Electrical Power and Energy Engineering

Basic information

Biämne på svenska: Elkraftteknik

Minor in Finnish: Sähköenergiatekniikka

Code: ELEC3027

Responsible professors: Marko Hinkkanen, Matti Lehtonen

Extent: 20 credits

Language: English

Prerequisites: Minor in Electrical Engineering in the Bachelor's degree or equivalent knowledge.

Content and structure of the minor

Electrical power and energy systems form the backbone of societies. Intelligent systems, spanning from production to end-user, ensure optimal utilisation of resources — minimal impact on environment, maximal benefits for society. The field includes transmission, distribution, smart grid, and sustainable generation and utilisation of electrical power, as well as power-conversion devices such as motors, generators, and power-electronic converters. This minor offers a theoretical base needed by engineers working on the field of electrical power and energy engineering.

Upon completion of the Minor, the student will be able to:

- Identify fundamental aspects and considerations for electrical energy systems
- Analyze and evaluate existing and future challenges in the field of electrical power and energy engineering
- Analyze power systems and energy conversion devices

The minor consists of 20 credits in total. Students may either choose to complete four compulsory courses of their choice or three compulsory courses and one elective course as given in the list below.

Code	Course	ECTS	Teaching period
Choose a minimum of 4 courses (20 credits) from the list below		20	
ELEC-E8424	Distributed Generation Technologies	5	I-II
ELEC-E8405	Electric Drives	5	I-II
ELEC-E8407	Electromechanics	5	I
ELEC-E8001	Embedded Real-Time Systems	5	I-II
ELEC-E8412	Power Electronics	5	I-II
ELEC-E8413	Power Systems	5	I-II
ELEC-E8406	Electricity Distribution and Markets	5	
ELEC-E8700	Principles and fundamentals of lighting	5	I-II

ELEC-E8702	Rakennussähköistys	5	III - V