Experimental Evaluation of Engineering Materials

Programme course

6 credits

Experimentell materialteknik

TMKM13

Valid from: 2017 Spring semester

Determined by
Board of Studies for Mechanical Engineering and Design

Date determined
2017-01-25

Offered for the last time
Spring semester 2015

Main field of study
Mechanical Engineering

Course level
Second cycle

Advancement level
A1X

Course offered for
- 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, Solid mechanics and Deformation and Fracture.

Intended learning outcomes
The aim of this course is to give a theoretical and practical knowledge of several important testing methods for characterizing the structure and properties of engineering materials. Most of these methods are used daily in industry for production quality control, failure analysis and research and development of new materials and materials technology. They are also important tools for academic researchers.

Course content
During the project work, the students form small research groups with the aim to explain the mechanisms that have been crucial to the outcome of a specific test method. The chosen test method can for example be, fatigue testing, crack growth testing, thermo-mechanical fatigue, tensile or impact testing. The imagination and the available equipment is the limit. Depending on the direction of the project, further studies will be done using for example, X-ray diffraction, scanning electron microscopy and optical light microscopy. Mechanical testing, sample preparation and interpretation of the results is the core of the course. The results should be written as a scientific paper also presented orally for the other students.

Teaching and working methods

The course consists of lectures, laboratory work and a supervised project work, which is performed in groups of 2 to 4 students. Students are expected to take the major responsibility for the project work to be completed.

Examination

PRA1	Project work	6 credits	U, 3, 4, 5

Grades

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

Department

Institutionen för ekonomisk och industriell utveckling

Director of Studies or equivalent

Mikael Segersäll

Examiner

Mikael Segersäll

Course website and other links

Education components

Preliminary scheduled hours: 34 h
Recommended self-study hours: 126 h

Course literature

Additional literature

Websites

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.