



DEPARTMENT OF CHEMISTRY AND MOLECULAR BIOLOGY

BIO555 Genetics, 15 higher education credits

Genetik, 15 högskolepoäng

Second Cycle

Confirmation

This course syllabus was confirmed by Department of Chemistry and Molecular Biology on 2014-06-11 and was last revised on 2017-06-27 to be valid from 2017-06-28, autumn semester of 2017.

Field of education: Science 100%

Department: Department of Chemistry and Molecular Biology

Position in the educational system

This is a second-cycle course in Genetics and is designed to provide an advanced knowledge in Genetics. The course can be included as a part of a Bachelor's degree in Molecular Biology and Biology, or as part of a Master's degree in Molecular Biology, Biology or Genomic and Systems Biology. The course is also offered as a separate course.

Main field of studies

Molecular Biology with Specialization in Genomics and Systems Biology

Molecular Biology

Biology

Specialization

A1N, Second cycle, has only first-cycle course/s as entry requirements

A1N, Second cycle, has only first-cycle course/s as entry requirements

A1N, Second cycle, has only first-cycle course/s as entry requirements

Entry requirements

Students must have successfully completed the basic courses in Cell Biology, BIO900, 15 hec, Molecular Genetics, BIO905, 15 hec, Biological Form and Function, BIO910, 15 hec, Ecology and Evolution, BIO915, 15 hec and Biodiversity and Systematics, BIO920, 15 hec or equivalent courses.

English proficiency is required to the level of English 6/English Course B from Swedish Upper Secondary School, or be certified by an internationally recognized test, for example TOEFL, IELTS. In addition a completed depth course of 15 credits in a relevant area is also required.

Learning outcomes

After completion of the course the student is expected to be able to:

Knowledge and understanding

- Know and understand key concepts in genetics, such as heritability, gene mapping and identification, genetic variation, etc.

Skills and abilities

- Be able to read and understand scientific literature in the field of genetics,
- Be able to orally present genetics articles to peers,
- Be able to write a laboratory report in the style of a research article,
- Be able to maintain *C. elegans* strains, and characterize their phenotypes

Judgement and approach

- Be able to design a gene mapping strategy in *C. elegans*,
- Be able to critically judge the import of primary articles in the field of genetics

Course content

The course provides a deeper education in several genetics topics, including all or some of the following: Simple and complex inheritance, Genetic linkage and mapping in eukaryotes, Variations in chromosome structure and numbers, Gene mutations and DNA repair, Human Genetics, Developmental biology, Quantitative genetics, Populations genetics and Evolutionary genetics.

Many parts of the course are built around original primary research articles that are introduced in their historical setting, after which the experimental set up and results are presented then interpreted and discussed in a modern context. A rather ambitious laboratory exercise involving the mapping of mutations in the model organism *C. elegans* spans several weeks of semi-independent activity by the students.

Form of teaching

See above

All items except lectures are compulsory.

Language of instruction: English

Assessment

A written final exam accounts for 80% of the final grade, A written essay (article-like lab report) accounts for 10% of final grade (must itself receive 60% or better to pass the course) and In-class presentations account for 10% of the final grade.

Missed compulsory sessions may be made up during the course when that is possible, or the next time the course runs.

A student who has failed a test twice has the right to change examiner, if that is possible. A written application should be sent to the Department.

In cases where a course has been discontinued or major changes have been made a student should be guaranteed at least three examination occasions (including the ordinary examination occasion) during a time of at least one year from the last time the course was given.

Grades

The grading scale comprises: Pass with Distinction (VG), Pass (G) and Fail (U).

The grades of Fail (U), Pass (G) or Pass with Distinction (VG) are awarded based on the following final grade scheme: 0-59% = U; 60-84% = G; 85-100% = VG.

Furthermore, the grades G and VG require a minimum of 60% for the lab report.

Course evaluation

An evaluation will be done at the end of the course. The results of the evaluation will be communicated to the students and will function as a guide for the development of the course.