Organic Electronics 2

Programme course

6 credits

Organisk elektronik 2

TNE104

Valid from: 2017 Spring semester

Determined by
Board of Studies for Electrical Engineering, Physics and Mathematics

Date determined
2017-01-25

Main field of study
Electrical Engineering

Course level
Second cycle

Advancement level
A1X

Course offered for
- Electronics Design Engineering, M Sc in Engineering

Prerequisites
Molecular Physics and Organic Electronics 1 (or equivalent)

Intended learning outcomes
After finishing the course, the students should be able to:
- explain the fundamental principles underlying the material properties of organic materials, such as optical properties and conductivity, and describe how they are connected
- specify and describe appropriate methods and processes for manufacturing various components in organic electronics
- identify and explain different concepts and principles that have applications in organic electronics, such as thermoelectricity, ferroelectricity, and bioelectronics
- describe the structure and functional principles of organic electronic components, such as light-emitting components and energy-storage systems
- explain how organic and inorganic components can be used together in hybrid systems, and discuss advantages and disadvantages of such systems
- gather information about, present, and reflect on current research in organic electronics.

Course content

Optical properties and charge transport in organic materials; manufacturing (material deposition, patterning, etc.); iontronics (applications based on ion transport, diodes and transistors); sustainable and renewable electronic materials; organic bioelectronics (cell signalling and electronic plants); organic ferroelectricity; energy storage (organic batteries and supercapacitors); flexible (bendable and stretchable) electronics; organic/inorganic hybrid components and circuits; current research in organic electronics. In addition to lectures and seminars, a laboratory exercise will be offered in the department's research lab.

Teaching and working methods

Teaching will consist of lectures, a laboratory exercise, and student-led seminars.

Examination

UPG1	Seminar	1 credits	U, G
TEN1	Written examination	5 credits	U, 3, 4, 5

Grades

Four-grade scale, LiU, U, 3, 4, 5

Department

Institutionen för teknik och naturvetenskap

Director of Studies or equivalent

Adriana Serban

Examiner

Magnus Jonsson

Education components

Preliminary scheduled hours: 32 h
Recommended self-study hours: 128 h

Course literature

Additional literature

Articles

Compendia

Common rules

Regulations (apply to LiU in its entirety)

The university is a government agency whose operations are regulated by legislation and ordinances, which include the Higher Education Act and the Higher Education Ordinance. In addition to legislation and ordinances, operations are subject to several policy documents. The Linköping University rule book collects currently valid decisions of a regulatory nature taken by the university board, the vice-chancellor and faculty/department boards.

LiU's rule book for education at first-cycle and second-cycle levels is available at http://styrdokument.liu.se/Regelsamling/Innehall/Utbildning_pa_grund-_och_avancerad_niva.