UPPSALA UNIVERSITY
Department of Mathematics
Rolf Larsson

Mathematcal Statistics
Inference Theory II
2023–10–03

Inference Theory II 1MS037, 5c

Welcome to the course Inference Theory II (5c). Course information, supplementary material etc. will be accessed through *Studium*.

Course literature:
Hannelore Liero & Silvelyn Zwanzig:
Introduction to the Theory of Statistical Inference. CRC Press, 2012. Chap 1-5.

Teaching:
12 1/2 lectures with theory (L1-L4, L5, L6-L13)
2 1/2 problem solving sessions (L5, L14, L15)

Teacher:
Rolf Larsson (rolf.larsson@math.uu.se)

Examination:
Written exam January 8, 2024. Permitted aids: Pocket calculator. A formula sheet with front and back page that you have written by yourself. *No electronic device is allowed.*
Three hand-in assignments, *compulsory*. Teamwork (2 students) is permitted. Please hand in your solutions as a pdf file on Studium. In case of teamwork, hand in only one solution with both names on.

Time plan:

#	Handed out	Handed in
1	15/11	22/11
2	28/11	5/12
3	11/12	18/12

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Plan of teaching:

#	Date	Agenda	Chapter
L1	31/10	Introduction, Statistical Model	1-2
L2	6/11	Likelihood, Score, Fisher Information	3.1-3.2.1
L3	7/11	Fisher Information, The Multivariate Case	3.2.1-3.2.2
L4	14/11	Sufficiency	3.3
L5	15/11	Sufficiency, Problem solving	2-3
L6	17/11	Methods of Estimation	4.1
L7	20/11	Unbiasedness, Mean Square Error, Best Unbiased Estimators	4.2-4.2.2
L8	23/11	The Multidimensional Case, Rao-Blackwell, Lehmann-Sheffé	4.2.3
L9	27/11	Asymptotic Properties of Estimators	4.3
L10	29/11	Test problems, P values, Decision rules, Neyman-Pearson	5.1-5.3.1
L11	6/12	Uniformly Most Powerful Tests	5.3.2
L12	7/12	Unbiased Tests	5.3.3
L13	11/12	Conditional Tests	5.3.4
L14	14/12	Problem solving	4-5
L15	18/12	Old exams	

Recommended problems

2.1, 2.4, 2.5, 2.6, 2.7, 2.8
3.2, 3.3, 3.4, 3.5, 3.6, 3.12, 3.14
4.1, 4.3, 4.6, 4.7, 4.11, 4.12
5.2, 5.3, 5.5, 5.6, 5.8, 5.9, 5.10, 5.12