Department of Biology Education

Stockholm University

Syllabus

for course at first level

Molecular Cell Biology
Molekylär cellbiologi

13.5 Higher Education Credits
13.5 ECTS credits

Course code:	BL3001
Valid from:	Autumn 2007
Date of approval:	2006-07-24
Department	Department of Biology Education
Subject	Biology
Specialisation:	G1F - First cycle, has less than 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 basic eligibility, knowledge equivalent to Swedish upper secondary school course Biology B and 30 credits in Chemistry, including a minimum of 7,5 credits in Biochemistry. (Three credits corresponds to approximately two weeks full-time studies).

Course structure

Examination code	Name	Higher Education Credits
3A01	Theory	9
3B01	Methods	4.5

Course content

The course covers the structure and function of the eukaryotic cell. b. The course includes the following elements: theory 9 hp. By way of introduction an overview of the structure and function of the eukaryotic cell is presented. Subsequently several aspects of the molecular basis of eukaryotic cell biology are studied: • Information flow. Genome organization, maintenance and evolution. Gene architecture and gene expression, incl. regulation of gene expression. Functional organization of the nucleus. Synthesis, maturation and sorting of proteins. • The functions of the cell surface and the cytoplasm. Structure and function of organelles. Organization and dynamics of the cytoplasm. The cytoskeleton, generation of cellular forces and motility systems. The plasma membrane, membrane transport and endocytosis. Cell adhesion, extracellular matrix, cell wall and intercellular contacts. • Growth control. Cell signaling. The cell cycle and its regulation, somatic cells and germ cells. Cell differentiation. • Evolution of eukaryotic cells. Methods 4.5 hp. Basic methods and experimental tools in molecular cell biology, incl. recombinant DNA techniques, cell culture, fluorescence microscopy and localization of protein and/or nucleic acids.

Learning outcomes

It is expected that the student after taking the course will be able to: • describe the basic principles of eukaryotic cell structure and function • apply this knowledge to studies of biological processes at the molecular-, cellular- and tissue-level • show basic skills in methods used in cell- and molecular biology, in experimental planning and in critical evaluation of results • show a basic level of insight into the applications

of molecular biology techniques and their relevance for society.

Education

The education consists of lectures, group education, laboratory exercises as well as written and oral presentations.
Participation in the group education, laboratory exercises and oral presentations 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 laboratory exercises
- approved written and oral presentations
- 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 courses Biology 45 p (BI1100), Molecular Cell Biology 5 p (BIA160), Cell and Molecular Biology in the Biology-Earth Sciences Programme 7 p (BI1690), Genes, Cells and Populations 15 hp (BL2011), Biology 40 p (BI1880), Cell and Molecular Biology 10 p (BI2280), Molecular Cell Biology 9 p (BI2230) or the equivalents.

Misc

The course is a component of the Bachelor's Programmes in Biology, Marine 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.