Course syllabus for

# Molecular and genetic mechanisms in nutrition science, 10 credits

Molekylära och genetiska mekanismer inom nutritionsvetenskap, 10 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:
Spring2022 , Autumn2022 , Autumn2023 , Spring2024

| | |
|---|---|
| Course code | 4NT001 |
| Course name | Molecular and genetic mechanisms in nutrition science |
| Credits | 10 credits |
| Form of Education | Higher Education, study regulation 2007 |
| Main field of study | Nutrition Science |
| Level | AV - Second cycle |
| Grading scale | Pass with distinction, Pass, Fail |
| Department | Department of Biosciences and Nutrition |
| Decided by | Education committee BioNut |
| Decision date | 2021-08-19 |
| Course syllabus valid from | Spring 2022 |

## Specific entry requirements

A Bachelor's degree or a professional degree equivalent to a Swedish Bachelor's degree of at least 180 credits in biomedicine, cellular and molecular biology, pharmaceutics, medicine, nutrition, or the equivalent. And proficiency in English equivalent to English B/English 6.

## Objectives

After completing the course, the student should be able to:

- discuss the role of nutrients in human metabolism and health from a molecular perspective.
- explain the concepts nutrigenomics and nutrigenetics and give examples of each areas in relation to human metabolism and health.
- explain and discuss the role of an optimal intestinal flora for human health.
- describe methods commonly used in the field of molecular nutrition and identify appropriate methods for answering different types of questions.
- answer a question in the area of molecular and genetic mechanisms underlying how diet affects health by searching for relevant scientific literature.

- compile and present, in writing and orally, a scientific report with an evidence-based approach to answer and critically discuss the above-mentioned question.

# Content

This course deals with current scientific evidence on the relationship between dietary factors, metabolic and hormonal regulation, as well as cellular and molecular mechanisms that are important in the development and treatment of lifestyle-dependent diseases such as obesity, cardiovascular disease, diabetes and cancer. This course also deals with the current methods used in research on molecular and cellular mechanisms of nutrition, such as RNA sequencing, quantitative PCR, CRISPR / Cas9-mediated gene modification. Biostatistics in connection with discussing scientific articles is also included. Ethical considerations in animal research is also included. During the course, the students will also receive training in presenting, discussing and communicating science in the area for the course.

# Teaching methods

The course consists of workshops, journal clubs and individual assignments and group work.

# Examination

The course is examined through several individual short reports during the course (graded Pass/Fail), presentation and discussion of group work regarding molecular methods (graded Pass/Fail), as well as a longer individual written report (graded Pass with distinction/Pass/Fail) and oral presentation (graded Pass/Fail). Grading criteria for all assignments are provided in the study guide or at Canvas.

In the case a student fail an assignment, it can be resubmitted a maximum of five more times. After six failed assignments, no further examination opportunities will be given for that assignment. A student who has failed two examinations for a course or part of a course, is entitled to have another examiner appointed unless special reasons speak against it.

Compulsory participation:
Assignments and seminars are compulsory. The course director assesses if and, in that case, how absence from compulsory parts can be compensated. Before the student has participated in all compulsory parts or compensated absence according withthecourse director's instructions, the student's results will not be registered in LADOK. Absence from a compulsory activity may result in that the student cannot compensate absence until the next time the course is given.

If there are special reasons, or need for adaptions for a student with a disability, the examiner may decide to depart from the syllabus's regulations on examination form, number of examination opportunities, possibility of complementation of or exemption from compulsory activities, etc. Content and learning outcomes as well as the level of expected skills, knowledge and abilities must not be altered, removed or lowered.

# Other directives

The course language is English.
A course evaluatioon will be conducted according to guidelines decided by the Board of Higher Education at KI. Oral evaluation will be carried out during the course.

# Literature and other teaching aids

Reports, articles and other prescribed literature are listed at course start and will be available electronically.