



Course syllabus

Faculty of Health and Life Sciences

Department of Chemistry and Biomedical Sciences

1BK006 Farmaceutisk cellbiologi, 7,5 högskolepoäng

1BK006 Pharmaceutical cell biology, 7.5 credits

Main field of study

Biomedical Science, Pharmacy

Subject Group

Medicine

Level of classification

First Level

Progression

G1F

Date of Ratification

Approved 2010-01-26

Revised 2017-02-02 by Faculty of Health and Life Sciences.

The course syllabus is valid from spring semester 2017

Prerequisites

General entry requirements and 15 credits in chemistry, including 7.5 credits in biochemistry and 7.5 credits in cell biology, or the equivalent.

Objectives

After completing the course, the student should be able to:

- explain the different phases of the cell cycle, the molecular and cellular mechanisms that regulate the transition between these phases, and how drugs can affect this regulation
- provide an overview of the phases of mitosis and meiosis and the structure and function of the cell spindle
- describe the molecular and cellular mechanisms that initiate and regulate the various apoptosis processes in cells
- describe oogenesis and spermatogenesis
- describe the cellular mechanisms that regulate the fertilisation process
- provide an overview of the cellular processes involved in stem cell differentiation and the formation of differentiated cells
- explain basic genetic concepts, describe the origin and consequences of mutations and chromosomal abnormalities, and explain Mendelian genetics and

- its relation to meiosis
- describe the molecular and cellular mechanisms of oncogenesis
- provide an overview of the concepts of neoplasia, cancer, and cancer development
- describe different types of conventional cytostatic drugs and cancer-inhibiting biological drugs and their molecular actions
- explain the methodology behind the cultivation of mammalian cells
- present and discuss their laboratory results in writing.

Content

The course includes the following elements:

- the cell cycle and its regulation at the molecular and cellular level
- mitosis and meiosis
- cellular mechanisms in fertilisation and differentiation
- molecular and cellular mechanisms of cell apoptosis
- basic genetics and chromosomal abnormalities
- molecular and cellular oncogenes
- neoplasia and cancer
- cancer-inhibiting drugs and their molecular mechanisms
- Laboratory exercises illustrating theoretical aspects of the course and providing skills training in eukaryotic cell culture techniques.

Type of Instruction

Instruction is delivered in the form of lectures, laboratory work, seminars, and group exercises. Laboratory sessions, seminars, and specified lectures are mandatory. For distance students, access to the internet is required.

Examination

The course is assessed with the grades Fail (U), Pass (G) or Pass with Distinction (VG).

The theoretical parts of the course are examined through an individual written exam at the end of the course and assessed with the grades Fail, Pass, and Pass with Distinction. In order to receive the grade of pass for the course, the student must have passed both the written examination and the laboratory work. Grading criteria for the grade of Pass are based on the objectives outlined above.

A first resit examination is offered within six academic weeks.

Course Evaluation

During or shortly after the course, a written course evaluation should be conducted. The result and analysis of the course evaluation should be promptly communicated to the students who have taken the course. Students who are taking the course when it is offered the next time should be informed of the result at the course introduction. The course evaluation is anonymous.

Required Reading and Additional Study Material

Alberts et al. *Essential Cell Biology*. Garland Science. The latest edition.

Pecorino, Lauren. *Molecular Biology of Cancer*. Oxford University. The latest edition.

Wilson K & Walker J. *Principles and Techniques of Biochemistry and Molecular Biology*. Cambridge university. The latest edition.

