Department of Biology Education

Stockholm University

Syllabus

for course at first level

Genetics II
Genetik II

15.0 Higher Education Credits
15.0 ECTS credits

Course code:	BL4007
Valid from:	Autumn 2007
Date of approval:	2006-09-11
Department	Department of Biology Education
Subject	Biology
Specialisation:	G2F - First cycle, has at least 60 credits in first-cycle course/s as entry requirements

Decision

This syllabus has been approved by the Board of the Faculty of Science at Stockholm University.

Prerequisites and special admittance requirements

Admittance to the course requires knowledge equivalent to Cell and Molecular Biology 15 credits, Diversity and Phylogeny of Organisms 15 credits, Physiology 15 credits and Ecology, Floristics and Faunistics 15 credits or 30 credits in Chemistry, including a minimum of 7,5 credits in Biochemistry, and Cell and Molecular Biology 30 credits. (Three credits corresponds to approximately two weeks full-time studies).

Course structure

Examination code	Name	Higher Education Credits
4007	Genetics	15

Course content

The course covers introductory repetition of basic concepts in cytological genetics; mitosis, meiosis, and the formation of gametes, as well as of transmission genetics. Molecular genetics: Chromosomes, DNA, and the structure and variation of genes. Natural and experimental alteration of DNA, genetic markers, whole genome sequencing, and gene mapping. Planning and carrying out a molecular genetic laboratory experiment. Molecular mechanisms behind the expression and control of genes. Bioinformatic analysis of DNA and protein sequences. Quantitative genetics and QTL analysis. DNA repair and cancer. Population genetics: Molecular methods for assessing genetic variation in analysis of populations. Applying the Hardy – Weinberg principle for the analysis of microevolutionary processes. Applied genetics: Human and clinical genetics, plant and animal breeding, the genetics of animal behaviour, evolutionary genetics, and developmental genetics.

Learning outcomes

It is expected that the student after taking the course will be able to:
• use and apply genetic concepts and definitions.
• apply theoretical knowledge of genetics in analyses of genetic problems.
• suggest methods and experimental approaches for solving genetic questions, and to plan and carry out such experiments.
• show knowledge how genetics theory is used and applied within contemporary genetic research as well as other areas of biology.

Education
The education consists of lectures, theoretical, exercises, group discussions, laboratory exercises and study visits.
Participation in laboratory exercises and group education associated with this is compulsory. An examiner may rule that a student is not obliged to participate in certain compulsory education if there are special grounds for this after consultation with the relevant teacher.

Forms of examination
a. Examination for the course is in the following manner: measurement of knowledge takes place through: Written and/or oral examination

b. Grading is carried out according to a 7-point scale related to learning objectives:
A = Excellent
B = Very Good
C = Good
D = Satisfactory
E = Sufficient
Fx = Fail
F = Fail

c. Grading criteria for the course will be distributed at the start of the course.

d. A minimum grade of E is required to pass the course, together with:
•approved written presentations of exercises
•approved laboratory exercises
•participation in all compulsory education

e. Students who fail to achieve a pass grade in an ordinary examination have the right to take at least further four examinations, as long as the course is given. The term “examination” here is used to denote also other compulsory elements of the course. Students who have achieved a pass grade on an examination may not retake this examination in order to attempt to achieve a higher grade. Students who have failed to reach a pass grade on two occasions have the right to request that a different teacher be appointed to set the grade of the course. A request for such appointment must be sent to the departmental board.

Interim
Students may request that the examination is carried out in accordance with this syllabus even after it has ceased to apply. This right is limited, however, to a maximum of three occasions during a two-year-period after the end of giving the course. A request for such examination must be sent to the departmental board.

Limitations
The course can not be included in a degree together with the course Genetics 10 p (BI3060) or the equivalent.

Misc
The course is a component of the Bachelor's Programmes in Biology and Molecular Biology, and it can also be taken as an individual course.

Required reading
Course literature is decided by the departmental board and is described in an appendix to the syllabus.