Course syllabus for

Genetics, 5 credits

Genetik, 5 hp
This course syllabus is valid from spring 2019.
Please note that the course syllabus is available in the following versions:
Spring2019 , Autumn2019 , Autumn2020 , Autumn2021

Course code	5MT009
Course name	Genetics
Credits	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 Molecular Medicine and Surgery
Decided by	Programnämnden för biomedicinprogrammen
Decision date	2018-10-30
Revised by	Programme committee for study programmes in biomedicine
Last revision	2019-03-27
Course syllabus valid from	Spring 2019

Specific entry requirements

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

Objectives

The course provids students with a basic knowledge in genetics and inherited genetic disease mechanisms, as well as critical assessment and presentation of genetic research in both oral and written form.

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

Regarding knowledge and understanding

- describe the human genome organization and different types of gene regulation and expression.
- describe how genetic variation occurs and its impact on health.
- understand the different modes of inheritance of genes and traits.

- describe common approaches to disease gene identification and diagnostic applications.
- to be able to use current online databases and tools to manage genome data.

Regarding skills and ability

- critically review relevant scientific literature and discuss the results and conclusions.
- communicate and comment on research data in the form of written texts and oral presentations.
- access and extract genomics data from online databases

Regarding judgement and approach

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

Content

Throughout the course the students will be provided an introduction on genetic concepts with a focus on human genetics in life science. Different themes, such as genome organization, the origin and consequences of genetic variation and inheritance models, gene regulation, gene expression and current diagnostic applications will be presented and discussed in accordance with the course objectives.

The course is divided in the following partly overlapping parts: self-studies, lectures, computer exercises, hands-on sessions, virtual lab simulations, workshops with teacher moderated discussions, computer exercises, student group work and oral presentations.

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. During this course the learning will be an active process with integrated feedback. The course may also include elements of "flipped classroom" learning in which course material are provided before teacher-moderated discussions at workshops or seminars. The learning activities include seminars, lectures, computer exercises, and studies in groups and at the individual level (self-learning).

Examination

The examination consists of assessment of oral presentations (graded Fail/Pass/Pass with distinction) and written exams (graded Fail/Pass/Pass with distinction). To pass the whole course the grade Pass must have been obtained for all parts of the course. To attain the grade Pass with distinction for the whole course, a grade of at least "Pass" must have been obtained for all examination parts of the course and the grade "Pass with distinction" must have been obtained for at least one examinatin part of the course.

Students must complete compulsory assignments in order to pass the course.

Students that fail to submit compulsory assignments in due time before the deadline will lose the opportunity to be graded with "Pass with distinction" for the course.

Compulsory participation
The introduction to the course, individual assignments, computer exercises, and group assignments as well as 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.

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 sections 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.

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.

Literature and other teaching aids

Recommended literature

Latest review articles from high impact journals in the field of genetics and genomics. The articles will be provided during the course.

Strachan, Tom; Read, Andrew P.

Human molecular genetics

Fifth edition. : Boca Raton, Florida : CRC Press, 2019 - xiii, 770 pages

ISBN:0815345895 LIBRIS-ID:gq514rnfd2cr6zcw

Library search

Strachan, Tom; Goodship, J.; Chinnery, Patrick F.

Genetics and genomics in medicine

New York : Garland Science, c2015. - xvii, 526 p.

ISBN:978-0-8153-4480-3 LIBRIS-ID:18853484

Library search