



TU1402 Training School 2018

Objective

The objective of the second COST TU1402 Training School is to explore methods and tools to implement a Value of Information analysis in structural engineering. Through the training school, the students will acquire knowledge and skills on the implementation of probabilistic modelling, structural reliability analysis and decision analysis by the use of Bayesian networks. All learning content will be taught alongside its implementation in a selected case study. A student who successfully has taken part in the course will be able to:

- Develop and apply probabilistic models of the relevant uncertainties in decision analyses, in structural reliability analyses and for measurement information modelling
- Perform Value of SHM Information and decision analyses

Dates and venue

3 days within 24th to 28th of September 2018

Lecturers

Prof. Dr. Daniel Straub, Technical University of Munich, Germany

Prof. Dr. Jochen Köhler, Norwegian Technical University, Norway

Assoc. Prof. Dr. Sebastian Thöns, Danish Technical University, Denmark

Further lecturers will be announced later.

Who should attend?

Post-Graduate Students and professionals.

As the training school is focused on implementation of methods, the attendees should ideally have a solid background in relevant topics as e.g. Probability Theory, Uncertainty Representation, Reliability Theory, Decision Theory. If potential attendees feel unsecure about their skills, brief self-study is recommended prior to the training school. Reference to basic engineering-oriented literature is given at the end of this document. Further references can be given on request.

Application, scholarships and registrations

There are 10 TU1402 scholarships with a support of maximum 400,00 Euro available. Please send a motivation letter, a short CV including the most relevant study transcript via email to Sebastian Thöns (sebt@byg.dtu.dk).



Training School Plan

Day 1	Introduction to the example case	
	Time	Topics
	08.30-9:00	Introduction to the case and the available data
	09:00-10:00	Value of information concept & decisions
	10:30-12:00	Decisions, consequences and monitoring of the case study
	13:00-14:30	Introduction to Bayesian Networks and Influence Diagrams
	15:00-17:00	Representing the case study by an Influence Diagram
Day 2	Structural reliability and measurements	
	Time	Topics
	08.30-10:00	Modelling the quality of information
	10:30-12:00	Case study work
	13:00-14:30	Reliability analysis within the BN
	15:00-17:00	Case study work
Day 3	Decision analyses	
	Time	Topics
	08.30-10:00	Sequential decision modelling
	10:30-12:00	Case study work
	13:00-17:00	Work on and presentation of own projects

Course evaluation

Course Diplomas are issued by COST TU1402 on the basis of (1) active course preparation, (2) active course participation and (3) a positive evaluation of the provided case study after the training school. 2.5 ECTS points will be awarded for the course.

Literature for preparation

- [1] Straub D. 2017 Lecture notes in Engineering Risk Assessment. Technische Universität München
- [2] Raiffa H, Schlaifer R. Applied statistical decision theory. Wiley classics library, Originally published: Harvard University, 1961. Republished: Wiley (2000)
- [3] Benjamin JR, Cornell CA. Probability, Statistics and Decision for Civil Engineers: McGraw-Hill New York; 1970.