



## DEPARTMENT OF CHEMISTRY AND MOLECULAR BIOLOGY

### **BIO213 Cell and Developmental Biology, 15 credits**

Cell- och utvecklingsbiologi, 15 högskolepoäng

*First Cycle*

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#### **Confirmation**

This course syllabus was confirmed by Department of Chemistry and Molecular Biology on 2013-10-02 and was last revised on 2023-02-28 to be valid from 2023-03-03, autumn semester of 2023.

*Field of education:* Science 100%

*Department:* Department of Chemistry and Molecular Biology

*Other participating department*

Department of Biological and Environmental Sciences

#### **Position in the educational system**

This is a course in biology at ground level. The course can be part of the Bachelor's programme in Molecular Biology and Biology, or as a part of the Master's programme in Molecular Biology, Biology or Genomics and Systems Biology. The course is also offered as a separate course.

*Main field of studies*

Biology

Molecular Biology

*Specialization*

G2F, First cycle, has at least 60 credits in first-cycle course/s as entry requirements

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#### **Entry requirements**

Admission to the course requires:

Passed basic courses in the subject areas of cell biology and molecular genetics and evolution comprising 30 credits. Completed basic courses in botanical and zoological physiology, ecology and biodiversity and systematics covering 30 credits, or equivalent.

English proficiency is required to the level of English 6/ English Course B from Swedish Upper Secondary School, or be certified by an internationally recognized test, for example TOEFL, IELTS.

### **Learning outcomes**

After completion of the course the students will be able to:

#### *Knowledge and understanding*

- Know and understand key concepts in cell and developmental biology such as cytoplasmic determinants, morphogenetic gradients, cell migration, organogenesis, signalling pathways and programmed cell death.
- Have an appreciation of the merits of several different model organisms used in the study of developmental biology.

#### *Competence and skills*

- Be able to read and understand scientific literature in the field of cell and developmental biology.
- Be able to orally present primary research articles to peers.

#### *Judgement and approach*

- Be able to critically judge the import of primary articles in the field of cell and developmental biology.

### **Course content**

The course provides a conceptual framework to understand biological development ranging from the cellular level to the formation and integration of organs into a complete organism. Our emphasis is on the mechanisms of development, illustrated using model organisms such as the nematode, fruit fly, mouse, *Arabidopsis* and explained in many instances down to the cellular and molecular levels.

Practical laboratory work may include a study of plant cell differentiation and the action of plant hormones, a cell culture lab and examining *C. elegans* development mutants. Student presentation of selected primary research articles highlight recent methods and advances in the field.

The course consists of two sub-courses: Cell Biology, 7.5 hec and Developmental Biology, 7.5 hec.

**Form of teaching**

The course is composed of lectures, presentations and laboratory work. All items except lectures are compulsory.

*Language of instruction:* English

**Assessment**

Every sub-course is assessed with a written exam. Compulsory course elements include oral presentations and laboratory exercises.

Missed compulsory sessions can be made up during the course if possible but otherwise the next time the course runs.

A student who has failed a test twice has the right to change examiner, if it is possible. A written application should be sent to the Department.

In cases where a course has been discontinued or major changes have been made a student should be guaranteed at least three examination occasions (including the ordinary examination occasion) during a time of at least one year from the last time the course was given.

**Grades**

The grading scale comprises: Pass with Distinction (VG), Pass (G) and Fail (U).

**Course evaluation**

Opportunity to submit a written course evaluation is given at the end of the course.

**Additional information**

The course is given entirely in English, unless all students are proficient in Swedish, in which case parts of the course are given in Swedish.