Course syllabus for

Basic Statistics and Computer Based Statistic Analysis, 7.5 credits

Grundläggande statistik och datorbaserad statistisk analys, 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:
Autumn2017 , Autumn2018

Course code	4FH071
Course name	Basic Statistics and Computer Based Statistic Analysis
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	Utbildningsnämnden PHS
Decision date	2017-03-22
Revised by	Education committee PHS
Last revision	2019-10-16
Course syllabus valid from	Autumn 2018

Specific entry requirements

A Bachelor's degree or a professional degree equivalent to a Swedish Bachelor's degree of at least 180 credits in public health science, healthcare or other relevant social sciences subject area. And proficiency in English equivalent to English B/English 6.

Objectives

The aim of the course is to a) provide students with robust knowledge of basic statistics to carry out common statistical analyses used in epidemiology, b) develop skills needed to conduct pertinent analyses and c) adequately interpret the results.

After completion of the course, the student should be able to:

- Describe the basic principles of descriptive and inferential statistics.
- Build, organize and administer databases

- Describe the concept of probabilistic sampling and sampling distributions.
- Define conceptual/operational hypotheses based on research questions.
- Construct and interpret point estimates and confidence intervals.
- Identify appropriate options for statistical analyses based on the type of data.
- Differentiate parametric vs. non-parametric statistics identifying conditions for their use.
- Describe, carry out and interpret common types of statistical analyses of continuous and categorical data

Content

The contents of the course were purposely set and organized hierarchically to be aligned with the learning outcomes as follows: Type of data (dichotomous, continuous, nominal, categorical, ordinal, etc.); proportions, ratios and rates; building, cleaning and administering databases (including defining, computing, selecting and recoding variables for data analyses); measures of central tendency (mean, median, mode); measures of dispersion (range, extreme values, percentiles, variance, standard deviation); data presentation (tabulations, bar/pie graphs, boxplots, scatterplots, etc.); prevalence and incidence (cumulative and density); theoretical probability distributions; central limit theorem; sample size calculation (type I error, type II error, power, confidence level); point estimate and 95% confidence intervals; measures of associations (OR-odds ratiohypothesis testing (null and alternative hypotheses, one-sided, two-sided tests); difference between proportions (Pearson Chi2 difference between 2 means (student's t-test of independent and related samples); difference among >2 means (ANOVA, F-test, Bonferroni test for multiple comparisons); non-parametric statistics (Mann-Whitney and Wilcoxon tests for independent and related samples); linear correlation (Pearson and Spearman correlation coefficients abnormal data); diagnostic test (sensitivity, specificity, predictive positive and negative values); Analyses will be carried out using the statistical software Stata.

Teaching methods

A combination of teaching techniques (i.e. interactive and traditional lectures, group and independent work, group dynamics, and computer labs) will be used depending on the specific study subject aimed at engaging students in the teaching-learning process to promote reflective thinking and active collaborative education following a deep approach to learning. Lectures, group activities and computer tutorials will be interconnected so that students can link the theoretical knowledge with the practical skills of performing statistical analyses using a computer.

Examination

The course learning outcomes will be assessed using different quantitative instruments:
Weekly review 10
Home assignment 30 points
Final exam 60 points
Total score 100 points

To "pass" the course students must attain 65 points or more of the total score. Students that exceed 90 points of the total score will receive "pass with distinction".

Compulsory participation
Some lectures are compulsory as indicated in the schedule.
The course director assesses if and, in that case, how absence 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. The grades used are fail, pass or pass with distinction.

Limitation of number of occasions to write the exam
The student has the right to write the exam six times. If the student has not passed the exam after four

participations he/she is encouraged to visit the study advisor.

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

The course has been cancelled and was offered for the last time during autumn semester 2018. Examination will be provided until fall semester 2021 for students who have not completed the course.

Other directives

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

The course language is English.

Literature and other teaching aids

Mandatory literature

Course literature is based on key articles, power-point presentations, and handouts. However, the following books will be used as reference or as additional support.

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

Pagano, Marcello; Gauvreau, Kimberlee

Principles of biostatistics

2. ed. : Pacific Grove : Duxbury, cop. 2000 - xvi, 525 s. , [42] s.

ISBN:0-534-22902-6 ; No price LIBRIS-ID:5036554

Library search

Recommended literature