UNIVERSITY OF GOTHENBURG

INSTITUTE OF MEDICINE

STA030 Quantitative method and biostatistics, 7.5 credits

Kvantitativa metoder och biostatistik, 7,5 högskolepoäng

Second Cycle

Confirmation

This course syllabus was confirmed by Institute of Medicine on 2021-08-16 and was last revised on 2022-07-01 to be valid from 2023-01-16, spring semester of 2023.

Field of education: Medicine 100%
Department: Institute of Medicine

Position in the educational system

The course is offered as a freestanding course.

Main field of studies	*Specialization*
-	A1N, Second cycle, has only first-cycle course/s as entry requirements

Entry requirements

The entry requirements of the course are a bachelor's degree or professional qualification of at least 180 credits or equivalent in one of the health science or social sciences main fields of study and English B/English 6.

Learning outcomes

On successful completion of the course the student will be able to:

Knowledge and understanding

- describe advantages and disadvantages of different designs for observational and randomised studies,
- explain what defines the different scales and how scales affect which compilation measures and analyses that are possible to use,

- describe and explain the central limit theorem, p-value, significance level, power and type II error,
- describe the difference in circumstances for making a linear regression, a logistic regression and a statistical survival analysis, respectively.

Competence and skills

- interpret and perform a hypothesis testing, a p-value and a confidence interval using a statistical program,
- perform analyses (using a statistical program) during both a normal distribution assumption and a non-parametric assumption, based on the scale for the response variable,
- interpret parameter estimations for a linear regression. a logistic regression and a statistical survival analysis, respectively,
- identify and suggest quantitative study design and methods for data collection and analysis which are appropriate for research themes and research questions within a specified health science discipline,
- organise data and perform analyses using a statistics computer program.

Judgement and approach

- discuss advantages and disadvantages of different observational study designs (eg. so-called case control, retrospective and prospective studies) as well as randomised studies, and how these designs influence which outcome measure can be used,
- discuss and evaluate the difference between making a bivariate regression and/or test and a multiple regression,
- discuss and evaluate similarities and differences between hypothesis testing and confidence interval.

Course content

The course gives an introduction/refresher of basic statistical methods and tools to plan studies, and also develops the students' ability to critically analyse and process data. The students will obtain knowledge that helps them to correctly apply results of different health-related examinations. The course is directed at students or doctoral students who want expand their statistics knowledge in preparation for project work. It is also appropriate for developers or project managers in health care.

Form of teaching

The study program is flexible since most of the teaching is web-based or recorded. Recorded lectures are combined with question sessions, quizzes, computer sessions and workshops. Computer exercises and workshops will be supervised. All sessions are taken place online. However, the examination will be held on site, at the University of

Gothenburg.

Language of instruction: English

Assessment

Examination consists of an individual written examination conducted on campus and seven compulsory components. The compulsory components consist of two quizzes, active participation in 2 workshops with associated written assignments and 3 completed computer exercises with associated written reports. A student who has not been able to participate in a compulsory component or who has failed will be offered an opportunity to make up for this within reasonable time after the conclusion of the course and during the next course instance.

If a student has received a recommendation from the University of Gothenburg for special support in learning when compatible with the learning outcomes of the course and provided that unreasonable resources are not required, the examiner may decide to allow the student adjusted conditions for exam or alternative form of assessment.

If a student has failed the same examined component twice, and wishes to change examiner before the next examination, a written application should be sent to the department responsible for the course and should be approved unless there are special reasons to the contrary (Chapter 6, Section 22 of the Higher Education Ordinance).

If a course has been discontinued or has undergone major changes, the student shall normally be guaranteed at least three examination occasions (including the ordinary examination) during a period of at least one year from the last course instance.

Grades

The grading scale comprises: Pass with Distinction (VG), Pass (G) and Fail (U).
For the grade of Pass in the whole course at least Pass on the written examination and Pass on all compulsory components (three computer sessions, two workshops and two quizzes) are required. To Pass with distinction in the whole course Pass with distinction on the written examination and Pass on all compulsory components are required (three computer sessions, two workshops and two quizzes).

Course evaluation

The course evaluation takes the form of an anonymous written questionnaire that is made available on the course's page in the learning management system. Compilation of the questionnaire is performed by the course coordinator. The compilation of the course evaluation questionnaire and any changes in the set-up of the course are to be made available for both earlier and future students.

Additional information

The course is offered remotely with a written examination on campus in Gothenburg. The student needs access to a computer with internet and a web camera. Information about required software will be provided in good time before the course starts.