



**Karolinska  
Institutet**

Course syllabus for

## **Molecular and Cellular Toxicology, 10 credits**

Molekylär och cellulär toxikologi, 10 hp

This course has been cancelled, for further information see Transitional provisions in the last version of the syllabus.

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

Autumn2019 , Autumn2020 , Autumn2021

Course code	4TX034
Course name	Molecular and Cellular Toxicology
Credits	10 credits
Form of Education	Higher Education, study regulation 2007
Main field of study	Toxicology
Level	AV - Second cycle
Grading scale	Fail (U) or pass (G)
Department	Institute of Environmental Medicine
Decided by	Utbildningsnämnden IMM
Decision date	2019-03-07
Revised by	Education committee IMM
Last revision	2021-03-08
Course syllabus valid from	Autumn 2021

### **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, 7.5 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 the area of toxicological research.

## 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 (7.5 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

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 is given in English.

Course evaluation will be 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**

### **Literature**

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