



**Karolinska
Institutet**

Course syllabus for

Molecular and Cellular Toxicology, 8.5 credits

Molekylär och cellulär toxikologi, 8.5 hp

This course syllabus is valid from autumn 2023.

Course code	4TX037
Course name	Molecular and Cellular Toxicology
Credits	8.5 credits
Form of Education	Higher Education, study regulation 2007
Main field of study	Toxicology
Level	AV - Second cycle
Grading scale	Pass, Fail
Department	Institute of Environmental Medicine
Decided by	Education committee IMM
Decision date	2023-03-06
Course syllabus valid from	Autumn 2023

Specific entry requirements

At least the grade pass on all courses within the first year of the Master's Programme in Toxicology.

Objectives

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

Regarding knowledge and understanding

- explain recent advances within research and development of methodologies in molecular and cellular toxicology,

Regarding skills and ability

- analyse and discuss relevant literature,
- apply an appropriate method to assess the reliability of scientific studies,
- choose and use appropriate statistical methods for analysis of results from toxicity studies,

Regarding judgment and approach

- demonstrate ability to make scientific assessment by analysis and discussion of scientific literature and/or seminars.

Content

The course is divided into the following parts:

Biostatistics, 2.5 hp

Grading scale: GU

Advanced statistical methods for the analysis of repeated observations, nonlinear dose-response curve estimation, survival data, outcome transformations, and missing data.

Molecular and cellular toxicology, 6.0 hp

Grading scale: GU

Recent advances within research and development of methodologies in molecular and cellular toxicology. Methods for the assessment of reliability of studies in toxicology.

Teaching methods

The course is an advanced course and it is assumed that students take responsibility to acquire knowledge. Teaching will be in the form of lectures, seminars, assignments, journal clubs, workshops and computer exercises.

Examination

Biostatistics (2.5 credits). The examination consists of a written examination. Graded Fail/Pass.

Cellular and molecular toxicology (6 credits). The examination consists of oral and/or written assignments. Graded Fail/Pass.

For the grade Pass in the course a Pass is required for both parts.

If there are special grounds, or a need for adaptation for a student with a disability, the examiner may decide to deviate from the syllabus's regulations on the examination form, the number of examination opportunities, the possibility of supplementation or exemptions from the compulsory section/s of the course etc. Content and learning outcomes as well as the level of expected skills, knowledge and abilities may not be changed, removed or reduced.

Compulsory participation:

Attendance at the seminars, journal clubs and workshops. The examiner 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 examiner's instructions, the student's results for respective part will not be registered. Absence from a compulsory activity may result in that the student cannot compensate the absence until the next time the course is given.

Transitional provisions

Other directives

The course is given in English.

Literature and other teaching aids

Literature

Course literature is scientific papers and material handed out during the course.