Course syllabus for

Advanced Statistics in Epidemiology, 7.5 credits

Avancerad statistik inom epidemiologi, 7.5 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:
Spring2013 , Spring2014 , Spring2015 , Spring2016 , Autumn2016

Course code	4FH065
Course name	Advanced Statistics in Epidemiology
Credits	7.5 credits
Form of Education	Higher Education, study regulation 2007
Main field of study	Public Health Sciences
Level	AV - Second cycle
Grading scale	Pass with distinction, Pass, Fail
Department	Department of Global Public Health
Decided by	Programnämnd 5
Decision date	2012-10-29
Course syllabus valid from	Spring 2013

Specific entry requirements

General admission requirements.

Objectives

The objective of this course is to give students the biostatistics skills needed to perform statistical analysis of epidemiologic data. The student will develop knowledge to choose, apply and interpret appropriate regression models to conduct his/her present and future research in public health epidemiology.

After successfully completing the course students should be able to:

• describe the main assumptions of linear regression models and in what scenarios they can be violated;
• propose, adjust, interpret, and perform diagnostic checks of linear regression models;
• describe the assumptions and uses of logistic and count data regression models and how these differ from linear regression models;
• propose, adjust, interpret, and perform diagnostic checks of logistic and count data regression models;
• propose, appropriately specify, adjust, and interpret results of non-parametric and semi-parametric models for survival data;
• use SPSS software to carry out the above tasks.

Content

The course develops the learning outcomes acquired in the course 4FH059 Basic statistics and computer based statistic analysis. Experience and statistical computing skills acquired in the course 4FH059, such as using SPSS for statistical analysis, are necessary.

The course covers linear regression, logistic regression, count data regression, generalised linear models and non-parametric and semi-parametric models for survival data. Among the topics covered are: hypothesis testing and confidence intervals for regression model parameters, maximum likelihood estimation and least squares criteria, model diagnostics, goodness of fit, collinearity and multicollinearity, fitted values, residuals.

Teaching methods

The course is founded on the course equivalent to "Basic statistics and computer based statistic analysis (4FH059) 7,5 credits".

Examination

The acquired knowledge and skills will be examined through following quantitative assignments:
Home examination 20 points;
Theoretical examination 50 points;
Practical examination 30 points.
Total points 100.

To obtain Pass grade the student should accumulate 65 points or more of the total, 10 points from home examination, 30 points from the theoretical and 20 points from the practical examination. Requirements for the grade Pass with distinction: 91 points or more.

The course director assesses if and, in that case, how failure to comply with compulsory tasks can be compensated. Before the student has participated in all compulsory parts or compensated absence in accordance with the course director's instructions, the student's results for respective part will not be registered in LADOK.

Limited number of examinations or practical training sessions
Students who have not passed the regular examination are entitled to participate in five more examinations. If the student is not approved after four examinations, he/she is recommended to retake the course at the next regular course date, and may, after that, participate in two more examinations. If the student has failed six examinations/tests, no additional examination or new admission is provided.

The number of times that the student has participated in one and the same examination is regarded as an examination session. Submission of a blank examination is regarded as an examination. An examination for which the student registered but not participated in, will not be counted as an examination.

After each course occasion there will be at least six occasions for the examination within a 2-year period from the end of the course.

Transitional provisions

After each course occasion there will be at least six occasions for the examination within a 2-year period from the end of the course.

Other directives

Course education will be carried out in accordance with the guidelines established by the Board of Education.

The course language will be English.

Literature and other teaching aids

Hosmer, David W.; Lemeshow, Stanley
Applied logistic regression
2. ed. : New York : Wiley, cop. 2000 - xii, 375 s.
ISBN:0-471-35632-8 LIBRIS-ID:4972522
Library search

Kirkwood, Betty R.; Sterne, Jonathan A. C.
Essential medical statistics
2. ed. : Malden, Mass. : Blackwell Science, cop. 2003 - x, 501 s.
ISBN:0-86542-871-9 LIBRIS-ID:8731249
Library search

Teaching aids

IBM SPSS Statistics Base 19 Users Guide.
IBM SPSS Regression 19.
IBM SPSS Advanced Statistics 19.

Armitage, Peter; Berry, Geoffrey; Matthews, J.N.S.
Statistical methods in medical research
4. ed : Oxford : Blacwell Science, 2002 - xi, 817 s.
ISBN:0-632-05257-0 LIBRIS-ID:8293285
Library search