

# Syllabus

for course at advanced level

**The Genome: Expression and Dynamics**  
**Genomets expression och dynamik**

**15.0 Higher Education**  
**Credits**  
**15.0 ECTS credits**

<b>Course code:</b>	BL8034
<b>Valid from:</b>	Autumn 2009
<b>Date of approval:</b>	2009-03-02
<b>Department</b>	Department of Biology Education
<b>Subject</b>	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 30 credits in Chemistry, including a minimum of 7,5 credits in Biochemistry, Cell and Molecular Biology 30 credits and additionally 15 credits in Molecular Life Sciences. (Three credits corresponds to approximately two weeks full-time studies). Swedish upper secondary school course English B/English 6 or equivalent.

## Course structure

Examination code	Name	Higher Education Credits
8034	The Genome: Expression and Dynamics	15

## Course content

The course covers:

- The dynamic organization of genome sequences
- The organization of the genome in chromatin and epigenetic regulation
- Replication and evolution of the genome
- Expression and regulation of the genome at different levels
- The multifunctional nature of RNA and its implications
- The cell nucleus: Function and dynamic organization
- Metagenomics as a strategy to understand genome evolution and coupling between gene expression and function
- Rational and strategy in research projects, choice of approaches and model systems, interpretations of experimental data
- Front-line research in life sciences, up-to-date methods and applications

## Learning outcomes

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

- to be able to read and critically examine scientific literature within the research field, and to give oral and written presentations of experimental results
- to be able to analyze biological questions within the subject area based on pertinent knowhow of genome structure and function
- understand the strategies behind and choice of approaches/methods within the subject area to solve scientific questions

- to know and account for practical and theoretical knowledge about up-to-date methodology within the subject area
- be familiar with sequence data bases and how to use them to find information about DNA and protein sequences, and to understand the principles for analyzing these sequences

### **Education**

The education consists of lectures, laboratory exercises, method discussions, seminars and an advanced exercise.

Participation in seminars, laboratory exercises, discussions 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 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.

### **Limitations**

The course can not be included in a degree together with the course Molecular Biology and Genome Analysis 15 hp (BI3600, BL8026).

### **Misc**

The course is a component of the Master's Programmes 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.