Wood - Material

Programme course

6 credits

Träteknik - Material

TMKT80

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
- Design and Product Development
- Industrial Engineering and Management - International, M Sc in Engineering
- Industrial Engineering and Management, M Sc in Engineering
- Mechanical Engineering, M 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
Engineering Materials, Materials for Design

Intended learning outcomes
The aim of this course is for the student to obtain thorough knowledge about wood as a material. Tree growth, wooden structure and properties, its microstructure, strength and relation to water. The student must also obtain knowledge of the most important Scandinavian wood species and be able to describe and identify these. In addition to a good knowledge of solid wood, the student should also have knowledge of many of the wood-based materials, wood composites and cellulose-based materials; how they are manufactured, their properties and possible applications. The students should also be able to compare wood with other materials and know and argue for the wood material's advantages and disadvantages.

Course content

The course contents consists of some interconnected parts:
Trees - Where and how they grow and their physical structure.
Wood - Anatomy, microstructure, physical properties.
Forestry, sawing and drying Wood.
Water and wood – moisture relations and how wood dries.
Why wood? Ethics, environment, recycling, emissions, differences to other groups of materials.
Wood-based materials - particle/fiber boards - lightweight panels - modern wood - cellulose based materials.
How to choose the right wood material.
Some lectures are given by invited guest lecturer in various areas of expertise. The lectures are based on the course literature, but are complemented with some extra material in some areas during the course.

Teaching and working methods

The course consists of lectures in combination with laboration, workshops and case studies. Parallell to the lectures the students will work with a project that is solved within the project group. Resources such as the material library and the wood workshop will be used in the laboratory work and in the project. The course is offered to many different programs, which allow a natural training in communication between professionals/engineers as well as a scope for exciting results and depth of the projects.

Examination

LAB1	Laboratory work	0.5 credits	U, G
PRA1	Project assignment	1.5 credits	U, G
TEN1	Written examination	4 credits	U, 3, 4, 5

Grades

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

Other information

Supplementary courses: Wood – Realisation, Wood – Innovation.

Department

Institutionen för ekonomisk och industriell utveckling

Director of Studies or equivalent

Peter Hallberg

Examiner
David Eklöf

Course website and other links
http://www.iei.liu.se/machine/courses/tmkt80

Education components
Preliminary scheduled hours: 70 h
Recommended self-study hours: 90 h

Course literature

Additional literature

Books

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.