Genetics and Evolution

Programme course

6 credits

Genetik och evolution

TFBI11

Valid from: 2017 Spring semester

Determined by
Board of Studies for Industrial Engineering and Logistics

Date determined
2017-01-25

Main field of study
Biology

Course level
First cycle

Advancement level
G1X

Course offered for
- Industrial Engineering and Management - International, M Sc in Engineering
- Industrial Engineering and Management, 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.

Intended learning outcomes
The course aims to provide basic knowledge about genetics and evolution. After the course the student will be able to:

- give an account of the structure and function of chromosomes
- give an account of concepts such as mitosis, meiosis and the cell cycle
- describe the foundations of inheritance
- give an account of the concept of Hardy-Weinberg equilibrium and how evolutionary processes affects allele and genotype frequencies in populations
- give an account of the causes of genetic variation in individuals and populations
- analyse the result of crosses between different genotypes and predict the outcome
- explain an exemplify evolutionary concepts and processes
- be able to, through group discussions, evaluate and gain insight into evolutionary processes
- describe the relationship between evolution and the society

Course content

The course covers genetic and evolutionary basic concepts. Mitosis, meiosis and the cell cycle. The foundation of inheritance and simple genetic analysis. The structure and function of chromosomes. Genetic mapping, mutation and recombination. Populations as genetic systems. Evolutionary mechanisms and the foundation of evolution. The role of evolution and its effects on human and human societies.

Teaching and working methods

The course is taught through lectures, seminars and group exercises. The course has a course room at Lisam where course information and course material is provided. Group exercises consist of the solving of genetic problems and questions together, some of which are later reported individually through Lisam. At the seminars genetic and evolutionary topics are discussed in groups, often from a human / societal perspective.

Examination

UPG1	Assignment	1.5 credits	U, G
TEN1	Written examination	4.5 credits	U, 3, 4, 5

The assignment part consists of active participation in all seminars and their corresponding approved assignments.
The course is further examined though an English written exam with multiple choice questions of a type continuously practiced during the course.

Grades

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

Department

Institutionen för fysik, kemi och biologi

Director of Studies or equivalent

Agneta Johansson

Examiner

Jenny Hagenblad

Course website and other links

https://www.ifm.liu.se/edu/coursescms/TFBI11/

Education components

Preliminary scheduled hours: 48 h
Recommended self-study hours: 112 h

Course literature

Genetics a conceptual approach, 5th ed av B.A. Pierce Why evolution is true av Jerry A. Coyne

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.