



Faculty of Medicine

## VMFN26, Cancer and Stem Cell Biology, Cancer Track, 30 credits

*Cancer- och stamcellsbiologi, Inriktning cancer, 30 högskolepoäng*  
Second Cycle / Avancerad nivå

---

### Details of approval

The syllabus was approved by Committee for Biomedical, Medical and Public Health Education on 2015-05-27 to be valid from 2015-05-27, spring semester 2016.

### General Information

Freestanding course. The course is intended as a preparation for third cycle studies in relevant fields at faculties of medicine, science or engineering and for students with a first or second cycle degree in science, biomedicine or medicine.

The course is delivered full-time.

*Language of instruction:* English

*Main field of studies*

Biomedicine

*Depth of study relative to the degree requirements*

A1N, Second cycle, has only first-cycle course/s as entry requirements

### Learning outcomes

The aim of the course is to enable students to acquire specialised theoretical and practical knowledge of cancer biology, from basic research to clinical applications of research findings. A further aim of the course is to provide students with practical laboratory experience through a project related to cancer.

### Knowledge and understanding

For a pass on the course, the students shall be able to

- define the concept of neoplasia from the perspectives of clinical practice, morphology and molecular biology

- account for the terminology used to classify tumour diseases and current methods within tumour diagnosis
- explain the molecular mechanisms currently known to cause cancer, including common risk factors, cancer etiology and the distinctive biological properties of cancer cells
- compare the biological properties of tumour cells and normal stem cells and, based on this, critically discuss the concept tumour stem cell from the perspectives of research, clinical practice and cell biology
- account for the most common experimental and bio-informatic methods of present-day cancer research, including animal models, and explain the theories behind the methods in sufficient detail to allow the strengths, weaknesses and appropriate applications to emerge
- provide examples of current issues in cancer research, explain the relevance of these issues from clinical and ethical perspectives, and describe the general scientific history of the issues

### **Competence and skills**

For a pass on the course, the students shall be able to

- independently formulate a current issue in the area of cancer research, select relevant methods to address the issue and, based on this, write a project plan including relevant background information, an appropriate aim, and a realistic work plan
- employ laboratory methods of relevance to the execution of a project within cancer research
- independently document research results from a project within cancer research
- compile, critically analyse and assess research results
- write a report about their own project in accordance with the instructions of a scientific journal, at least including relevant background information, research issue, description of the material and methods, result, and a discussion of their findings in relation to previous research
- identify and analyse the ethical issues of a research project related to cancer and determine if it requires ethical vetting

### **Judgement and approach**

On completion of the course, the students shall be able to

- argue for the need of documentation of experimental activities
- assess scientific information within the field of cancer
- assess ethical aspects of a research project within the field of cancer

### **Course content**

The course starts with 2 weeks of preparation of the project work and lectures and seminars led by experienced researchers and physicians. The students select a project from a set of available projects and write a project plan that is to be approved by the planning group. This is followed by the laboratory component of the course which is combined with seminars and group work. The aim of the group work is to continually follow up the project work with regard to supervision, data collection and practical research methodology. The students are required to actively prepare the seminars/group work through reading and review of hand-outs and/or texts produced by the students for submission and assessment, followed by individual oral and

written feedback.

## Course design

The teaching consists of lectures, seminars, group work, reading assignments, presentations related to current research fields and project work that includes laboratory components.

All timetabled activities except lectures are compulsory.

## Assessment

The assessment is based on four components: two written exams, a course portfolio and a project that is to be presented in speech and writing.

The written exams are used to assess the learning outcomes of knowledge and understanding.

The course portfolio is used to assess the learning outcomes of competence and skills and judgement and approach through active participation in group work, oral presentations and written assignments on ethical aspects related to the project.

*Examinations:*

- Written exam (4.5 credits)
- Project plan (2 credits)
- Course portfolio (7.5 credits)
- Written and oral presentation of project work (16 credits)

*Subcourses that are part of this course can be found in an appendix at the end of this document.*

## Grades

Marking scale: Fail, Pass.

## Entry requirements

To be admitted to the course, students must have a Bachelor's degree (180 credits) in a field of science, biomedicine, medicine or the equivalent. International students are exempted from the general entry requirement of proficiency in Swedish but all students are required to have proficiency in English corresponding to English 6 from Swedish upper secondary school.

## Further information

Required reading: Journal articles presenting original research and surveys. Required reading is presented prior to the start of the course and throughout the course.

## Subcourses in VMFN26, Cancer and Stem Cell Biology, Cancer Track

Applies from V16

- 1501 Written examination, 4,5 hp  
Grading scale: Fail, Pass
- 1502 Project plan, 2,0 hp  
Grading scale: Fail, Pass
- 1503 Course Portfolio, 7,5 hp  
Grading scale: Fail, Pass
- 1504 Written and oral project report, 16,0 hp  
Grading scale: Fail, Pass