Faculty of Medicine

LÄKA13, Cell Biology, 18 credits

Cellbiologi, 18 högskolepoäng

First Cycle / Grundnivå

Details of approval

The syllabus was approved by Committee for Biomedical, Medical and Public Health Education on 2014-03-25 and was last revised on 2017-10-11 by The Medical Degree Programme Board. The revised syllabus applies from 2017-10-11, spring semester 2018.

General Information

The course is included in semester 1 of the Master of Science programme in Medicine. It is a compulsory component of the programme.

Language of instruction: Swedish
The course is taught in Swedish. English-language literature is used.

Main field of studies	*Depth of study relative to the degree requirements*
Medicine	G1N, First cycle, has only upper-secondary level entry requirements

Learning outcomes

Knowledge and understanding

On completion of the course, the students shall be able to

- explain the properties of the cell's "building blocks" that are used to maintain cell integrity and support life functions

- explain the importance of three-dimensional molecular structure in the biological processes
- explain how cells obtain energy and how various energy metabolism processes are integrated and regulated at the level of the cell
- describe transport mechanisms for ions, molecules and particles into and out of the cell, and explain how these mechanisms are used by cells with various functions
- account for the principles of information transfer DNA>RNA>protein in a eukaryotic cell, and explain how expression of genetic information can vary in different cells
- explain how proteins are steered to various destinations in the cell
- account for the different stages of the cell cycle, and explain how it is regulated and synchronised
- explain how signals outside the cell can be transferred to different effector systems inside the cell, and how activity in the various intracellular signalling systems can be integrated
- explain what controls the shape of the cell and its ability to move and divide, and how cells interact with each other and their surrounding environment
- explain how molecular defects in a cell can lead to the transformation of the cell into a cancer cell.
- explain how the cells of the immune system discover infections, how the innate and adaptive defences are activated, and how the defence cells are accumulated and attack infections

Competence and skills

On completion of the course, the students shall be able to

- present and explain information from scientific articles on cell and molecular biology issues, and place this information into its general biological functional context
- work constructively in and be able to lead groups
- assess their own role in a group

Judgement and approach

On completion of the course, the students shall be able to

- identify their need of knowledge and take responsibility for their own learning

Course content

The course provides the general knowledge of cell and molecular biology required to complete the Master of Science programme in Medicine and to maintain the general biological knowledge required of a practising doctor. The student learns about the cell's structure and function and the mechanisms that control cell division and the interplay and metabolism of cells.

Course design

The course is constructed around the principles of Problem-Based Learning (PBL) with tutor-led groups in which cell and molecular biology are studied using modified clinical cases. Scientific papers and review articles are presented by students to provide insight into scientific communication. To illustrate the principles of cell biology, students will carry out a laboratory session or laboratory project.

Assessment

1. Written exam, based on the learning outcomes stated for the course (3 credits).
2. Oral exam, using a scientific article as a point of departure, based on the learning outcomes stated for the course. (12 credits).
3. Course portfolio (3 credits) consisting of:

- passed PBL work, including an article presentation
- self-assessment of PBL work
- passed laboratory session

Students must have passed the written exam in order to take the oral exam.

The examiner, in consultation with Disability Support Services, may deviate from the regular form of examination in order to provide a permanently disabled student with a form of examination equivalent to that of a student without a disability.

Subcourses that are part of this course can be found in an appendix at the end of this document.

Grades

Marking scale: Fail, Pass.

Entry requirements

General and courses corresponding to the following Swedish Upper Secondary School Programs: Biology 2, Physics 2, Chemistry 2 and Mathematics 4.

Subcourses in LÄKA13, Cell Biology

Applies from H07

0701 Oral Test, 12,0 hp
Grading scale: Fail, Pass
0702 Activity Passed, 3,0 hp
Grading scale: Fail, Pass
0703 Written Test, 3,0 hp
Grading scale: Fail, Pass