HÖGSKOLAN I GÄVLE

Data Analysis and Statistics for Engineering 7.5 cr

Dataanalys och statistik för ingenjörer 7,5 hp

Set by Board of Mathematics, Natural and Computer Sciences

Version

	Set at	**Valid from**
	10/15/08	HT2008
	5/21/14	**VT2014**

Level	G1N
Education level	First cycle
Course identifier	ST010A
Credits	7.5 cr
Main field of study	Mathematics
Subject group	Mathematical Statistics
Disciplinary domain	Natural sciences 100.0 %

Learning outcomes

On completion of the course, the student should be able to
1. build and analyse models with normal distribution measured values and use some common statistical models for non-normal distribution measured values for engineering applications
2. be able to explain and present results received through methods within the frame of the course
3. be able to handle a statistical program within the fields covered in the course.
4. be able to plan and carry out basic experiments and independently present results and procedures.
5. be able to critically assess information presented statistically

Course content

Description of data using tables, diagrams and measures
Principles for data collection through experiments and sampling
Relationships between variables evident from cross tables, scatter plots, linear regression and correlation measures. Assessment of influential measured values and other circumstances of significance for the possible conclusions.
The concepts of chance, probability and random variable and basic principles and laws in probability theory

Usage of probability/density functions and distribution functions for common discrete and continuous probability variables.
The concepts of expected value, variance, covariance and correlation.
Concepts and methods for hypothesis testing and inference in common continuous and discrete distributions and their parameters. Distribution graphs and principles of normal approximation and the central limit theorem.
Introduction to statistical quality control: Factorial experiments, control charts for mean and variation.
Introduction to regression analysis and interpretation of printouts from computer programs.

Teaching

Lectures/teaching sessions/supervision/seminar and calculation and computer exercises.

Prerequisites

General entry requirements + Mathematics 3c or Mathematics D

Examination

Written examination, seminars and written assignments

Grade

A, B, C, D, E, Fx, F

Limitations

Seminars and written assignments are examined in connection with the implementation of the course. If the student has unfinished assignments on completion of the course, the student may be examined on these two parts within three years through written examination and/or written assignments in agreement with the examiner.

Sustainable environment

A minor part of the course content deals with sustainable development.

Module

0020	Examination	6 cr	Grade: AF
0030	Seminars and assignments	1.5 cr	Grade: UG