DALARNA UNIVERSITY

Course Syllabus

Electrical Power Engineering 7.5 Credits*, First Cycle Level 1

Learning Outcomes

The overall goal of the course is for students to gain knowledge about the principles for the components of power systems in generation, transmission and distribution as well as for students to gain skills for using numerical calculations for dimensioning and measurement methods to decide on performance of these components. The course looks at transmission grids for alternating and direct current, electrical power dimensioning and phase compensation. Engines, transformers and power electronics are important elements in the course.

After completing the course, students shall be able to:

- explain the meaning of fundamental concepts and technical vocabulary within electrical engineering
- explain the principles of different transformers as well as be able to dimension them
- explain the principles and the design of motors and generators as well as dimension them
- explain the principles, the design and the architecture of various types of power electronics to convert AC to DC and vice versa, as well as be able to perform calculations on them
- dimension lines and transmission line systems for both three-phase alternating current and direct current
- identify the different components of an electric power system
- manage the electrical safety in electrical installations in the power grid

Course Content

Electrical power engineering is the technology used to design power systems for the production, transmission and distribution of electrical energy. The course explains the meaning of the basic concepts and technical terms. The student will learn how to calculate different equipment in electrical systems as well as in transmission lines for both AC and DC. Power feed calculations and power factor correction in power grids are included. Motors and motor controls are an important part of the course as are transformers and

* 1 Credit = 1 ECTS

power electronics. The course also includes laboratory sessions where practical exercises and measurements are performed.

Assessment
Written examination 5 credits and laboratory work 2.5 credits.

Forms of Study
Lectures, exercises and laboratory work with preparation task

Grades
The Swedish grades U, 3, 4, 5.

Prerequisites
Electricity Part 2,5 credits

Other Information
Replaces ET1021

Subject:
Electrical Engineering

Group of Subjects:
Electrical Engineering

Disciplinary Domain:
Technology, 100%

Approved:
Approved 14 June 2017
Valid from 31 August 2017