

Behaviour Genetics

Programme course

7.5 credits

Beteendegenetik

NBID65

Valid from: 2017 Spring semester

Determined by

Board of Studies for Chemistry, Biology
and Biotechnology

Date determined

2017-01-25

Main field of study

Biology, Chemical Biology

Course level

Second cycle

Advancement level

A1X

Course offered for

- Applied Ethology and Animal Biology, Master's Programme

Entry requirements

Note: Admission requirements for non-programme students usually also include admission requirements for the programme and threshold requirements for progression within the programme, or corresponding.

Prerequisites

120 ECTS including 90 ECTS in Biology.

Intended learning outcomes

The student will learn and understand the basis of quantitative genetic techniques, in particular how they pertain to behavioural variation. The student will apply such techniques to actual data, as well as discuss the limitations of such techniques and compare and contrast between them. Students will analyse and contrast the genetic architecture underpinning a variety of different behavioural traits, discussing the ramifications for future studies on behaviour.

Course content

The field of behaviour genetics involves the synthesis of ethology, genetics, neurobiology and evolution amongst others, and impacts on a multitude of different fields in biology. Previous to the field's genesis, behaviour had been thought to be controlled by a 'black box', with scant regard to what genes can affect a trait and how they achieve this. As this field has risen to greater prominence, the genes that underpin both the mechanisms and variation present in behaviour are starting to be understood. This course will teach both a combination of the genetic knowledge required to interpret this field, as well as an understanding of the field itself. The course will in addition focus on practical aspects of behaviour genetics, principally the use of statistics and how they are required in the field, experimental design and the like. Aspects as diverse as heritability, genetic mapping, transcriptomics, mutagenesis and transgenics will be covered, whilst a variety of different behaviours will be looked at and dissected, including anxiety, learning and memory, foraging and sleep.

Teaching and working methods

The course will consist of lectures, workshops/ seminars and a combined literature and data analysis project. The students are expected to work independently and manage their time efficiently in order to handle the course assignments. Extra costs due to travelling must be paid by the student.

Examination

HEM1	Home examination	3 credits	U, 3, 4, 5
UPG2	Project	3.5 credits	U, 3, 4, 5
UPG1	Attendance and participation in seminars	1 credits	U, G

Project involves analysing a given data set in small groups (each group with a specific dataset). Students will take the analysis from an initial examination of the data through to more advanced analysis for gene/ QTL identification. They will then describe the results, discuss the ramifications and implications, and design further experiments tailored to their specific dataset.

For the final grade in the course the different grades in the included parts are weighted taking into account their different sizes.

Grades

Four-grade scale, LiU, U, 3, 4, 5

Department

Institutionen för fysik, kemi och biologi

Director of Studies or equivalent

Agneta Johansson

Examiner

Dominic Wright

Course website and other links

Education components

Preliminary scheduled hours: 26 h

Recommended self-study hours: 174 h

Course literature

Anholt, R.R.H., Mackay, T.F.C. Principles of Behavioral Genetics. (Academic Press, 2010).

Common rules

Regulations (apply to LiU in its entirety)

The university is a government agency whose operations are regulated by legislation and ordinances, which include the Higher Education Act and the Higher Education Ordinance. In addition to legislation and ordinances, operations are subject to several policy documents. The Linköping University rule book collects currently valid decisions of a regulatory nature taken by the university board, the vice-chancellor and faculty/department boards.

LiU's rule book for education at first-cycle and second-cycle levels is available at http://stydokument.liu.se/Regelsamling/Innehall/Utbildning_pa_grund-_och_avancerad_niva.