Physics

Programme course

6 credits

Fysik

TFYY55

Valid from: 2017 Spring semester

Determined by
Board of Studies for Chemistry, Biology and Biotechnology

Date determined
2017-01-25

Main field of study
Applied Physics, Physics

Course level
First cycle

Advancement level
G2X

Course offered for
- Chemical Biology, M Sc in Engineering
- Engineering Biology, M Sc in Engineering

Entry requirements
Note: Admission requirements for non-programme students usually also include admission requirements for the programme and threshold requirements for progression within the programme, or corresponding.

Prerequisites
Algebra, Calculus one variable, Mechanics

Intended learning outcomes
The first part of the course will provide basic knowledge about electromagnetism, and its applications. The second part of the course will give an overwiev of modern physics including theory of relativety, quantum and nuclear physics. The basic concepts of modern physics and its consequences on different fields in physics will be presented. The students should after the course be able to.

- Understand the basic concepts of electricty and magnetsim.
- Mathematically solve basic problems regarding electrical and magnetic fileds.
- Understand the basic of theory of relativity, and its cosequences such as timedilation and length contraction.
  Explain the basics of quantum mechanics and its application in atomic, molecular and nuclear physics. Explain the basics of the atomic nuclea, and the nuclear processes.
- Use simple experimental equipment for physical experiments.

Course content

Electromagnetics: Electrical Charge, Electric Field, Gauss Law, Electrical Potential, Capacitance, Current and Resistance, Magnetic Field, magnetic Field from Currents, Induction and Inductance, Maxwells Equations, Electromagnetic Waves, Interference, Diffraction, Theory of Relativity, Photons, Matter Waves, The Atom, Nuclear Physics, Nuclear reactions, Elemetary Particles

Teaching and working methods

The course will be given as lectures, classroom exercises and laborations.
The course runs over the entire spring semester.

Examination

LAB1	Laboratory Work	1 credits	U, G
TEN1	Written examination	5 credits	U, 3, 4, 5
UPG1	Assignment	0 credits	U, G

Grades

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

Other information

Supplementary courses: Molecular Physics

Department

Institutionen för fysik, kemi och biologi

Director of Studies or equivalent

Magnus Boman

Examiner

Peder Bergman

Education components

Preliminary scheduled hours: 68 h
Recommended self-study hours: 92 h

Course literature

Halliday,Resnick,Walker: Fundamentals of Physics 9th Ed. (Wiley). Nordling, Österman: Physics Handbbok

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.