



Faculty of Arts and Social Sciences

Statistics

Syllabus

Course Approval

The syllabus was approved by the Faculty Board of Arts and Social Sciences on 20 February 2014, and is valid from the Autumn semester of 2014 at Karlstad University.

Course Code: STGB01

Statistical Theory, 7.5 ECTS Credits

(Statistisk teori, 7.5 Swedish credit points)

Degree Level: Bachelor

Progressive Specialisation: G1F (First cycle, has less than 60 credits in first-cycle course/s as entry requirements)

Language of Instruction

The language of instruction is Swedish.

Prerequisites

A minimum of 30 credits in Statistics plus upper secondary level Mathematics D.

Major Field of Study

STA (Statistics)

Learning Outcomes

Upon completion of the course, students should be able to:

-judge what probability distribution is used in any given situation and identify and explain the connections between different probability distributions,

-identify distributions by means of moment-generating functions,

-explain the principles of some common estimation methods and determine parameter estimations with the help of these methods, and

-infer interval estimation in various situations and assess the properties of different point estimates.

Content and Form of Instruction

The course aims to further develop students' knowledge of probability theory and inference theory. The course covers the following subject areas:

-Various concepts of probability.

-Discrete and continuous random variables and their probability distributions, and Chebyshev's theorem.

-How to identify the distribution of random variables by means of the distribution function method, the

transformation method, and the moment-generating function method,

-Sampling distribution and the central limit theorem.

-Common estimation methods, such as feature estimation and the method of maximum likelihood. Point estimates and their properties. Inference-based interval estimation by means of the pivot method.

Reading List

See separate document.

Examination

Examination is in the form of a final written exam, lab reports, and take-home assignments. Examination based on this syllabus can be completed up to one year after the syllabus is replaced. Two examination opportunities are provided during the first year in which the course is not offered, and one in the second year.

Grades

One of the grades Distinction (VG), Pass (G), or Fail (U) is awarded in the examination of the course. The course grade is based on examination results and lab reports.

Quality Assurance

Follow-up relating to learning conditions and goal-fulfilment takes place both during and upon completion of the course in order to ensure continuous improvement. Course assessment is based on student views and experiences as reported in written course evaluations and/or group discussions. Students will be informed of the result of the evaluation and of the measures to be taken.

Course Certificate

A course certificate will be provided upon request.

Additional Information

Students who enrolled before 1 July 2007 will complete their studies in accordance with the requirements of the earlier admission. Upon completion students may request degree and course certificates to be issued under the current ordinance if they meet its requirements.

The local regulations for studies at the Bachelor's and Master's levels at Karlstad University stipulate the obligations and rights of students and staff.

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