Engineering Design Methodology

Programme course

6 credits

Konstruktionsmetodik

TMMI19

Valid from: 2017 Spring semester

Determined by
Board of Studies for Mechanical Engineering and Design

Date determined
2017-01-25

Main field of study
Mechanical Engineering

Course level
First cycle

Advancement level
G2X

Course offered for
- Mechanical Engineering, B Sc in Engineering

Entry requirements
Note: Admission requirements for non-programme students usually also include admission requirements for the programme and threshold requirements for progression within the programme, or corresponding.

Prerequisites
Basic mechanical engineering courses from different areas.

Intended learning outcomes
The course provides knowledge of the design process and design methodology. The course also provides skills in using some parts of the design methodology. After completing the course students will be able to:

- attack a minor mechanical engineering problem in a systematic manner using general design methodology from identification of requirements through concept selection to a layout.
- describe and explain the mechanical design process.
- develop a set of requirements in the form of a so-called design criteria list.
- describe and interpret a QFD matrix
- explain and use the concepts of function, technical principle and technical solution/means.
- describe and explain existing technical systems / products in terms of the above.
- be able to describe and use a creative method suitable for technical problem solving
- in a smaller group be able to carry out both oral presentations and a written report on a minor design task where the above presented theory is applied.
- describe for some so-called DFX areas and how a design can be adapted for these.
- explain how patents work.

Course content
The design process, designer's role, development of specifications, concept generation, concept evaluation, detailed engineering, etc

Teaching and working methods
The course is organized in a number of lectures interspersed with lessons in which exercises in design methodology is implemented.

Examination

UPG1	Compulsory Excercise	1.5 credits	U, G
TEN1	Written Examination	4.5 credits	U, 3, 4, 5

Grades
Four-grade scale, LiU, U, 3, 4, 5

Other information
Supplementary courses: Engineering Design - Project

Department
Institutionen för ekonomisk och industriell utveckling

Director of Studies or equivalent
Peter Hallberg

Examiner
Marcus Eriksson

Course website and other links
lisam.liu.se

Education components
Preliminary scheduled hours: 56 h
Recommended self-study hours: 104 h

Course literature

Additional literature

Books

Ullman, David G, (2010) *The Mechanical Design Process* 4
ISBN: 978-007-108695-0

Common rules

Regulations (apply to LiU in its entirety)

The university is a government agency whose operations are regulated by legislation and ordinances, which include the Higher Education Act and the Higher Education Ordinance. In addition to legislation and ordinances, operations are subject to several policy documents. The Linköping University rule book collects currently valid decisions of a regulatory nature taken by the university board, the vice-chancellor and faculty/department boards.

LiU's rule book for education at first-cycle and second-cycle levels is available at http://styrdokument.liu.se/Regelsamling/Innehall/Utbildning_pa_grund-_och_avancerad_niva.