Genes and Gene Expressions

Programme course

15 credits

Gener och genuttryck

NBIC47

Valid from: 2017 Spring semester

Determined by
Board of Studies for Chemistry, Biology and Biotechnology

Date determined
2017-01-25

Main field of study
Biology, Chemical Biology

Course level
First cycle

Advancement level
G2X

Course offered for
- Biology
- Chemical Biology

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
50 ECTS in biology/ chemical biology including a second course in Molecular Genetics or Biochemistry or equivalent.

Intended learning outcomes

The aim of the course is to provide in depth knowledge of the molecular processes behind cell division, DNA replication, DNA repair, gene expression and cellular transport. The aim of the course is also to provide theroretical and practical knowledge in population- and evolutionary genetics. The course also aims to introduce experimental approaches and research methodology used in genetics and molecular biology. Another goal with the course is to provide knowledge about how reserach and development in genetics and molecular biology are involved in the society.After completing the course the participant will be able to account for

- the organisation of the genetic material in prokaryotic and eukaryotic organisms
- the mechanisms behind replication, reparation and expression of the genetic information
- model organisms in genetics and molecular biology
- the recent development of research in genetics and molecular biology
- theories of population- and evolutionary genetics
- genetic methods in studies of evolution

After the completed course the participant will be able to reflect over the content in relevant scientific publications and also to plan, perform and evaluate experimental work in the laboratory.

Course content

The course treats the structure and evolution of genes and genomes. The course also examines the mechanisms behind the replication, repair and expression of the genetic information, as well as the regulation of the cell cycle. Further, the course treats therories and applications of population- and evolutionary genetics. Experimental approaches used in genetics and molecular biology are introduced in theory and in practice. In seminars, there are discussions how research in genetics and molecular biology increase our knowledge about fundamental biological processes and contributes to a sustainable development of our society.

Teaching and working methods

The course includes lectures, laboratory work and seminars. Both theory and results from laboratory work are presented at seminars in oral and in written reports. Current research is discussed in literature seminars.

Examination

UPG1	Seminar assignments	2 credits	U, G
LAB1	Laboratory work	4 credits	U, G
TEN1	Written examination	9 credits	U, 3, 4, 5

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

Department
Institutionen för fysik, kemi och biologi

Director of Studies or equivalent
Agneta Johansson

Examiner
Johan Edqvist

Course website and other links

Education components
Preliminary scheduled hours: 110 h
Recommended self-study hours: 290 h

Course literature
Molecular Biology (andra upplagan) av Craig, Cohen-Fix, Green, Greider, Storz och Wolberger (Oxford University Press, 2014)

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.