BIMA35 Pathobiology and Pharmacology

13.5 higher education credits First cycle

General Information

Main field
Biomedicine

Subject
Pathobiology and pharmacology

Type of course
The course is mandatory in the Bachelor of Medical Science in Biomedicine programme and is taught in term 4.

Language of instruction
Swedish

Learning Outcomes

Knowledge and understanding
On completion of the course, students shall be able to:
- explain the basic principles of pharmacokinetics and carry out simple pharmacokinetics calculations;
- explain the known and possible cellular and molecular pathophysiological mechanisms underlying common diseases, including examples from infection medicine, inflammatory conditions and internal medicine;
- explain the basic principles of pharmacodynamics;
- describe existing and possible routes of pharmacological intervention at molecular and cellular level for the diseases studied;
- explain the complexity of organ system-related diseases and pharmacological and non-pharmacological treatment of these.

Skills and abilities
On completion of the course, students shall be able to:
- formulate hypotheses for the pathological causes of disease;
- carry out microscope analysis of normal and pathological preparations and identify differences between them;
- gather knowledge from various sources and be able to present them for peers using language appropriate to the subject and at the level of the course literature;
- work in groups and lead them so that the work yields results.
Judgment and approach
On completion of the course, students shall be able to:
- assess the advantages and disadvantages of pharmacological intervention;
- assess ethical aspects of increasing knowledge of diseases and their underlying causes.

Course Content
The course integrates previously acquired knowledge of physiology, cell biology, microbiology, immunology and chemistry with pathobiology and pharmacology through the study of a few selected diseases. It aims to provide a holistic perspective of the diseases and illuminate the need of a broad knowledge base to be able to explain them at molecular, cellular and organ level. The course also introduces pharmacological terms and the mechanisms behind the effects of drugs. An introduction is provided to ethical issues in the subject.

Subjects examined
A pass on the course is worth 13.5 credits and requires a pass in examinations, active participation in all group exercises and laboratory work/presentations. A pass must be achieved on submitted tasks. Students who have failed one section are, as far as possible, provided with an opportunity to remedy this during the course. If this is not possible, then they must wait until the course is taught again.

Instruction and Examination
The course is based on problem-based learning (PBL) and consists of week-long themes. A typical week contains one or more lectures. During the week, students work in tutorial groups (two meetings a week) and individually. The course begins with an introduction to pharmacokinetics and a review of basic pharmacological concepts and the principles of administration, distribution, metabolism and elimination (ADME). This then serves as a basis for the pharmacology studied in the coming weeks.

The course then continues with weekly themes which aim to illustrate a selection of diseases. This takes place in as broad a perspective as possible, with discussion of underlying causes, symptoms, diagnosis, pharmacological and non-pharmacological treatment, and ethical aspects. Laboratory demonstrations are used, e.g. to show the complexity of pharmacological intervention in organ disease, or diagnostic potential. Microscope exercises are used to aid morphological understanding.

Examination takes place through written examination. Two occasions for examination will be scheduled soon after the course. Re-examination will be planned by individual agreement.

Grades
The grades awarded are Pass or Fail.

Admission Requirements
At least 13 credits in Cell Biology (BIMA10 or MOBA01), 15 credits in basic chemistry (one of the courses KEMA00, KEMA01, KEMA02, KEMA03), 15 credits of cell chemistry (MOBA02), a completed 15-credit course in physiology (BIMA34 or BIOC01) and one of the courses BIOA01, MOBA03, BIMA30 or BIMA31.
Literature
Recommended literature will be listed separately. An updated list will be posted on the course website a month before the course starts. Additional compendia will be issued for exercises/laboratory exercises. Scientific papers will be issued during the course.

Further Information
The course is a shorter version of BIM043.