Sveriges lantbruksuniversitet
Swedish University of Agricultural Sciences

Syllabus

BI0111.1 Animal Genetics and Breeding, 22.5 credits

Genetik och husdjursförädling

The course is given as course independent of study programme

Syllabus discontinued 31 October 2007

Version 1 in Slukurs. Corresponds to version 1 in Ladok

Syllabus approved

10 December 1997

The version applies to students admitted from spring 1999 to autumn 2008

The version is not a module version

Subjects

Biology

Education cycle

First cycle

Modules

Title	Code	Credits
Single module	0101	22.5

Advanced study in the main field

Grading scale

Pass / Failed

The requirements for attaining different grades are described in the course assessment criteria which are contained in a supplement to the course syllabus. Current information on assessment criteria shall be made available at the start of the course.

Language

Swedish

Prior knowledge

The equivalent of: 40 Swedish University Credits (SUC) of basic (A-level) and intermediate (B-level) courses in Biology including 10 SUC in Biochemistry, 10 SUC in Cell Biology, 10 SUC in Animal Physiology; and 10 SUC in Statistics (of which 5 SUC in Analysis of Variance and Regression).

Objectives

Students should after the course have a good general knowledge concerning conditions for a sustainable use of the domestic animal genetic resources, including e.g. to:
- understand the meaning of genetic variation, how it arises and can be changed and maintained
- understand the principles for studying genetic variation at the DNA-level
- understand the use of biometric methods for estimation of genetic variation, breeding values etc. in principle, and also be able to use such methods for simple situations
- have an insight in and be able to describe the genetic background of various traits
- understand, evaluate and be able to discuss the construction of various breeding programs, and
- have insights in the short- and long term biologic and economic consequences of those programs.

Content

The course covers the following main areas:
- Mendelian genetics (basic terminology, segregation)
- Population genetics (changes in gene frequencies; inbreeding and genetic relationships)
- Molecular genetics and cytogenetics (gene mapping, biotechnology in animal breeding)
- Quantitative genetics (genetic and phenotypic variation, heritability, genetic correlation)
- Genetic evaluation (breeding value, BLUP, selection index theory, accuracy/precision)
- Selection (genetic progress, gene flow, genotype-environment interaction)

- Breeding methods and breeding programs (breeding objectives, breeding programs for pure- and crossbreeding in large and small livestock populations, biological and economic consequences, genetic conservation)

The teaching methods comprise lectures, group discussions, biostatistic exercises and computer labs, as well as some farm study visits. Each student writes an essay within the area of biology and genetics of various traits. The students apply their knowledge in a project covering the various parts of a breeding programme.

Implementation

Lectures ca 100 h
Biostatistic and computer exercises ca 50 h
Laboratory ca 10 h
Group discussions ca 25 h
Study visits ca 15 h
Project ca 30 h
Essays ca 30 h
Written and oral examinations ca 10 h

Examination

Requirements for examination

Written and oral examinations, essay and project reports.

Passed examinations and project work and participation in all compulsory components of the course.

- If the student fails a test, the examiner may give the student a supplementary assignment, provided this is possible and there is reason to do so.
- If the student has been granted special educational support because of a disability, the examiner has the right to offer the student an adapted test, or provide an alternative assessment.
- If changes are made to this course syllabus, or if the course is closed, SLU shall decide on transitional rules for examination of students admitted under this syllabus but who have not yet passed the course.
- For the examination of a degree project (independent project), the examiner may also allow the student to add supplemental information after the deadline. For more information on this, please refer to the regulations for education at Bachelor's and Master's level.

Additional information

- The right to take part in teaching and/or supervision only applies to the course date to which the student has been admitted and registered on.
- If there are special reasons, the student may take part in course components that require compulsory attendance at a later date. For more information on this, please refer to the regulations for education at Bachelor's and Master's level.

Responsible department

Department of Animal Breeding and Genetics

Supplementary Information

Finalized by: Programnämnden för JLT-fakultetens utbildning, Ultuna
Biology Area: Other Biology Courses