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
Revised by	Programme Committee 5
Last revision	2013-10-23
Course syllabus valid from	Spring 2014

Specific entry requirements

A Bachelor’s degree or a professional qualification worth at least 180 credits in public health science, healthcare or other relevant social sciences subject area. English language skills equivalent to English B at Swedish upper secondary school.

Objectives

The objective of this course is to develop the students, biostatistics skills needed to perform statistical analysis of public health and 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:

• understand 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;
• understand the assumptions and uses of logistic and count data regression models and how these differ

from linear regression models;
• identify, adjust, interpret, and perform diagnostic checks of logistic and count data regression models;
• 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 covers linear regression, logistic regression, count data regression, generalised linear models, life tables 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 a mix of lectures and computing tutorials. In lectures, statistical concepts needed to understand regression models are introduced, illustrated, and discussed in class and group discussions. In computing tutorials, the statistical concepts are illustrated with examples from epidemiological studies and/or epidemiological data.

Examination

The acquired knowledge and skills will be examined through home examination, theoretical examination and practical examination.

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.

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

Dupont, William D.

Statistical modeling for biomedical researchers : a simple introduction to the analysis of complex data

2. ed. : Cambridge, UK : Cambridge University Press, 2009. - xx, 522 s.
ISBN:978-0-521-84952-4 (hardback) LIBRIS-ID:11299500
Library search