STUDYGUIDE 2007/2008 for PREMASTER STATISTICS for OML 1(2DD19)

Teachers

- F.R. Nardi and O. Wittich

Lectures

- The lectures will be given in Block A on Tuesday from 8.45h-10.30h in Auditorium 16 and on Wednesday from 13.45h-15.30h in Auditorium 13. So four hours each week. The teacher will be F.R.Nardi. See also OWINFO.

Instructions

- There will be instructions on Thursday from 13.30h-16.15h in PAVILJOEN J17. So 3 hours each week. The teacher for the instructions will be O. Wittich. See also OWINFO.
- Exam: See OWINFO.

Study material

- D.C.Montgomery, G.C.Runger, Applied Statistics and Probability for Engineers, 4rd ed., Wiley 2002.
- Statistical Compendium, Edited by Dr.ir. E.E.M. van Berkum and Dr. A. Di Bucchianico

Necessary knowledge

Calculus, set theory and logic.

Addresses teachers

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Exam

- For the exam one needs to know Chapters 1,2,3,4 (except § 4-11); from Chapter 5: § 5-1.1, § 5-1.2,§ 5-1.3, § 5-1.4, § 5-1.6 § 5-3 and § 5-5. Remark § 5-2 is not part of the exam but will be explained because it is useful. Moreover it is necessary to know Chapter 6: § 6-1; Chapter 7 (except § 7-4); Chapter 8 (except § 8-7).
- There is a written exam of 3 hours. The exam consists of 20 questions. It is allowed to use the Statistical Compendium with nothing extra written on it and a (graphical) pocket calculator.
  Date: see OWINFO

Statgraphics

Use will be made of Statgraphics. The goal is to learn how to use a statistical software package and to use it for the methods discussed in this course. At the exam output of Statgraphics might be given. However, in Premaster statistic for OML 1, the use of Startgraphics will be moderate. In Premaster statistic for OML 2 more use will be made of Startgraphics. One must be able to understand the output and interpret it. It can be installed from the site

http://w3.tue.nl/nl/diensten/dienst_ict/
Choose Dutch;
Choose Producten en diensten
Choosenow S:Software: PC Software installatie;
and then for Statgraphics Centurion and follow the instructions.

Studyweb

In Outlook in the folder

Public Folders/All Public Folders/Studyweb/2007-2008/W en I/2DD19_Premaster_Statistic for OML 1

is a.o. available this studyguide, a folder 'Answers exercises Montgomery', a folder with 'Old Exams exercises' and answers and the transparencies from the lectures.
Remark: You have only access to these folders if you register yourself for this course using http://studyweb.tue.nl

Schedule for lecture :

Week 1 28-29 aug	Chapter 1 Chapter 2 Chapter 3 3.1, 3.2, 3.3	The role of Probability and Statistics. Introduction to probability, sample space, events, axioms of probability, addition rules, conditional probability, Bayes' Theorem, random variable. Discrete random variables, probability distribution, probability (mass) function, cumulative distribution function,
Week 2 4-5 sep	3.4 to 3.9 Chapter 4 4.1 to 4.6	Mean and variance of a discrete random variable, some discrete distributions: binomial, Poisson, use of tables. Continuous random variables, probability density function, cumulative distribution function, mean and variance, uniform distribution, normal distribution, standardizing a normal random variable.
Week 3 11-12 sep	4.7 to 4.10 Chapter 5 5.1	Normal approximation to the binomial and Poisson distribution. Exponential distribution and Poisson-process Erlang distribution, Weibull-distribution. Joint probability distributions, marginal distribution, conditional distribution, independence.
Week 4 18-19 sep	5.3 and 5.5 Chapter 6.1 Chapter 7 7.1, 7.2, 7.3	Covariance and correlation, linear combination of random variables. Numerican summaries of data. Random samples, sampling distribution, Central Limit Theorem, Statistical inference, properties of estimators.
Week 5 25-26 sep	Chapter 8 8.1 to 8.6	Confidence interval for the mean of a normal distribution(variance known and variance unknown). choice of sample size. General definition of confidence intervals. confidence interval for variance, confidence interval for a population proportion.

Exercises

In the next table Examexer-1 means exercise 1 from the file Examexer.pdf in the folder 'Exercises from old exams' in studyweb. In the next table Chapter x refers to exercises of Montgomery. **Extra** are just some more exercises. The number of the exercises refer to EDITION 4 of Montgomery book. If you have the 3rd edition, look to the conversion table.

Chapter 2	**Chap2**: 5, 22, 33, 35, 58, 62, 67, 75, 91, 115, 118, 124, 125, 133, 146, 149. Examexer-1b, Examexer-2ac, Examexer-3a **Extra**: **Chap2**: 23, 54, 71, 78, 79, 95, 120, 148.
Chapter 3	**Chap3**: 1 t/m 6, 14, 26, 28, 39, 40, 47, 53, 58, 65, 80, 81, 87, 102, 107, 114, 115, 150. Examexer-1a. **Extra**: **Chap3**: 7 t/m 11, 17, 24, 30, 43, 54, 108, 116 152.
Chapter 4	**Chap4**: 1, 3, 8, 12, 15, 20, 27, 31, 32, 37, 44, 45, 46, 54, 55, 63, 65, 71, 72, 74, 79, 81, 85, 155. Examexer-3b, Examexer-4, Examexer-5, Examexer-7. **Extra**: **Chap4**: 9, 16, 22, 62, 76, 80, 83, 97, 100, 111, 124, 131.
Chapter 5	**Chap5**: 1, 2, 5, 8, (17, 24, 25, 35: these exercises between brackets from §5-2 are not part of the exam), 33, 43, 57, 60, 62, 64. Examexer-6, Examexer-8 **Extra**: **Chap5**:3
Chapter 6	**Chap6**: 1, 2, 13.
Chapter 7	**Chap7**: 2, 9, 10, 16, 17, 21, 36 (this exercise can be done despite the fact that §7-3 is not part of the exam). Examexer-9, Examexer-10 **Extra**: **Chap 7**: 14, 19
Chapter 8	**Chap8** 4, 5, 7, 12, 15, 22, 24, 33, 38, 40, 52, 53. Examexer-11, Examexer-12 **Extra**:**Chap8** 1, 3, 9, 18, 20, 23, 34, 38, 47, 55, 60.