ECON4130: Statistics 2, fall term 2010

Plan for Rice, edition 3

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Seminar leader: Harald Goldstein

See the course webpage for times and venues for lectures, seminars and computer instruction.

Discussions are encouraged in the class, both during lectures, where emphasis is on theory, and in the seminar where exercises, applications and problems are in focus. Do exercises as much as possible. The learning through exercises is essential for this course. The exam is an open book exam with more weight on understanding than mere reproduction, and, therefore, requires a skill level which is hard to achieve without proper exercise training.

Because of the resource situation there will not be any portfolio ("mappe") evaluation this semester. Also there will be seminars only every second week (even numbered weeks starting week 36). For "no-seminar weeks" some exercises will be put on the net and solutions later in the week.

The main focus of the course is theoretical but some computing will be required. Computing will be done in STATA. An introduction to STATA will be arranged in week 36. The students will be divided (during the lecture week 35) into two groups for the computer training. The instruction will be in terms of a tutorial that should be downloaded from the course web page and printed before coming to the pc-room. The students will work on the tutorial by themselves, but the lecturer will be present to help out if someone gets stuck.

The computer groups for week 36 are:

Group I: Monday 6 September, 10:15 – 12, PC-room 035 in Harriet Holter
Group II: Wednesday 8 september, 10:15 – 12, PC-room 035 in Harriet Holter

A tentative plan for the course follows below. It may be subject to revisions and updated later in the term. A more detailed reading list of examples and paragraphs in the book that can be skipped, will be given shortly on the net. For some of the topics in the table below the textbook is too thin and supplementary material will be supplied on the net when needed.

Tentative Lecture/Seminar Plan
(May be subject to modifications during the course)
Textbook: J.A. Rice edition 3, "Mathematical Statistics and Data Analysis"

Week	Book sections In Rice	Topics	Seminar
34 (Aug)	2.1, 2.2	Review, discrete/continuous pdf, cdf Uniform, normal, exponential distribution, poisson events.	
35	2.2, 2.3	Gamma distribution, inverse functions, transformed random variables (rv's), simulation of continuous rv's.	
36 (Sept)	3.3, 3.4, 4.1, 4.2	Expectation, variance for continuous distr., multiple integrals, joint and marginal distributions, independence	Chap 2: 33, 34, 40, 45, 60, 61
37	3.6.1, 3.5, 4.4 (4.3 read yourself)	(Read yourself about covariance, correlation in 4.3) Conditional distributions and conditional expectations	No seminar
38	4.4	More on conditional distributions, theoretical basis for regression, prediction	Supplementary Exercises 1-4 (on the net)
39	4.4, 4.5	Joint and conditional normality, moment generating functions (mgf).	No seminar
40 (Oct)	4.1 (Theorem A) 4.2 (Theorem C), 4.6, chap. 5 + Lecture notes to Rice chapter 5	Taylor approximation, limit theorems, Markov's and Chebysjev's inequalities, weak law of large numbers	To be announced
41	----------	**NO TEACHING**	----------
42	Lecture notes to Rice chapter 5	More on limit theorems, central limit theorem (CLT), Slutsky's lemma.	To be announced
43	(Read 8.1-8.3 yourself) 8.4, 8.5	Estimation: Moment method (MME), and maximum likelihood method (MLE) Efficiency, Cramer-Rao bounds, Fisher information	No seminar
44	"Lecture notes to Rice chapter 8"	Random matrices, Multivariate normal distribution, asymptotic covariance matrix for MLE estimators (multi parameter case)	To be announced
45 (Nov)	"Lecture notes to Rice chapter 8" Rice 3.3, 8.2	Multiparameter case continued. Multinomial models.	No seminar
46	Rice 9.4, 9.5 (Read 9.1, 9.3 yourself)	Chi-square testing	To be announced
47		Open	No seminar