Department of Biology Education

Stockholm University

Syllabus

for course at advanced level

Cellular and Genetic Toxicology
Cellulär och genetisk toxikologi

15.0 Higher Education Credits
15.0 ECTS credits

Course code:	BL7006
Valid from:	Autumn 2007
Date of approval:	2006-09-27
Department	Department of Biology Education
Subject	Biology

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 a minimum of 120 credits in Biology and Chemistry, including a minimum of 30 credits in Chemistry and 15 credits in Cell and Molecular Biology. (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
7006	Cellular and Genetic Toxicology	15

Course content

The course covers different aspects of toxicology from a biological point of view, describing effects and mechanisms of toxic agents on higher organisms including man.
Introduction to toxicology: The effects of toxic agents at organ, cellular, subcellular and molecular levels. Included are basic concepts in toxicology, extrapolation from cellular models to man, toxicokinetics, neurotoxicology, immunotoxicology, reproduction toxicology, organ specific toxicology, and cellular and subcellular models for risk estimation.
Genetic toxicology: Basics and history of genetic toxicology, different DNA lesions, DNA repair, cellular models for genotoxicity, mutation mechanisms, mechanisms of cancer initiation, genotoxic and carcinogenic agents, and factors modifying the effect of such agents.
Applied toxicology: Risk model for carcinogenicity and the regulations for handling and use of toxic agents.

Learning outcomes

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

- explain the mechanistic action of toxic agents on living organisms at different levels, individual, organ, cellular, subcellular and molecular, with special reference to effects at a cellular level
- explain how poisonous agents affect the heritable material and how this relates to the origin of different diseases including cancer
- use in vitro cell culture assays to explore different scientific questions in toxicology

•read and critically analyze relevant original scientific literature

Education
The education consists of lectures, laboratory exercises, seminars, written and oral presentations as well as study visits
Participation in the laboratory exercises, seminars, oral prsentations as well as study visits 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 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 Cellular Toxicology 5 p (BI3910), Genetic Toxicology 5 p (BI3930),Cellular and Genetic Toxicology 10 p (BI3900), Toxicology 20 p (BI3960)or the equivalents.

Misc
The course is a component of the Master's Programme in 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.