



## HÖGSKOLAN I GÄVLE

### Data Analysis and Statistics for Economists, 15 cr

*Dataanalys och statistik för ekonomer 15 hp*

Set by Faculty of Engineering and Sustainable Development

#### Version

Set at	Valid from
6/4/08	HT2008
3/25/15	HT2015

<b>Level</b>	G1N
<b>Education level</b>	First cycle
<b>Course identifier</b>	ST006A
<b>Credits</b>	15 cr
<b>Main field of study</b>	Not defined
<b>Subject group</b>	Statistics
<b>Disciplinary domain</b>	Natural sciences 100.0 %

#### Learning outcomes

- On completion of the course, the student should be able to
1. summarise and interpret data with descriptive statistics
  2. calculate probabilities using common probability models
  3. review statistical studies
  4. carry out statistical inference
  5. Be able to apply elementary regression and time series analysis
  6. Be able to handle a statistical program within the fields covered in the course

#### Course content

- overview of how public statistics are provided by SCB (Statistics Sweden) and other authorities responsible for statistics
- description of data using different graphs and which conclusions can be drawn about data distribution based on graphs
- compilation of raw data in tables; principles for extracting information from cross tables
- how to summarise data with measures of centre, spread and association
- analysis of data using the normal distribution
- principles of data collection through experiments: and through sampling, principles of questionnaire design

- the concepts of chance, probability, random variable, simple and conditional probability and Bayes' theorem, independent, combinatorial arithmetic rules
- expected value, variance and covariance
- common probability models: e.g. Binomial, Poisson, Exponential, Normal, Chi-2 and the t-distribution.
- simulation of random numbers with computers
- the population parameters mean and proportion, their estimations and the distribution of the estimations and normal approximation and the central limit theorem
- confidence intervals and hypothesis testing
- illustration and interpretation of relationships using cross tables, Chi-2 tests
- analysis of relationships between variables using scatter plots, simple and multiple linear regression and correlation measures
- time series analysis with elementary prognostication methods
- statistical analysis and report writing

**Teaching** Lectures/teaching sessions/supervision and calculation and computer exercises. Attendance at seminars is compulsory.  
On the distance course equivalents to the above via a web-based conference system.

**Prerequisites** General entry requirements + Mathematics 3b or 3c or Mathematics C, Social studies 1b or 1a1+1a2

**Examination** Written examination or seminars/written assignments.

The final course grade is based on the results of all the included parts.

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

**Limitations** The course may not be included in a higher education degree together with any of  
Data Analysis and Statistics 1  
Data Analysis and Statistics 1 for Technicians and Natural Scientists  
Data Analysis and Statistics 2  
Basic distance course in statistics  
Basic distance course in statistics for technicians and natural scientists

**Other regulations** Grading criteria are provided by the course coordinator or examiner at the beginning of the course.  
The course requires access to the statistical program Minitab Statistical Software.

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

<b>Module</b>			
0010	Data analysis and statistics 1	5 cr	Grade: AF
0030	Data analysis and statistics 3	7.5 cr	Grade: AF
0040	Data analysis and statistics 2	2.5 cr	Grade: UG