Statistics; Theory and Application in Biology

Programme course

6 credits

Statistik; teori och tillämpning i biologi

NDAB02

Valid from: 2017 Spring semester

Determined by
Board of Studies for Chemistry, Biology and Biotechnology

Date determined
2017-01-25

Offered for the last time
Spring semester 2023

Replaced by
NBIB53

Main field of study
Mathematics

Course level
First cycle

Advancement level
G1X

Course offered for
- Biology
- Chemical Biology
- Protein Science, 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
Courses in biology corresponding to at least 60 ECTS.

Intended learning outcomes
The students shall understand and use basic probability theory and statistics. The theory and methods are primarily focused on such that apply in biology. By the end of the course the student should be able to:

- Explain basic statistical concepts, such as population, sample, significance level and confidence interval.
- Choose designs and statistical models for basic types of experiments in which the outcome is influenced by random variation.
- Apply statistical software packages for descriptive analyses of the collected data and inference about populations, treatment effects and relationships between variables.
- Articulate and critically assess the conclusions from a statistical analysis

Course content
The course treats basic methods to describe and analyze data from biological experiments. Descriptive statistics. Regression analysis. One- and two-way ANOVA. Non parametric tests. Experimental design.

Teaching and working methods

Lectures, seminars and computer sessions to apply statistical methods on biological data and experiments.
The course runs over the entire spring semester.

Examination

LAB1	Computer based laboratory work	1.5 credits	U, G
TEN1	Written Examination	4.5 credits	U, 3, 4, 5

Grades

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

Department

Institutionen för datavetenskap

Director of Studies or equivalent

Lotta Hallberg

Examiner

Bertil Wegmann

Education components

Preliminary scheduled hours: 48 h
Recommended self-study hours: 112 h

Course literature

Additional literature

Books

Zar, *Biostatistical analysis,*
ISBN: 0-13-206502-9

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://styrdokument.liu.se/Regelsamling/Innehall/Utbildning_pa_grund-_och_avancerad_niva.