

MSA840, STATISTICS AND DATA ANALYSIS, 7.5 credit points

Level: advanced

1. Authorisation

The course plan has been authorised by the vice-dean of the Department of Mathematical Sciences on November 9, 2006, to be valid from July 1, 2007.

Educational field: Mathematical Sciences

2. Educational context.

The course is part of the Master Program in Bioinformatics and System Biology. It is also open for students outside the program who meet the course prerequisites.

3. Prerequisites

Calculus, and an introductory course in statistics.

4. Goals and learning outcomes

At the end of this course, students should:

- be able to perform statistical hypothesis tests, parameter estimation, regression analysis and to apply other common methods,
- have acquired skills in using a statistical software such as R/Splus,
- understand multiple testing problems,
- have insights into the Bayesian approach and resampling techniques.

5. Course description

This course is intended as a second course in statistics, where students should develop a deepened understanding of conditional probability, principles of statistical modeling, and acquire skills in data analysis. Theoretical definitions and derivations are considered to some extent, but the emphasis of the course is on applications. A substantial part of the course is devoted to the statistical software R.

6. Literature.

See separate list.

7. Assessment

Hand-in of answers to the two or three compulsory R exercises is necessary to pass the course. The grade is based on a 4 hour written exam.

8. Grades

The grade levels are Fail (U), Pass (G), and High Pass (VG). A wish for an ECTS grade should be reported to the examiner at the beginning of the course.

9. Course evaluation

In the middle of the course the teacher arranges a feedback discussion with the students and at the end of the course the students will be asked to answer a questionnaire. The results of the questionnaire will be processed by the teacher together with student representatives.

10. Additional information