

## Molecular and Medical Pharmacology

Molekylär och medicinsk farmakologi

7.5 credits

Single subject course

8FA225

Valid from: 2022 Spring semester

<b>Determined by</b>	<b>Main field of study</b>	
Chairman of The Board for First and Second Cycle Programmes	Medical Biology	
<b>Date determined</b>	<b>Course level</b>	<b>Progressive specialisation</b>
2013-10-30	Second cycle	A1X
<b>Revised by</b>	<b>Disciplinary domain</b>	
Chairman of The Board for First and Second Cycle Programmes	Medicine	
<b>Revision date</b>	<b>Subject group</b>	
2021-08-16	Medical Biology	
<b>Offered first time</b>	<b>Offered for the last time</b>	
Autumn semester 2014		
<b>Department</b>	<b>Replaced by</b>	
Institutionen för biomedicinska och kliniska vetenskaper		

## Entry requirements

- Bachelor's degree in a major subject area with relevance for biomedical sciences, equivalent to a Swedish Kandidatexamen with at least 90 ECTS credits in the following subjects:
  - biochemistry
  - cell biology
  - molecular biology
  - genetics
  - gene technology
  - microbiology
  - physiology
  - immunology
  - histology
  - anatomy
  - pathology
- English corresponding to the level of English in Swedish upper secondary education  
Exemption from Swedish

## Intended learning outcomes

In this course the student will acquire an advanced knowledge of the mechanisms of drug action on a molecular and cellular level to understand the medical effects of drugs. The course comprises in-depth knowledge in pharmacodynamics (how drugs act) and includes recent research within selected fields of pharmacology.

### LEARNING OUTCOMES

By the end of the course the students will be able to:

#### *Knowledge and understanding*

- Understand the mechanisms of action of different drugs on a molecular, cellular and physiological level  
Analyze drug effects on a molecular to medical level  
Analyze advanced models of drug/receptor protein interactions

#### *Competence and skills*

- Apply an advanced knowledge in pharmacological sciences in order to design and perform laboratory studies and to critically interpret obtained results

#### *Judgement and approach*

- Evaluate and analyze complex pharmacological questions presented in the scientific literature

## Course content

- Current concept of drug/receptor protein interaction
- Mechanisms and medical effects of drugs that interact with G-protein coupled receptors
- Drugs that interact with transmembrane proteins
- Drugs that interfere with intracellular target proteins
- Drugs that affect the neuron and neurotransmission
- Pharmacokinetics
- Recent research within some field of pharmacology; pharmacodynamics and pharmacokinetics

## Teaching and working methods

Linköping University Master's Programme in Experimental and Medical Biosciences applies student-centered learning among which Problem Based Learning (PBL) is one pedagogical philosophy and method. To prepare the students for future employment, practical and experimental work in laboratory settings are important parts of the programme in courses as well as in individual projects.

Specific: In this course lectures, tutorial groups, seminars and laboratory work are used

## Examination

### COMPULSORY ITEMS

Active participation in the compulsory parts is necessary to pass the course, and assessment of them is carried out continuously. Compulsory parts in this course are: tutorial groups, group assignments- including laboratory work and in-depth studies, and seminars.

### EXAMINATION

Individual written examination.

### CHANGE OF EXAMINERS

Students who have failed the course or part of the course twice are entitled to request another examiner for the following examination occasion, unless specific reasons are present.

If special circumstances prevail, and if it is possible with consideration of the nature of the compulsory component, the examiner may decide to replace the compulsory component with another equivalent component.

### Application for examination

Instructions on how to apply for examinations are given prior to the beginning of each course.

### Re-examination

The date for re-examination should normally be announced by the date of the regular examination at latest; in which case the scope must be the same as at the regular examination.

### **Examination for students with disabilities**

If the LiU coordinator for students with disabilities has granted a student the right to an adapted examination for a written examination in an examination hall, the student has the right to it.

If the coordinator has recommended for the student an adapted examination or alternative form of examination, the examiner may grant this if the examiner assesses that it is possible, based on consideration of the course objectives.

An examiner may also decide that an adapted examination or alternative form of examination if the examiner assessed that special circumstances prevail, and the examiner assesses that it is possible while maintaining the objectives of the course.

### **Nomination of another examiner**

A student who has taken two examinations in a course or a part of a course without obtaining a pass grade is entitled to the nomination of another examiner, unless there are special reasons to the contrary.

## **Grades**

Three-grade scale, U, G, VG

## **Other information**

Planning and implementation of the course is to be based on the wordings in the course syllabus. A course evaluation is compulsory for each course and should include how the course is in agreement with the course syllabus. The course coordinator will analyse the course evaluation and propose appropriate development of the course. The analysis and proposal will be returned to the students, the Director of Studies, and as needed to the Education Board, if related to general development and improvement.

The course is carried out in such a way that knowledge of gender, gender identity/expression, ethnicity, religion or other belief system, disability, sexual orientation and age is addressed, highlighted and communicated as part of the programme.

If the course is cancelled or undergoes major changes, examination is normally offered under this course syllabus, at a total of three occasions, within/in connection to the two following semesters, of which one in close proximity to the first examination.