

Bayesian Analysis and Decision Theory

Schedule version 2 feb

Lectures, exercises and seminars are given by

Ullrika Sahlin, Niklas Vareman, Johan Lindström, Martin Stjernman and Inari Helle

Part I Decisions, risk and uncertainty

Tuesday 13th of March				Biology Building unless stated otherwise
10-11	Decision making under uncertainty	Lecture	Niklas	Stora konferensrummet in the Ecology Building
11-12	Uncertainty	Literature seminar	Niklas	Stora konferensrummet in the Ecology Building
lunch				
13-14	Bayesian Belief Networks	Lecture	Ullrika	Serebrum
14-15	Decision making using BBN	Exercise	Ullrika	Serebrum
15-16		Questions & Answers	Ullrika, Niklas, Johan	Serebrum
Wednesday 14th of March				
10-11	The Bayesian paradigm in risk assessment	Lecture	Ullrika	Serebrum
11-12	Communicating scientific uncertainty	Lecture	Ullrika	Serebrum
lunch				
13-14	Uncertainty analysis	Lecture	Ullrika	Serebrum
14-15	Quantifying	Lecture and	Ullrika	Serebrum

	uncertainty by expert knowledge elicitation	Exercise		
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Part II. Bayesian Hierarchical Modelling

Tuesday 20th of March		MH:227 in the Maths Building	
10-11	Introduction to statistical and mechanistic modelling and making predictions	Lecture	Johan
11-12	Simulation and prediction in a simple model	Exercise	Johan
lunch			
13-14	Bayesian Hierarchical Modelling	Lecture	Johan
14-15	INLA - Generalized linear mixed models.	Exercise	Johan
15-16		Questions & Answers	Johan, Ullrika
Wednesday 21st of March			
10-11	Using Bayesian analysis in research	Lecture and group discussions	Martin, Ullrika
11-12	Bayesian Hierarchical Modelling - Introduction to MCMC	Lecture	Johan
lunch			

13-14.30	JAGS	Exercise	Johan, Martin
14.30-15	Introduction to individual project		Ullrika

Part III. Bayesian decision analysis with applications

Tuesday 10th of April		Serebrum in the Biology Building	
10-11	Bayesian learning, forecasting and decision analysis	Exercise	Ullrika
11-12	Decision making robust to uncertainty.	Lecture	Niklas, Ullrika
lunch			
13-14	Applications of Bayesian analysis in environmental management	Lecture	Inari
14-15	Walk through examples of Bayesian models	Exercise	Inari
15-16		Questions & Answers	Ullrika, Inari, Johan
Wednesday 11th of April			
10-12	Bayesian decision analysis: possibilities, necessities, limitations and extensions	Literature seminar	Ullrika, Niklas, Inari
lunch			
13-15	Introduction to individual projects	Pitch and feedback session	Ullrika, Niklas, Inari, Johan, Martin

Thursday 12th of April			
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Part IV. Individual project

The purpose with the individual project is to give the students an opportunity to deepen or apply course content on something that are in their own interest. It can be purely theoretical or more hands-on modelling project. A suggestion is to do a decision analysis where one need to integrate data and expert judgment.