Electrical Engineering

Elkraftteknik
6 credits

Programme course

TSFS14

Valid from: 2023 Spring semester

Determined by	**Main field of study**	
Board of Studies for Mechanical Engineering and Design	Electrical Engineering, Mechanical Engineering	
Date determined	**Course level**	**Progressive specialisation**
2022-08-31	First cycle	G2X
Revised by	**Disciplinary domain**	
	Technology	
Revision date	**Subject group**	
	Electrical Engineering	
Offered first time	**Offered for the last time**	
Spring semester 2021		
Department	**Replaced by**	
Institutionen för systemteknik		

Course offered for

- Bachelor of Science in Engineering Electronics
- Bachelor of Science in Mechanical Engineering

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

Other information

About teaching and examination language

The teaching language is presented in the Overview tab for each course. The examination language relates to the teaching language as follows:

- If teaching language is “Swedish”, the course as a whole could be given in Swedish, or partly in English. Examination language is Swedish, but parts of the examination can be in English.
- If teaching language is “English”, the course as a whole is taught in English. Examination language is English.
- If teaching language is “Swedish/English”, the course as a whole will be taught in English if students without prior knowledge of the Swedish language participate. Examination language is Swedish or English depending on teaching language.

Other

The course is conducted in a manner where both men's and women's experience and knowledge are made visible and developed.

The planning and implementation of a course should correspond to the course syllabus. The course evaluation should therefore be conducted with the course syllabus as a starting point.

The course is campus-based at the location specified for the course, unless otherwise stated under “Teaching and working methods”. Please note, in a campus-based course occasional remote sessions could be included.

If special circumstances prevail, the vice-chancellor may in a special decision specify the preconditions for temporary deviations from this course syllabus, and delegate the right to take such decisions.