Eawag Summer School in Environmental Systems Analysis 2009 PR/DK/17.06.2009

Peter Reichert (PR), Dmitri Kavetski (DK), Carlo Albert (CA) (lectures)
+ Anne Dietzel and Simon-Lukas Rinderknecht (practice support)

Course Program

Monday, June 15

Time	Type	Who	Topic
08:30 - 09:00		PR	Introduction to the course
09:00 - 10:30	lecture	PR	**Importance of models** **Causes of uncertainty in model predictions** **Description of uncertainty** **Mathematical representation of models**
10:30 - 11:00	break		
11:00 - 11:30	lecture	PR	**Introduction to R**
11:30 - 12:30	practice	all	Practice with R
12:30 - 14:00	lunch		
14:00 - 15:30	lecture	PR	**Construction of models** **Preliminary analysis** **Sensitivity analysis**
15:30 - 16:00	break		
16:00 - 17:30	practice	all	Practice of sensitivity analysis

Tuesday, June 16

Time	Type	Who	Topic
08:30 - 10:00	lecture	PR	**Frequentist inference: tests, confidence regions**
10:00 - 10:30	break		
10:30 - 12:30	practice	all	Practice of frequentist inference
12:30 - 14:00	lunch		
14:00 - 15:30	lecture	CA	**Frequentist inference: identifiability, model structure selection**
15:30 - 16:00	break		
16:00 - 17:30	practice	all	Practice of identifiability analysis

Wednesday, June 17

Time	Type	Who	Topic
08:30 - 10:00	lecture	PR	**Bayesian inference: priors, updating**
10:00 - 10:30	break		
10:30 - 12:00	lecture	PR	**Model predictions** **Bayesian numerics: importance sampling, Markov chain Monte Carlo techniques**
12:30 - 13:30	lunch		
13:30 - 14:15	optional tour	HG/TL	Guided tour through the FC building
14:15 - 15:30	practice	all	Practice of Bayesian inference
15:30 - 16:00	break		
16:00 - 17:30	lecture	DK	**Bayesian inference using hierarchical models. Posterior diagnostics, identifiability and well-posedness of Bayesian inferences and the role of prior knowledge**

Thursday, June 18

Time	Type	Who	Topic
08:30 - 10:00	practice	all	Practice on Bayesian inference and empirical assessment of identifiability and well-posedness
10:00 - 10:30	break		
10:30 - 12:00	lecture	DK	**Bayesian numerics: Implementation aspects and tools. Selected applications**
12:30 - 14:00	lunch		
14:00 - 15:30	lectures	all	**Outlook to current research**
15:30 - 16:00	break		
16:00 - 17:30	practice	DK/PR	Practice on Bayesian techniques in hydrology

Friday, June 19

Time	Type	Who	Topic
08:30 - 10:00	discussion	all	**Discussion of problems of the participants**
10:00 - 10:30	break		
10:30 - 11:00	discussion	participants	**Feedback of participants to the course**
11:00 - 12:30	practice	all	Practice on chosen subject
12:30 - 14:00	lunch		
14:00 - 16:30	practice	all	Practice on chosen subject