Reg No: ELGB09/20221

Faculty of Health, Science and Technology
Electrical Engineering

Syllabus

Introduction to electrical power systems

Course Code:	ELGB09
Course Title:	Introduction to electrical power systems *Introduktion till elkraftsystem*
Credits:	7.5
Degree Level:	Undergraduate level
Progressive Specialisation:	First cycle, has less than 60 credits in first-cycle course/s as entry requirements (G1F)

Major Field of Study:
ETA (Electrical Engineering)

Course Approval
The syllabus was approved by the Faculty of Health, Science and Technology 2021-08-30, and is valid from the Spring semester 2022 at Karlstad University.

Prerequisites
Registered for 7.5 ECTS credits in electrical technology or circuit technology from a university or Master programme in Engineering, or registered for 7.5 ECTS credits in electrical engineering, programming, physics, engineering physics, or energy and environmental engineering from a university or Master programme in Engineering, or equivalent

Learning Outcomes
Upon completion of the course, students should be able to:
- perform calculations on three-phase systems,
- perform calculations on transformers,
- perform calculations on electric power grids (resistance, conductance, inductance, and capacitance), and
- perform calculations on models for electric power grids.

Content
- Three-phase systems: Complex effect, analysis of balanced and unbalanced three-phase systems
- Tranformers: Ideal, one-phase, and three-phase transformers, autotransformers, and per-unit system
- Parameters of electric power grids: resistance and conductance, inductance and impedance, capacitance and admittance
- Models for electric power lines: short, medium, and long power lines

Reading List
See separate document.

Examination
Assessment is based on a written exam, mandatory laboratory sessions, and lab reports.

If students have a decision from Karlstad University entitling them to Targeted Study Support due to a documented disability, the examiner has the right to give such students an adapted examination or to examine them in a different manner.

Grades
One of the grades Distinction (VG), Pass (G), or Fail (U) is awarded in the examination of the course.
Students in Engineering are awarded one of the grades Pass with Distinction (5), Pass with Some
Distinction (4), Pass (3), or Fail (U) in the examination of the course.

Quality Assurance
Follow-up relating to learning conditions and goal-fulfilment takes place both during and upon completion of the course in order to ensure continuous improvement. Course evaluation is partly based on student views and experiences obtained in accordance with current regulations and partly on other data and documentation. Students will be informed of the result of the evaluation and of any measures to be taken.

Course Certificate
A course certificate will be provided upon request.

Additional information
The local regulations for studies at the Bachelor and Master levels at Karlstad University stipulate the obligations and rights of students and staff.