

JCSS Continuing Education & Advanced School

Probability Theory, Risk Assessment & Structural Reliability and Probabilistic Model Code

Part 1

Probabilistic Modelling and Risk Analysis in Engineering

Organized by the Joint Committee on Structural Safety (JCSS): www.jcss.byg.dtu.dk
(<https://jcsseducation.wordpress.com/>)

Increased interest in risk and reliability

Methods of reliability, risk and safety assessment are increasingly gaining importance as decision support tools in various fields of engineering. In order to utilize these methods and to exploit their potential in industrial applications, an understanding of the fundamental principles is necessary. The Advanced School aims at educating engineers and researchers to work more efficiently in supporting decision makers and clients for a sustainable societal development.

JCSS

The JCSS is a committee in the field of Structural related Risk and Reliability, acting on behalf of the Liaison Committee of the following six international professional associations:

- CIB International Council for Research and Innovation in Building and Construction
- ECCS European Convention for Constructional Steelwork
- fib International Federation for Structural Concrete
- IABSE International Association for Bridge and Structural Engineering
- RILEM Reunion internationale des Laboratoires et Experts des Matériaux
- IASS International Association for Shell and Spatial Structures

The goals of the JCSS are:

- To provide general knowledge and decision support for the life-cycle based management of safety, reliability, risk, robustness, durability, resilience and sustainability for the built environment, on the basis of sound scientific principles and with an open eye for the applications in practice.
- To take care that inter-associational pre-normative research in the field of Risk and Reliability is performed in an effective and adequate way.
- To strive for coordination between the interassociational pre-normative research and normalization activities in ISO, Eurocode etc.
- To provide appropriate support and technical co-ordination for the work of the Member Associations.

JCSS Advanced School description

The JCSS Continuing Education and Advanced School provides a deep and thorough insight in the latest developments in the concepts and tools for probabilistic structural reliability engineering and risk informed decision making.

Benefits

The participants benefit by becoming able to master the methods of reliability, risk and safety assessment for engineering projects. Furthermore, the participants can offer clients new services in the perspective of benefit and risk informed decision support.

Who should attend?

Engineers involved in probabilistic structural analysis, design and reliability assessment, as well as engineering supervisors and managers will benefit from this course. Further, PhD students and academics working in the field of structural risk assessment will profit from this course. Participants are expected to have basic knowledge on basic probability theory, statistics, linear algebra and elementary structural analysis (static/dynamic).

Hotel

Hotel accommodation is not provided by the organization. Participants are kindly requested to arrange this themselves.

Time and Location

The course on Probabilistic Modelling and Risk Analysis in Engineering will be held from the 18.03.2019 to the 22.03.2019.

The course location will be at the Guimarães University of Minho, Portugal.

Learning methods and activities

Learning methods and activities comprise lectures, practical exercises and self-studies. Self-study assignments will typically consist of calculations that develop understanding of the materials presented in class. Participants will be made familiar with the state-of-the-art computational methods and software in this field.

Evaluation and Diploma

Course Diplomas are issued by the JCSS on the basis of active course participation and a positive evaluation of the provided material by the participant.

Course materials

Course compendium, books, selected research reports and papers from journals and conferences.

Lecturers

- Prof. Dr. Michael H. Faber (Aalborg University)
- Prof. Dr. Jochen Köhler (NTNU)
- Prof. Dr. Robby Caspele (Ghent University),
- Prof. Dr. José Matos
- Dr. Matthias Schubert (Matrisk, Switzerland)
- Niels Peter Hoj (Hoj Consulting, Switzerland)

Costs and registration

The attendance fee is 1'950 € per participant. A reduced attendance fee of 950 € applies to PhD and master students. Early bird registration is required via email to Matthias Schubert (schubert@matrisk.com) until the 15.12.2018 with a discount of 15%. For registrations after the 15.12.2018 the full price will apply.

This amount will be refunded if the course does not start.

Course Content

Topics of the course are:

- Probability theory
- Uncertainties and random variables
- Properties of random variables
- Distribution functions
- Random processes and probabilistic model building
- Regression analysis
- Structural reliability
- Risk analysis and decision making

The course language is English.