Organic Electronics 2

Program course

6 credits
Organisk elektronik 2
PhD course
2020 Fall semester
Main field of study
Materials Science

Course level
Phd course

Course offered for
PhD students, MSc students, postdocs

Prerequisites
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, electrocatalysis 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 electronic

Course content
Optical properties and charge transport in organic materials; organic electronic devices for light emission and charge storage; iontronics (applications based on ion transport, diodes and transistors); flexible (bendable and stretchable) electronics; sustainable and renewable electronic materials; organic/inorganic hybrid components and circuits; solar fuels; advanced bioelectronics in mammalian and plant systems, functional wood based materials; thermoelectrics (converting heat to electricity); current research in organic electronics. In addition to lectures and seminars the participants will have a project concerning current research where they will have to give a presentation and a written summary.
Teaching and working methods
Teaching will consist of lectures, and student-led seminars.

Examination
Written examination 5 credits
Seminar 1 credits

Grades
F, 3, 4, 5

Subject area
Materials Science

Disciplinary domain
Technology

Department
Department of Science and Technology (ITN)

Course Responsible
Eleni Stavrinidou, eleni.stavrinidou@liu.se

Education components
Preliminary scheduled hours: 36 h
Recommended self-study hours: 120 h

Course literature
Articles
Compendiums
Plagiarism
For examinations that involve the writing of reports, in cases in which it can be assumed that the student has had access to other sources (such as during project work, writing essays, etc.), the material submitted must be prepared in accordance with principles for acceptable practice when referring to sources (references or quotations for which the source is specified) when the text, images, ideas, data, etc. of other people are used. It is also to be made clear whether the author has reused his or her own text, images, ideas, data, etc. from previous examinations. A failure to specify such sources may be regarded as attempted deception during examination.

Attempts to cheat
In the event of a suspected attempt by a student to cheat during an examination, or when study performance is to be assessed as specified in Chapter 10 of the Higher Education Ordinance, the examiner is to report this to the disciplinary board of the university. Possible consequences for the student are suspension from study and a formal warning. More information is available at https://www.student.liu.se/studenttjanster/lagar-regler-rattigheter?l=sv.

Grades
The grades that are preferably to be used are Fail (U), Pass (3), Pass not without distinction (4) and Pass with distinction (5). Courses under the auspices of the faculty board of the Faculty of Science and Engineering (Institute of Technology) are to be given special attention in this regard.
1. Grades U, 3, 4, 5 are to be awarded for courses that have written examinations.
2. Grades Fail (U) and Pass (G) may be awarded for courses with a large degree of practical components such as laboratory work, project work and group work.

Examination components
1. Grades U, 3, 4, 5 are to be awarded for written examinations (TEN).
2. Grades Fail (U) and Pass (G) are to be used for undergraduate projects and other independent work.
3. Examination components for which the grades Fail (U) and Pass (G) may be awarded are laboratory work (LAB), project work (PRA), preparatory written examination (KTR), oral examination (MUN), computer-based examination (DAT), home assignment (HEM), and assignment (UPG).
4. Students receive grades either Fail (U) or Pass (G) for other examination components in which the examination criteria are satisfied principally through active attendance such as other examination (ANN), tutorial group (BAS) or examination item (MOM). The examination results for a student are reported at the relevant department.
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