrial design and managing the product development process.
- The main terminology of a language for communication in the interdisciplinary environment of product development teams is defined and implemented.
- Building up an efficient product development process which tracks different approaches such as systems, customer-centred, and object-oriented approaches.
- Considerations about different issues, such as- ergonomics, MMI (Man-Machine Interface), reliability and environmental considerations, product development economics and more are giving a holistic view to the product design.
- Presentations of different tools and techniques such as - affinity process, QFD, morphological chart, Pugh matrix, system´s architecture and Design for X techniques and guidelines are included in the theory.
- A unifying example is to be presented for demonstrating the theories.
- Seminars given by the students are planned for summarizing and discussing the theory.

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.
- Project based learning is the teaching method applied.
- A concept solution generated and developed by using the proper approach, tools and techniques and presented by a 3D model is the expected result from the project.
- The result has to be presented in a written report, following the instructions and using different techniques for presenting the process and implementing the final concept.
- For accomplishing the design project skills in working in design teams have to be developed.

Type of Instruction

Teaching consists of lectures, seminars and projects.

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).

The course will be examined through oral exam and project report, the oral exam will be graded U/G and the projectreport A-F. The final grade is a weighted average of assessment methods.

Course Evaluation

During the course or in close connection to the course, a course evaluation is to be carried out. The result and analysis of the course evaluation are to be communicated to the students who have taken the course and to the students who are to participate in the course the next time it is offered. The course evaluation is carried out anonymously. The compiled report will be filed at the Faculty.

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: This course replaces the courses 1MT301 och 2MT013 and creditoverlap with 12 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

Karl T. Ulrich, Steven D. Eppinger, Product Design and Development, Fifth edition, 2012, Mc Graw Hill, ISBN 978-007-108695-0, 415 pages.

William Lidwell, Gerry Manasca, Deconstracting Product Design, 2011, Laurence King Publishing, ISBN978-1592537396, 240 pages.

Alvin R. Tilley, Henry Dreyfuss, The measure of men and Women, 2002, John Wiley & Sons, Inc., ISBN9780471099550, 98 pages.

Reference literature

Peter L. Jackson, Getting Design Right: A Systems Approach, 2010, CRC Press, ISBN978-1-4398-1115-3, 366 pages.

Monö Rune, Design for product understanding, 1997, Liber, ISBN9789147011056, 168 pages.

Kenneth Österlin, Design I Fokus för produktutveckling, 2003, Liber, ISBN9789147065356, 156 pages.

Hans Johannesson, Jan Gunnar Persson, Dennis Pettersson, Produktutveckling - Effektiva metoder för konstruktion och design, 2nd edition, 2013, Liber, ISBN9789147105823, 720 pages.