



**Karolinska
Institutet**

Course syllabus for

Pharmacology and Toxicology, 10 credits

Farmakologi och toxikologi, 10 hp

This course syllabus is valid from spring 2013.

Please note that the course syllabus is available in the following versions:

Spring2009 , Spring2011 , Spring2013 , Spring2014 , Spring2015

Course code	1BI008
Course name	Pharmacology and Toxicology
Credits	10 credits
Form of Education	Higher Education, study regulation 2007
Main field of study	Biomedicine
Level	First cycle, has only upper-secondary level entry requirements
Grading scale	Excellent, Very good, Good, Satisfactory, Sufficient, Fail, Fail
Department	Department of Physiology and Pharmacology
Decided by	Programnämnden för biomedicinprogrammen
Decision date	2008-10-13
Revised by	Programnämnd 7
Last revision	2012-11-07
Course syllabus valid from	Spring 2013

Specific entry requirements

At least the grade E at the courses in Introduction to biomedical science (1BI001) and General and organic chemistry (1BI000), and at least the grade pass at the parts Basal metabolism and Biochemical laboratory methods (3+2 credits) of the course Medical biochemistry (1BI002), and the part Cell biology (6 credits) of the course Cell biology and genetics (1BI003).

Objectives

Upon completion of the course, the student should be able to:

- describe basic pharmacological principles within the field of pharmacokinetics (i.e. principles of absorption, distribution and elimination of drugs),
- describe interindividual differences in drug metabolism as well as interactions between different drugs,
- describe different classes of receptors which interact with drugs, and describe intracellular transduction mechanisms coupled to some of these receptors,
- explain principles for central and peripheral neurotransmission,
- describe mechanisms of action of drugs within the following fields: neuropsychopharmacology,

general anaesthesia, local anaesthesia, analgesia, cardiovascular pharmacology, diuretic drugs, respiratory pharmacology, and gastrointestinal pharmacology,

- describe and explain toxicological principles, e.g. dose-effect relationships and methods for studying bioactivation and the toxicity of xenobiotics.

Content

Medication is a very important part in the overall treatment of various diseases. This course intends to equip the students with basic knowledge of how drugs affect cells, organs and, not the least, all organisms. The pharmacological part will mainly focus on general pharmacological principles. The toxicology part intends to give the students knowledge of toxicological principles such as dose response, and how bioactivation and toxicity of xenobiotic substances are studied.

Pharmacokinetics and Pharmacodynamics, 2 hp This component of the course contains pharmacokinetics as well as effects of pharmaceuticals on different diseases within e.g. neuropharmacology and cardiovascular pharmacology. **Laboratory work in pharmacology, 1.5 hp** Three laboratory practices. **Group assignments in pharmacology and toxicology, 2.5 hp** This component constitutes three group seminars and a PBL task in toxicology. **Integration of pharmacology and toxicology, 4 hp** Integrates of the content of the course.

Teaching methods

The course consists of lectures, supervised laboratory practicals, and supervised group seminars. The group seminars will review and substantially expand upon the material provided in the lecture series. These seminars train the students to independently search for and assess relevant information, and provide an opportunity to discuss problems and theoretical concepts with faculty members that are actively involved in research in the fields above. The course also includes a seminar task which will be solved by using the pedagogical approach “Problem based learning”.

Examination

Pharmacokinetics and pharmacodynamics (2 credits). Examined through an oral quiz graded as fail/pass.

Laboratory work in pharmacology (1.5 credits). Graded as fail/pass. The students have to participate in all laboratory practicals to be graded as pass.

Group assignment in pharmacology and toxicology (2.5 credits). Graded as fail/pass. The students have to participate actively in all group works to be graded as pass.

Integration of pharmacology and toxicology (4 credits). Examined by a written exam graded as F/Fx/E/D/C/B/A.

The grade of the course is based on the grade of the component Integration of pharmacology and toxicology.

Compulsory participation

The course director assesses if and, in that case, how absence can be compensated. Before the student has participated in all compulsory parts or compensated absence in accordance with the course director's instructions, the student's results for respective part will not be registered in LADOK.

Limited number of examinations or practical training sessions

Students who have not passed the regular examination are entitled to participate in five more examinations. If the student is not approved after four examinations, he/she is recommended to retake the course at the next regular course date, and may, after that, participate in two more examinations. If the student has failed six examinations/tests, no additional examination or new admission is provided.

The number of times that the student has participated in one and the same examination is regarded as an examination session. Submission of a blank examination is regarded as an examination. An examination

for which the student registered but not participated in, will not be counted as an examination.

Transitional provisions

After each course occasion there will be at least six occasions for the examination within a two-year period from the end of the course.

Other directives

The course language is English.

Course evaluation is carried out in accordance with the guidelines established by the Board of Higher Education.

Oral evaluation in the form of course council meetings will be carried out during the course.

Literature and other teaching aids

Mandatory literature

Rang, H. P.; Dale, M. Maureen

Rang and Dale's pharmacology Pharmacology

7. ed. : Edinburgh : Churchill Livingstone, 2011 - 792 p.

ISBN:978-0-7020-3471-8 (pbk.) LIBRIS-ID:12148717

[Library search](#)

Reference literature

Casarett, Louis J.; Klaassen, Curtis D.4 ed; Doull, John

Casarett and Doull's toxicology: the basic science of poisons

7. ed. : New York : McGraw-Hill, cop. 2008 - xv, 1310 s.

ISBN:978-0-07-147051-3 (hardcover : alk. paper) LIBRIS-ID:10616935

URL: <http://www.loc.gov/catdir/toc/ecip0715/2007015656.html>

[Library search](#)

FASS : förteckning över humanläkemedel.

Stockholm : Läkemedelsindustriföreningen (LIF), 2012 - 2 vol. (4273 s.)

ISBN:978-91-85929-10-8 (A-L) ISSN:1400-6588 LIBRIS-ID:12488996

URL: [Länk](#)

[Library search](#)

Läkemedelsboken 2011-2012

Uppsala : Läkemedelsverket, 2011 - 1269 s.

ISBN:978-91-979605-0-2 LIBRIS-ID:12199360

[Library search](#)