

PH.D. Course "Theoretical Statistics"

short title: Liese-Kurs

Lecturer: Silvelyn Zwanzig

1 General

The course will be given for Ph. D. students and for very interested master students. The kurskod for the masterkurs 1MS011. (related to part I)

The lecture course is based on the book:

"Statistical Decision Theory: Estimation, Testing, Selection"

by Friedrich Liese and Klaus J. Miescke

Springer : ISBN 978-0-387-73193-3, e-ISBN: 978-0-387-73194-0

1.1 Some words to the book:

The authors wrote a new abstract mathematical book on theoretical statistics. But the abstraction are done only up to necessary level and not more as necessary. The decision theoretical approach includes test and selection problems as well as estimating problems . The book contains an pragmatic approach to Bayes theory. This book delivers a good compromise between German style (theoretically oriented such that the proofs are easy - but it is impossible to find the result) and the American textbook style (easy to find the result - but complicated to find the closed proof too).

1.1.1 Comparison to other books. Additional literature:

Books which are more abstract than the book of Liese and Miescke:[5] [6], [8]

Books which are more methodical than the book of Liese and Miescke: [4], most of the classical textbooks on estimation theory, parts of [10]

The book of Liese and Miescke includes most parts of the following books: [1], [2], [7], [9], [3]

2 Organization of the lecture course

The course will organized as follows:

Part I (Chapter 1- 5) 7.5 hp, Period 4 of 2008/09, kurskod: 1MS011

Part II (Chapter 6 - 9) 7.5 hp Period 1 of 2009/10, kurskod: open

Prerequisites

The contents of the courses:

Mathematical Statistics MS 013 (Probability theory MN2, Inference MN2)

Measure theory

2.1 Part I

Course will be a mixture of a lecture course and a reading course. 7 lectures will be given by the teacher almost all second week. Obs! Lecture 5 will be given by Friedrich Liese. In the time between the lectures students have to read sections and to solve problems.

Examination:

Obligatory home assignments related to the reading parts.

Oral examination

2.1.1 Time-Table (preliminary)

1. Lecture: Tuesday 24/3 13-15 Polacks 2214
Introduction, Chapter 1
- reading part: Chapter 1.3
2. Lecture: Tuesday 7/4 13-15 Polacks 2214
Chapter 1.4 ,1.5
- reading part: rest Chapter 1
3. Lecture: Tuesday 21/4 13-15 Polacks 2214
Chapter 2.1, 2.2
- reading part: rest of Chapter 2.2
4. Lecture: Tuesday 28/4 13-15 Polacks 2214
Chapter 3.1,3.4 3.5
- reading part: results of Chapter 3, whose were not included in the Lecture
5. Lecture: OBS!!! given by **Friedrich Liese** Wednesday (!) 13/5 13-15 Polacks 2214
Chapter 4: 4.1, 4.2
- reading part: Chapter 4: 4.3, 4.4
6. Lecture: Tuesday 26/5 13-15 Polacks 2215
Chapter 5: 5.1, 5.2,
- reading part: Chapter 5: 5.3, 5.4
7. Lecture: Tuesday 2/6 13-15 Polacks 2215
Summary, discussion, Solution of home works

References

- [1] Akahira, M and Takeuchi, K. (1981) Asymptotic Efficiency of Statistical Estimators , Springer New York
- [2] Bandorf-Nielsen, O. (1978) Information and Exponential Families, Wiley New York
- [3] Bickel, P.J. Klaassen, C.A.J. Ritov,Y. and Wellner,J.A. (1993)Efficient and Adaptive Estimation for Semiparametric Models, John Hopkins University Press, Baltimore
- [4] Bunke,H, Bunke,O (1987) Statistical Methods of Modelbuilding, Wiley
- [5] Chencov,N.N. (1982) Statistical Decision Rules and Optimal Inference. Trans Math. Monographs, 53
- [6] Le Cam, L.(1986) Asymptotic Methods in Statistical Decision Theory, Springer New York
- [7] Lehmann E.L., Romano,J.P. (2005) Testing Statistical Hypotheses, Springer New York
- [8] Strasser, H. (1985) Mathematical Theory of Statistics, Walter de Gruyter, Berlin
- [9] van der Vaart, A.W.(1998) Asymptotic Statistics, Cambridge Press
- [10] Witting, H and Mueller Funk,U. (1995), Mathematische Statistik II, Teubner, Stuttgart