BIMA52 Developmental Biology

13.5 higher education credits     First cycle

General Information

Main field
Biomedicine

Subject
Developmental biology

Type of course and its location in the education system
The course is mandatory in the Bachelor of Medical Science programme in Biomedicine and is taught in term 5.

Language of instruction
English

Learning Outcomes

Knowledge and understanding
On completion of the course, students shall be able to
- describe the fundamental mechanisms that control embryonic development
- explain some of the key embryonic development processes
- describe the most important mechanisms of cell–cell communication and signal transduction pathways involved in early development
- compare advantages/disadvantages and uses/limitations of the most important model systems used in developmental biology

Skills and abilities
On completion of the course, students shall be able to
- search for and present relevant information from scientific publications dealing with developmental biology issues, put it into its biological context, and evaluate its relevance
- apply critical thinking in evaluating and explaining developmental biology issues

Judgment and approach
On completion of the course, students shall be able to
- reflect on social consequences of developmental biology research and knowledge, and discuss these with their peers
Course Content

Basic principles of developmental biology are presented, with special emphasis on model systems such as *Drosophila* and mice. The course deals with the key processes of early embryonic development, such as gametogenesis, oogenesis and fertilisation, early cell division with cleavage patterns and asymmetry, axis formation, gastrulation, neurulation, development of extremities and organs, and stem cells. The course also provides insight into how knowledge of developmental biology is applied, when establishing animal models for the study of the effects of diseases and drugs.

**Subjects examined**

Written examination

Instruction and Examination

The whole course is based on problem-based learning (PBL) and consists of week-long themes. A typical week begins with two supporting lectures and ends with summarising comments. In between, students work in tutorial groups (two meetings a week) and individually. The topic is also illustrated using methodology introductions and demonstrations, or short laboratory sessions including discussions, carried out in a developmental biology research laboratory. Seminars help students to practise reading scientific articles in the field, extracting relevant information, and orally presenting the data. During each seminar, two students will present articles. During the seminar, there will be time for questions and discussions in which everyone is expected to take part. The week is finished with comments to the problems dealt with by the tutor groups.

Learning outcomes specified under “knowledge and understanding” will be examined through written exam. Learning outcomes specified under “skills and abilities” and “judgment and approach” will be examined during the article seminars.

Active participation in PBL tutorials and approved article presentations are needed for admission to the written exam.

Grades

The grades awarded are Pass or Fail.

Admission Requirements

To be eligible for the course students must have completed two years of study on the Bachelor of Medical Science programme in Biomedicine. Alternatively, students must have passed courses in chemistry 30 credits (including at least 15 credits of biochemistry), cell biology 30 credits, and physiology 15 credits.

Literature

Further Information

The course largely corresponds to the earlier BIM044.