

## **Tumour Biology**

Tumörbiologi

7.5 credits

Single subject course

8FA229

Valid from: 2022 Spring semester

<b>Determined by</b>		<b>Main field of study</b>	
The Board for First and Second Cycle Programmes at the Faculty of Health Sciences		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		Autumn semester 2024	
<b>Department</b>		<b>Replaced by</b>	
Institutionen för biomedicinska och kliniska vetenskaper		8FA340	

## 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 (Engelska 6)  
Exemption from Swedish

## Intended learning outcomes

The purpose of the course is for the students to obtain advanced knowledge about tumour development in general including the genetic basis of human cancer. Furthermore, the course will give an overview of cancer by site taking into account different clinical and biological aspects as well as the occurrence of specific gene alterations. The course is elective semester one or three in the Master's Programme in Experimental and Medical Biosciences.

### LEARNING OUTCOMES

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

#### Knowledge and understanding

- Analyze and discuss specific capabilities of cancer cells and how the biological/genetic alterations occur for normal cell to tumor cell
- Integrate knowledge in tumour biology in different types of malignancies in relation to environmental factors, gender, age, hormonal influence, and molecular alterations

#### Competence and skills

- Design an experiment in order to analyse how the alterations in cell signalling may interfere with the cellular response to damage

#### Judgement and approach

- Analyze and assess experimental results in tumour biology
- Evaluate and discuss new hypotheses in the field of cancer research

## Course content

- Organ specific cancer: different spectra of malignancies in relation to race, gender, age, and molecular biology
- Mechanisms of tumour development, invasion and metastasis
- Concepts in cancer genetics including oncogene, tumour suppressor gene, mismatched repaired genes, and apoptosis related genes
- Control of the cell cycle and cancer
- Angiogenesis and cancer
- Hormones and cancer
- Stem cells and cancer
- Tumour immunology
- The principle of tumour diagnosis and treatment

## Teaching and working methods

General: 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, laboratory work, and seminars.

### EXAMINATION

Individual written examination.

Individual written report of laboratory work.

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 conducted in such a way that there are equal opportunities with regard to sex, transgender identity or expression, ethnicity, religion or other belief, disability, sexual orientation and age.

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.

If special circumstances prevail, the vice-chancellor may in a special decision specify the preconditions for temporary deviations from this course syllabus, and delegate the right to take such decisions.