Department of Biology Education

Stockholm University

Syllabus

for course at advanced level

Stem cells in developmental- and cancer biology
Stamceller i utvecklings- och cancerbiologi

15.0 Higher Education Credits
15.0 ECTS credits

Course code:	BL7029
Valid from:	Spring 2011
Date of approval:	2010-08-20
Department	Department of Biology Education
Main field:	Biology
Specialisation:	A1N - Second cycle, has only 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 120 credits, including a minimum of 30 credits in Chemistry and 7,5 credits in Biochemistry, and Cell and Molecular Biology 30 credits. (Three credits corresponds to approximately two weeks full-time studies). Swedish upper secondary school course English B or equivalent or one of the following tests. Cambridge CPE och CAE: Pass. IELTS : 6.0 (with no part of the test below 5.0). TOEFL (paper based): 550 (with minimum grade 4 on the written test part). TOEFL (computer based): 213. TOEFL (internet based): 79.

Course structure

Examination code	Name	Higher Education Credits
7029	Stem cells in developmental- and cancer biology	15

Course content

The course covers the molecular mechanisms regulating the division and differentiation of stem cells in development and cancer. Mechanisms of cell differentiation and de-differentiation, reprogramming, induction of pluripotent cells, and the signaling pathways controlling these processes will be discussed. Important aspects of stem cell regulation, such as epigenetic changes, the presence of a niche, and asymmetric cell division will be covered.

Learning outcomes

It is expected that the student after taking the course will be able to:

•Explain basic concepts in stem cell biology; these include cell differentiation and de-differentiation, pluripotency, the stem cell niche, signaling, and asymmetric cell division.
•Describe the importance of model organisms for central concepts in stem cell biology.
•Compare epigenetic changes with gene expression differences during differentiation and de-differentiation of stem cells and during embryo development.
•Discuss how the concept of cancer stem cells influences our view of how cancer arises and is treated.

Education

The education consists of lectures, seminars, exercises and laboratory exercises. Participation in seminars,

exercises, 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 as well as written and/or oral presentations.

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:
•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.

Misc

The course is a component of the Master's Programme in Biology and Molecular Life Sciences, 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.