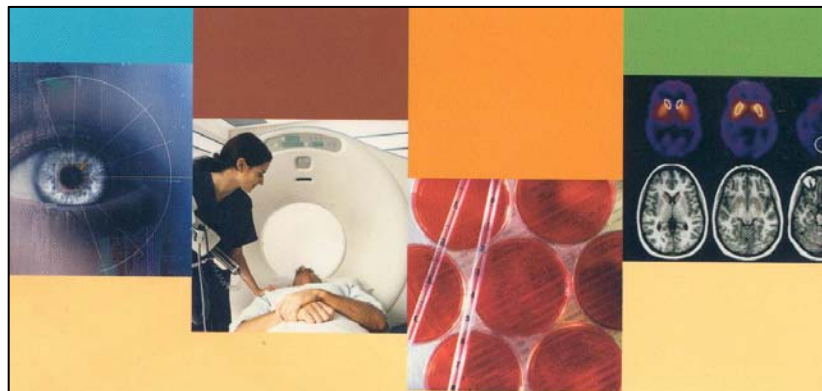


Course Fundamentals of Biostatistics

TU/e technische
universiteit
eindhoven

Department of Mathematics and Computer Science



May 15, 20, 25, 28 and June 5, 2009

Dr. J.J.M. Rijpkema
Drs. P.W.M. Verkissen

TU/e-course: Fundamentals of Biostatistics

May 15, 20, 25, 28 and June 5 - 2009

General Information

Course Description:

The course “Fundamentals of Biostatistics” provides PhD-students Biomedical Engineering with an introduction to the theory and applications of statistical methods, relevant for their research. During the course participants will have the opportunity for hands-on experience with practical exercises and small case studies, using representative and easy to use statistical software, such as Statgraphics Centurion XV. For successful completion of the course participants have to prepare, present and discuss a case study.

Lecturers: Dr. J.J.M. Rijpkema (course coordinator)
TU/e – Department of Mathematics and Computer Science
Main building HG 10.24, tel. 040-2473170
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drs. P.W.M. Verkissen
TU/e – Department of Mathematics and Computer Science
Main building HG 8.13, tel. 040-2472171
e-mail: p.w.m.verkissen@tue.nl

Textbook: Rosner, Bernard, Fundamentals of Biostatistics, 6th edition, 2006, ISBN 0-495-06441-6 (will be supplied at the start of the course).
A copy of the book of Rosner will be provided at the start of the course.

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Concept Programme

Day 1:	May 15th 2009, 9.00-12.30 & 13.30-17.00 Location: TU/e main building, HG 6.01
	Introduction to the course; Descriptive Statistics; Exploratory Data Analysis; Concepts of Probability; Probability Distributions (Binomial, Poisson, Normal), Error propagation and Uncertainty Analysis. Computer Exercises and Small Case Studies. [Rosner: chapters 1-5]
Day 2:	May 20th 2009, 9.00-12.30 & 13.30-17.00 Location: TU/e main building, HG 6.01
	Principles of Estimation and Hypothesis Testing; Sampling Distributions (Student-t, Fisher-F, Chi squared); One-Sample and Two-Sample Inference for Mean and Variance; Power of a Test; Sample Size Determination; Relation between Hypothesis Testing and Confidence Intervals; Nonparametric Methods; Computer Exercises and Small Case Studies. [Rosner: chapters 6-9]
Day 3:	May 25th 2009, 9.00-12.30 & 13.30-17.00 Location: TU/e main building, HG 8.61 (may be subject to change !)
	Principles of Regression and Correlation Methods; Simple Regression, Model Building and Model Evaluation; Polynomial Regression; Multiple Regression; Multicollinearity; Non Linear Regression. Computer Exercises and Small Case Studies. [Rosner: chapter 11]
Day 4:	May 25th 2009, 9.00-12.30 & 13.30-17.00 Location: TU/e main building, HG 6.01
	Principles of Multisample Inference; One-Way ANOVA: Fixed-Effects Models, Multiple Comparisons; Contrasts; Sample Size Determination; Randomized Complete Block Design; Factorial Designs and Multi-Way ANOVA; Nonparametric Methods. Computer Exercises and Small Case Studies [Rosner: chapter 12]
Day 5:	June 5th 2009, 9.00-12.30 & 13.30-17.00 Location: TU/e main building, HG 8.61 (may be subject to change !)
	Analysis of Categorical Data: Goodness-of-Fit Test, Fisher's Exact Test, McNemar's Test. Logistic Regression. [Rosner: chapter 10 and parts of 13] Presentations of Case-Studies by Participants; Course Review and Evaluation.