Course syllabus for

Frontiers in Translational Medicine, 16.5 credits

Kunskapsfronten inom translationell medicin, 16.5 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:
Autumn2015 , Autumn2016

Course code	5MT000
Course name	Frontiers in Translational Medicine
Credits	16.5 credits
Form of Education	Higher Education, study regulation 2007
Main field of study	Molecular Life Science
Level	AV - Second cycle
Grading scale	Pass with distinction, Pass, Fail
Department	Department of Medicine, Solna
Decided by	Programme Committee 7
Decision date	2015-03-25
Course syllabus valid from	Autumn 2015

Specific entry requirements

A Bachelor’s degree or a professional degree worth at least 180 credits . At least 10 credits should be in mathematics and
20 credits in life sciences (such as cell biology, biochemistry, microbiology or molecylar biology). And proficiency in English
equivalent to English B/English 6.

Objectives

The aims of the course are that the student should acquire knowledge about human biology, disease aetiology and pathogenesis, understand why and how bioinformatics tools improve understanding of human biology, disease aetiology and pathogenesis, as well as the implications of these interdisciplinary approaches for the discovery of novel diagnostic tools and pharmaceuticals. This course serves as an introduction to the whole Master’s Programme.

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

Regarding knowledge and understanding

- describe and explain fundamental functions and mechanisms at the level of the cell and organ in relation to the whole human body and be able to apply the same to the development of disease and treatment,
- describe and explain basic and fundamental principles (theory) and work-flow (practice) of bioinformatics tools,
- describe and explain the application of bioinformatics tools to the study of human diseases,

Regarding skills and ability

- integrate understanding of bioinformatics tools with molecular biology in studying human diseases (molecular medicine),
- differentiate between the pros and cons of bioinformatics tools commonly used in molecular medicine.
- search for, collect, evaluate, interpret and discuss (in both written and oral forms) specialised information in relation to topics covered within the course,

Regarding judgement and approach

- reflect on ethical aspects of research involving human and animal material,
- take responsibility for his/her own learning.

Content

The course focuses on common human diseases such as metabolic diseases (eg obesity, diabetes and cardiovascular diseases), cancer and inflammation/immunological disorders. Bioinformatics tools used within the field of advanced translational research are reviewed.

The main theme is to gain understanding of common human diseases from a translational medicine perspective involving high-throughput data analyses. A central concept is to understand why and how huge datasets of cellular, molecular biological and molecular genetic data are generated from a biomedical perspective and applied to improve our knowledge of human diseases.

The course is divided into the following parts:

Disease mechanisms and translational medicine, 6 hp Advanced biomedical knowledge of different diseases covered within the course and basic knowledge of bioinformatics.

Practicals and demonstrations, 2 hp Theoretical background (concerning diseases covered within the course) is integrated with practical methodologies utilising appropriate bioinformatics tools.

Journal club, 4.5 hp In depth studies of recent scientific articles. Emphasis is placed on individual preparation, ability to perform oral presentations and active participation in the analytical discussions of the theories and scientific concepts.

Integration of theory and practice, 4 hp In depth self-directed studies on the integration of theoretical biomedical knowledge of different diseases with appropriate bioinformatics tools.

Teaching methods

The course is at master's level, where students are assumed to be familiar with the most common study

methods in higher education. The fundamental pedagogical view is based on learning as an active research process. The structured learning activities include workshops, seminars, expert lectures and practical sessions. Particular emphasis is placed on peer-learning and self-studies (both theoretical and practical) in groups and at the individual level. Students are mentored to facilitate self-initiated learning activities.

Examination

Disease mechanisms and translational medicine (6 credits). The examination consists of oral or written presentation of assignments handed out during the course. The assignments comprise questions and problems covering different course topics. Written work is to be handed in before the end of the course according to the times specified in the schedule. Graded Fail/Pass.

Practicals and demonstrations (2 credits). The examination consists of active participation in demonstrations and practical workshops and evaluation of the student’s practical performance. Graded Fail/Pass.

Journal club (4.5 credits).The examination consists of oral and written analysis of scientific articles. Graded Fail/Pass.

Integration of theory and practice (4 credits). The examination consists of a written exam. Graded Fail/ Pass/Pass with distinction.

The final grade for the whole course is based on the grade for the part Integration of theory and practice. To pass the whole course the grade pass must have been obtained for all parts of the course.

Compulsory participation
The introduction to the course, seminars, group assignments and demonstrations as well as presentations and lectures linked to these parts are compulsory. 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.

Limitations of the 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 recommend 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 endof the course.

Other directives

The course language is 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

Specific study material and reference articles will be provided during the course.