Faculty of Economic Sciences, Communication and IT
Statistics

Syllabus

Course Approval
The syllabus was approved by the Faculty Board of Economic Sciences, Communication and IT on 4 April 2007 , and is valid from the Autumn semester of 2007 at Karlstad University.

Course Code: STGA06
Statistics I, 15.0 ECTS Credits
(Statistik I, 15.0 Swedish credit points)
Degree Level: Bachelor
Progressive Specialisation: G1N (First cycle, has only upper-secondary level entry requirements)

Language of Instruction
The language of instruction is Swedish.

Prerequisites
- field-specific eligibility A4 (upper secondary school level Mathematics 3b or 3c, Civics 1b or 1a1 + 1a2), barring Civics 1b or 1a1 + 1a2, or
- field-specific eligibility 4 (upper secondary school level English B, Mathematics C, Civics A) barring English B and Civics A.

Major Field of Study
STA (Statistics)

Learning Outcomes

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

-compile and graphically present various types of data material as well as calculate and interpret different summary measures,

-give an account of various concepts of probability such as experiment, event, result, and conditional probability function,

-perform simple probability calculations,

-define point estimates and give an account of some properties of point estimates,

-construct confidence intervals for population parameters and interpret the results,

-set up hypotheses in various testing situations, perform hypothesis testing for population parameters and interpret the results,

-calculate type I and type II errors,

-build on theoretical knowledge of basic probability theory to interpret the results, and

-use the basic functions of statistical software programmes.

Content and Form of Instruction

The course comprises the following five sections:

-Descriptive Statistics: This section covers methods for calculating different summary measures for the position and distribution of data material, as well as methods for describing connections between variables, including linear regression. The section also covers methods for collecting data and illustrating it graphically.

-Probability Theory and Random Variables: This section introduces students to the concept of probability, calculation laws for probability, discrete and continuous random variables, expectation value and variance. The section covers discrete distributions, primarily binomial, Poisson, and hypergeometric distribution. The continuous distributions covered are unimodal distribution, exponential distribution, T distribution, and normal distribution.

-Sampling Distribution: This section covers the way in which estimation of a quantity, for instance proportion, varies randomly between samples from the same population. This section provides a foundation for the following sections of the course.

-Point and Interval Estimation: This section gives students an introduction to properties of point estimates of mean values and proportions. Students are also taught how to construct and interpret confidence intervals.

-Introduction to Hypothesis Testing: This section will introduce a number of central concepts in hypothesis testing.

Reading List

See separate document.

Examination

Examination is in the form of take-home assignments (1.5 credits) and a final written exam (13.5 credits), testing students' grasp of theory as well as their problem solving skills. 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 reflects both the examination result and the quality of the set assignments.

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.