

# Statistics for Business and Economics

*Course Number: 351-0545-00L*

Master in Management, Technology and Economics  
D-MTEC, ETH Zurich

## Course Outline (HS 2009)

Instructor: Dr. Mehdi Farsi, D-MTEC, E10, ZUE, Zürichbergstr. 18  
Office hours: Thursday 10 to 12 or upon appointment  
E-mail: [mfarsi@ethz.ch](mailto:mfarsi@ethz.ch) Phone: 044 632 0656  
Website: <http://www.cepe.ethz.ch/people/staff/mfarsi/index>

Lectures: ML F 39, Thursday 8 to 10 am  
Credit points: 3

Course Website: <http://elbanet.ethz.ch/wikifarm/mfarsi/index.php?n=Main.Courses>

### Description:

This course is an introduction to statistical methods and concepts applied to business and economics data. The topics include probability distributions, confidence intervals, hypothesis testing, analysis of variance and multiple regression. The course is organized in weekly 2-hour lectures (total of 28 hours) with a final comprehensive exam. Homework assignments will be given every other week.

### Objectives:

The students will learn the basics of using statistical methods in applications related to business and economics. These include the following skills: a basic understanding of the theory of probability and statistics and how it is applied to test different kinds of hypotheses as well as the basic skills required for preparing and analyzing the data. Most of these abilities especially those related with computer software are developed through students' individual practice with the assignments. After this course students should be able to use econometric methods in empirical projects. In particular, the students will be introduced to statistical models used to describe the relationship among multiple variables. The students will be exposed to relevant examples in economics and business applications. The main objective of these examples is to motivate the use of statistical analysis and at the same time encourage students to go beyond the mechanical application of techniques and to develop critical judgment.

### Contents:

1. Data and Statistical Thinking.
2. Methods for Describing Data.
3. Probability and Random Variables.
4. Sampling Distributions.
5. Interval Estimation.
6. Hypothesis Testing.
7. Comparisons of Populations.
8. Analysis of Variance.
9. Simple Linear Regression.
10. Multiple Regression Models.

### Assessment:

Assessment will be based on a written final (end-of-semester) exam (90 minutes). Participation in the exam requires the instructor's confirmation. The conditions of admission to the exam will be based on the submitted homework assignments. The detailed requirements will be announced in the class.

Admission to the repetition exam requires a separate confirmation based on additional assignments as well as the student's performance in the first exam. In any case the repetition exam is restricted to students who have attended and failed the first exam.

### Textbooks:

The lectures are mainly based on:

Statistics for Business & Economics, 10th edition (2008)  
J. T. McClave, P. G. Benson and T. Sincich  
ISBN 0132069733, 944 pp, Publisher: Prentice Hall.

The solution manual of this book is a useful complement:

Student's Solutions Manual (McClave/Benson/Sincich) 10/E (2008)  
Nancy T. Boudreau  
ISBN 0132409372, 528 pp, Publisher: Prentice Hall.

The students can alternatively use the following textbook (also highly recommended as an additional reading):

Introductory Statistics for Business and Economics, 4th ed. (1990)  
Th. H. Wonnacott and R. J. Wonnacott  
ISBN 047161517X, 832 pp, Publisher: Wiley.

Other alternative textbooks are listed below.

Fundamentals of Business Statistics, 2006  
D. J. Sweeney, Th. A. Williams and D. R. Anderson  
ISBN 0324305915, 643 pp, Publisher: South-Western.

Essentials of Statistics for Business and Economics, 4th ed. (2005)  
D. R. Anderson, D. J. Sweeney and Th. A. Williams  
ISBN 032422320X, 682 pp, Publisher: South-Western.

Introductory Statistics for Business and Economics, 4th ed. (1990)  
Th. H. Wonnacott and R. J. Wonnacott  
ISBN 047161517X, 832 pp, Publisher: Wiley.

Essential Statistics for Economics, Business and Management, 2007  
T. Bradley  
ISBN 0470850795, 674 pp, Publisher: Wiley.

Basic Statistics for Business and Economics, 6th ed. (2008)  
D. A. Lind, W. G. Marchal, S. A. Wathen  
ISBN 0071263659, 640 pp, Publisher: McGraw-Hill.

Additional reading (optional):

Common Errors in Statistics (and How to Avoid Them) 2/ed (2006)  
Ph. I. Good and J. W. Hardin  
ISBN 0471794317, 254 pp, Publisher: Wiley.

Notes:

- The main lecture notes will be made accessible on the course website. The students are invited to study the related lecture notes before each lecture.
- The lecture notes are not self-explanatory. Sufficient learning of the covered material requires attendance in the class, individual reading of at least one textbook, and doing exercises.
- Homework assignments will be given every other week. The expected time for individual work required for homework assignments and preparation for the lectures is on average four hours per week. The students should anticipate an absolute minimum of two hours per week for individual work.
- The homework assignments occasionally require using a statistical software such as SPSS, SAS, Stata, Limdep, Excel or any other suitable program. The students will have the opportunity of learning a program of their choice while doing the exercises.
- Re-grading the final exam is only possible with a written request within ten days after the announcement of the grades. In case of such requests the student's entire examination (not an individual problem) will be graded again and the grade can go up or down.

Related D-MTEC courses:

- "Empirical Methods" (Prof. Grote) is a helpful complement to this course, which can be taken in the same semester. It is especially useful for students interested in empirical research from the initial steps in survey and data collection to the reporting of the final results.
- "Econometrics" (Prof. Sturm) is an excellent follow-up course for the next semester especially for students who wish to further their learning in statistical analysis applied to economics.