

Lecturers: Carlo Albert (CA), Peter Reichert (PR), Andreas Scheidegger (AS), Dmitri Kavetski (DK), Nitin Kumar (NK) and Juan Pablo Carbajal (JP).

Practice sessions and support in R: Lorenz Ammann (LA), Jenny Held (JH), Tom Lorimer (TL), Gian Marco Palamara (GP) and Max Ramgraber (MR).

Sunday, June 2: Optional Preparatory Course

10:30 - 11:30	lecture	AS	Review of probability theory
13:00 - 14:00	lecture	LA	Review of the R programming language
14:30 - 16:00	practice	LA	Exercises

Monday, June 3: Probabilistic Models

08:45 - 09:00	lecture	CA	Introduction to the course
09:00 - 10:00	lecture	PR	Probabilistic models and likelihood functions
10:00 - 10:30	discussion	CA, all	Introduction and expectations of participants
11:00 - 11:30	lecture	AS	Sensitivity analysis
11:45 - 12:30	lecture	CA	Monte Carlo simulation
14:00 - 17:00	practice	JH, all	Practice of likelihood functions and sensitivity analysis, ex.1
17:00 - 17:30	discussion	JH	Discussion of exercises
18:00 - 21:00	barbecue	all	<i>At the small river close to Eawag; if weather is nice (bring beach-volley gear!)</i>

Tuesday, June 4: Introduction to Bayesian Analysis

08:30 - 09:15	lecture	PR	Concepts of Bayesian analysis
09:30 - 10:15	lecture	DK	Simple Bayesian schemes
10:45 - 11:30	lecture	CA	Bayesian computation with Monte Carlo methods
11:45 - 12:30	lecture	DK	Identifiability analysis and posterior diagnostics
14:00 - 17:00	practice	MR, all	Practice of elementary Bayesian inference, ex. 2
17:00 - 17:30	discussion	MR	Discussion of exercises

Wednesday, June 5: Bayesian Computation and Alternative Techniques

08:30 - 09:15	lecture	DK	Optimization techniques
09:30 - 10:15	lecture	CA	Ensemble methods and filters
10:45 - 11:30	lecture	AS/PR	Inference with hierarchical models
11:45 - 12:30	lecture	DK	Alternative methods of model calibration
13:30 - 14:30	guided tour	Thomas L.	<i>Guided tour through the building and to the river</i>
14:30 - 17:00	practice	TL, all	Practice of Bayesian inference / advanced methods, ex. 3
17:00 - 17:30	discussion	TL	Discussion of exercises

Thursday, June 6: Advanced Topics

08:30 - 09:15	lecture	PR	Stochastic models in hydrology and ecology
09:30 - 10:15	lecture	CA	Approximate Bayes computation (ABC)
10:45 - 12:30	discussion	all	Discussion of problems of the participants
13:45 - 14:00	course picture		<i>Outside or in the atrium, depending on the weather</i>

14:00 - 15:00	practice	all	FC-B81	FC-C20
15:00 - 16:00	practice	all	Ex. 4: Inference with hierarchical models (GP)	Repetition (AS) / problems of participants
16:00 - 17:00	practice	all	Ex. 5: ABC (LA)	
			Ex. 6: Emulators (JP)	

Friday, June 7: Discussion of Problems of the Participants

8:30 - 9:15	lecture	DK	Hydrological modeling, uncertainty and hypothesis testing
9:30 - 10:15	lecture	NK	Machine Learning
10:45 - 11:15	discussion	all	Discussion of problems of the participants
11:30 - 12:00	discussion	AS	Summary of the course
12:00 - 12:30	discussion	all	Feedback to the course
14:00 - 16:30	practice	all	Practice of Bayesian inference and exercises Discussion of problems of the participants

Lectures and practice sessions will take place in FC-C20, lunch will be provided in the restaurant downstairs.