



LUNDS UNIVERSITET
Lunds Tekniska Högskola

Course syllabus

Kraftelektronik

Power Electronics

ETEF10, 7,5 credits, G2 (First Cycle)

Valid for: 2023/24

Faculty: Faculty of Engineering, LTH

Decided by: PLED E

Date of Decision: 2023-04-11

General Information

Compulsory for: IEA2

Language of instruction: The course will be given in Swedish

Aim

The aim of this course is to give the students the basic knowledge about the components and systems used in power electronics.

Learning outcomes

Knowledge and understanding

For a passing grade the student must

- be able to explain and use concepts used in power electronics.
- be able to explain the function of different rectifiers and converters.
- have knowledge about HVDC.

Competences and skills

For a passing grade the student must

- be able to calculate the parameters that are necessary to choose components needed in power electronic systems.
- be able to plan and perform measurements in power electronic systems.
- be able to plan a power electronic system due to given conditions.

Judgement and approach

For a passing grade the student must

- be able to judge the suitability and characteristics for a power electronic system from a general point of view,
- have gained the self confidence to appreciate the structure of various power electronic systems,
- have gained the self confidence to make certain measurements and calculations on a power electronic system.

Contents

- Switch mode power supplies.
- Line-commutated rectifiers
- Load-commutated inverters
- Self-commutated inverters.
- Applications
- HVDC
- Static converters
- Transistor drive circuits and protective circuits (snubbers)
- Passive components and filters
- Semiconductor losses and thermal management.
- Standards (overview)

Examination details

Grading scale: TH - (U,3,4,5) - (Fail, Three, Four, Five)

Assessment: Grade 3: passed written examination, passed laboratory preparation reports, passed laboratory experiments. Grade 4 and 5 is based on the result of the written examination.

The examiner, in consultation with Disability Support Services, may deviate from the regular form of examination in order to provide a permanently disabled student with a form of examination equivalent to that of a student without a disability.

Parts

Code: 0113. **Name:** Power Electronics.

Credits: 6,5. **Grading scale:** TH. **Assessment:** A passed written examination gives the grade 3 or higher.

Code: 0213. **Name:** Laboratory Works.

Credits: 1. **Grading scale:** UG. **Assessment:** Passed laboratory preparation reports and passed laboratory experiments.

Admission

Admission requirements:

- Passed laborations in EITA40/ETE604 Circuits and measurements

The number of participants is limited to: No

Reading list

- Williams, BW: Power Electronics, Devices, Drivers, Applications and Passive Components. 2006, ISBN: 9780955338403.

Contact and other information

Course coordinator: Univ adj Bengt Simonsson, Bengt.Simonsson@iea.lth.se

Course homepage: <https://www.lth.se/iea/utbildning/kurser-paa-campus-helsingborg/kraftelektronik/>