Course syllabus for

Frontiers in Translational Medicine, 22 credits

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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:
Autumn2011 , Autumn2012 , Autumn2013 , Autumn2014 , Autumn2015 , Autumn2016 , Autumn2017 , Autumn2018 , Autumn2019 , Autumn2020

Course code	4BI080
Course name	Frontiers in Translational Medicine
Credits	22 credits
Form of Education	Higher Education, study regulation 2007
Main field of study	Biomedicine
Level	AV - Second cycle
Grading scale	Pass with distinction, Pass, Fail
Department	Department of Medicine, Solna
Participating institutions	• Department of Microbiology, Tumor and Cell Biology • Department of Neuroscience • Department of Neurobiology, Care Sciences and Society • Department of Biosciences and Nutrition • Department of Oncology-Pathology • Department of Clinical Neuroscience
Decided by	Programnämnd 7
Decision date	2011-05-10
Revised by	Programnämnd 7
Last revision	2013-03-21
Course syllabus valid from	Autumn 2013

Specific entry requirements

Bachelors degree or professional qualification worth at least 180 credits in biomedicine, biotechnology, cellular and molecular biology or medicine. In addition, knowledge of English equivalent to English B (with a minimum Pass) are required.

Objectives

The aims of the course are that the student should understand the connection between how changes at

molecular level can influence basic functions in individual cells and/or organs in relation to the human body; special focus is placed on changes from sound to diseased tissue and connection to symptoms, diagnosis and treatment of different diseases.

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

Regarding knowledge and understanding

- explain basic functions and mechanisms at the molecular level in individual cells and in organs and put it in relation to the human body as a whole,
- apply the above knowledge to processes such as disease development, diagnosis and treatment,
- demonstrate an understanding of how and when to use the most important methods in molecular medicine.

Regarding skills and ability

- be able to participate actively in project planning (study design) and implementation,
- be able to evaluate and present results from a research project both orally and in writing,
- be able to find relevant original-, review- and other literature regarding issues related to biomedicine, and from these extract information for problem-solving, experimental design and compilations,
- be able to present and discuss scholarly articles,
- give peer feedback to classmates regarding oral presentations and written assignments.

Regarding assessment ability and attitudes

- take responsibility for his/her own learning,
- show an ethical, critical and scholarly attitude to research data and scientific presentations.

Content

The main theme is translational medicine -”from molecule to patient and from patient to molecule”. How cellular and molecular biological knowledge is applied for an understanding of different diseases and for design of new treatments or diagnostics will constitute the basis for all parts of the course, see below. The course particularly focuses on cancer, infectious diseases, cardiovascular diseases and the diseases of the nervous system. Inflammation is brought up as a sub-theme regarding all these diseases. Cell biology-related processes such as cell-cell interactions, intracellular signalling and cell death are covered. Technologies used within advanced translational research, such as relevant cellular and molecular biological technologies, biobanks and the methodology of the –omics are reviewed.

The course is divided into the following parts:

Inflammation, cardiovascular and neurological diseases, 6 hp Advanced biomedicine within inflammation/autoimmunity, cardiovascular diseases as well as neurological and psyciatric diseases, including experimental methodology. Integrating theory and practical work during the course. **Cancer and infection, 4 hp** Advanced biomedicine within cancer and infection including experimental methodology. Integrating theory and practical work during the course. **Group seminars, 4 hp** Group seminars as well as laborations and demonstrations. **Journal club, 8 hp** In depth studies of scientific articles performed in smaller groups, with special emphasis on individual preparatory work. This part of the course integrates ability to prepare oral presentations, written explanations as well as taking part in analytical discussions in a smaller group.

Teaching methods

The course is a course at the master's level, where the 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 teaching is given as group tuition, expert lectures, studies of scholarly work and laboratory sessions. Reading assignments of research articles for journal clubs. In-depth studys in groups with an emphasis on own work and literature studies. Peer-to-peer reviews.

Examination

Inflammation, cardiovascular, neurological and psyciatric diseases (6 credits). The examination consists of a written exam. Graded Fail/Pass/Pass with distinction.

Cancer and infection (4 credits). The examination consists of a written exam. Graded Fail/Pass/Pass with distinction.

Group seminars (4 credits). The examination consists of active participation in the seminars. Graded Fail/Pass.

Journal club (8 credits).The examination consists of oral and written analysis of scientific article. Graded Fail/Pass.

The course grade is the sum of the grades for Inflammation, cardiovascular and neurological diseases and Cancer and infection. To pass the whole course the grade pass must have been obtained for all parts on 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 end of 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

The student is expected to have education that equals literature used during Karolinska Institutet BSc in Biomedicine. http://pingpong.ki.se/public/courseId/7085/lang-en/publicPage.do?item=3923765 and the most importatn text books listed. Other text books with equal information to the literature listed below

can be used. Specific study material will be handed out during the course and provides the basis for the examination questions. The student will also retrieve web-based information.

Medical physiology : principles for clinical medicine

Rhoades, Rodney; Bell, David R.

3. ed. : Philadelphia : Lippincott Williams & Wilkins, cop. 2009 - 816 s.
ISBN:978-0-7817-6852-8 LIBRIS-ID:10702457
Library search

Murray, Patrick R.; Rosenthal, Kenneth S.0 319233; Pfaller, Michael A.

Medical microbiology

6. ed. : Philadelphia : Mosby/Elsevier, cop. 2009 - x, 947 s.
ISBN:0-323-05470-6 LIBRIS-ID:11179944
Library search

Neuroscience

Purves, Dale

4th ed. : Sunderland, Mass. : Sinauer, cop. 2008 - 857 s. + (52 s.)
ISBN:978-0-87893-697-7 LIBRIS-ID:10531974
Library search

Weinberg, Robert A.

The biology of cancer

New York ;a London : Taylor & Francis, cop. 2007 - xix, 796, 4, 20, 24 s.
ISBN:0-8153-4076-1 LIBRIS-ID:10202722
Library search

Vander's Human Physiology : the mechanisms of body function

Widmaier, Eric P.; Raff, Hershel; Strang, Kevin T.; Vander, Arthur J.

11. ed. : Boston : McGraw-Hill Education, c2008 - xxviii, 770 p.
ISBN:978-0-07-128366-3 LIBRIS-ID:10637341
Library search

Abbas, Abul K.

Basic Immunology

Lichtman, Andrew H.

3rd ed. : Saunders, 2009
ISBN:978-1-4160-4688-2
Library search