Electrical Engineering

Programme course

6 credits

Elkraftteknik

TMEI01

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 2020

Main field of study
Electrical Engineering, Mechanical Engineering

Course level
First cycle

Advancement level
G1X

Course offered for
- Engineering Electronics
- 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
Electric Circuit Theory.

Intended learning outcomes

To give knowledge about the design and use of electrical power equipment used in mechanical engineering. In the end of the course the student should know about how to:

- perform calculations on symmetrical and unsymmetrical three phase systems
- perform calculations on three phase transfomer and draw complex circuits per phase
- understand the princip function and perform calculations on the DC-machine
- understand the princip function and perform calculations of the asynchronous machine
- perform calculations and phase control of inductive loads with capacitors in Y-or D connected
- perform calculations in power electronics with thyristors and diodes and rectifier AC-current with two-three and sexpuls bridges

As sub elements the student should know how to:

- understand the princip function and perform calculations in speed control of the DC-machine
- understand the princip function and perform calculations in speed control of the asynchronous machine
- understand the princip function of the synchronous machine
- understand and know personal danger in electrical systems

Course content

- three-phase systems
- three-phase transformer
- three-phase power distribution
- DC-machine
- asynchronous machine
- speed control of DC and AC- machine
- synchronous machine
- phase control of reactive loads
- AC/DC-conversion
- personal danger

Teaching and working methods

Lectures, exercises and laboratory work.

Examination

LAB1	Laboratory work	2 credits	U, G
TEN1	Written examination	4 credits	U, 3, 4, 5

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

Department
Institutionen för systemteknik

Director of Studies or equivalent
Tomas Svensson

Examiner
Christofer Sundström

Course website and other links
http://www.fs.isy.liu.se/Edu/Courses/TMEI01

Education components
Preliminary scheduled hours: 48 h
Recommended self-study hours: 112 h

Course literature
T. Franzen, S. Lundgren Elkraftteknik. Studentlitteratur. ISBN 91-44-01804-5 .
Kompletterande material (laborationshandledningar mm).

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.