Sveučilište u Splitu
University of Split

INTERNATIONAL SPLIT SUMMER SCHOOL 2026

COURSE: Stochastic Modeling and Simulation in Engineering

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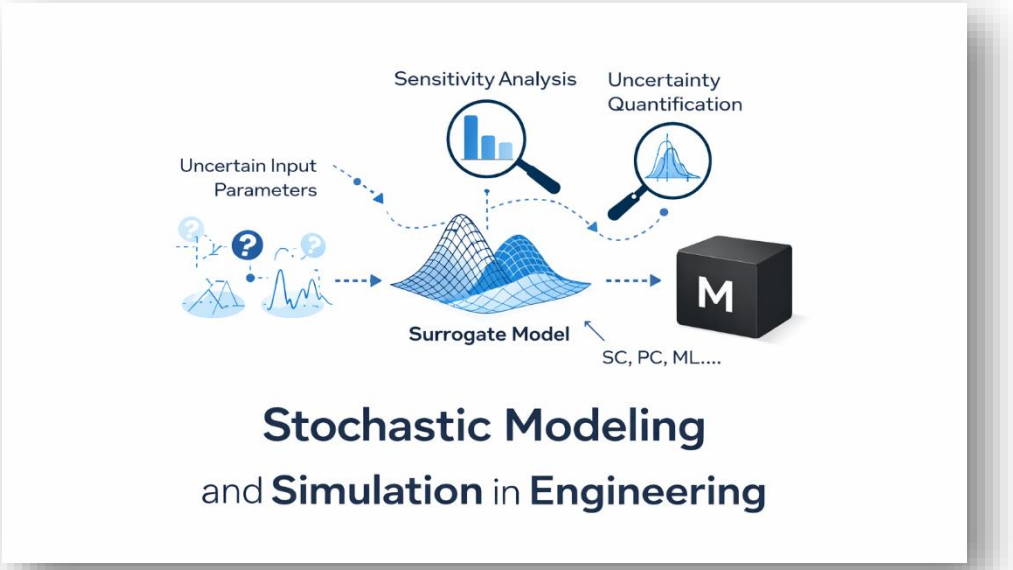

Main topics

- **Fundamentals of statistics and stochastic methods for engineering applications**
- **Deterministic modeling of complex systems**
- **Intrusive and non-intrusive stochastic methods**
- **Local and global sensitivity analysis**
- **Surrogate modelling: Classical and AI Approaches**

Programme structure

- 5-day course (max 4 hours per day)
- Combination of lectures, workshops, and hands-on practical exercises
- Independent student project with guidance from instructor
- All students receive lecture notes and datasets for practical exercises

Important dates

Course dates: 31.08. – 04.09.2026.
Deadline for application: June 15, 2026.
Payment due by:
Confirmation of the course:
Price of the course: 300 € (tax included)

Program plan	Lectures
Day 1 Introduction and Fundamentals	- Lecture: Introduction to statistics for engineering applications, distributions, and statistical parameters (1.5h) - Lecture: Fundamentals of stochastic methods and uncertainty propagation (1.5h) - Workshop: Deterministic modeling and software tools for complex systems (1h)
Day 2 Intrusive & Non-intrusive Methods	- Lecture: Monte Carlo simulations and advanced sampling strategies (1.5h) - Lecture: Non-intrusive stochastic collocation and comparison with intrusive methods (1.5h) - Workshop: Implementing Monte Carlo and stochastic collocation methods in software (1h)
Day 3 Sensitivity Analysis	- Lecture: Local and global sensitivity analysis (Sobol indices, screening methods) (1.5h) - Workshop: Performing sensitivity analysis and interpreting results (1.5h) - Discussion / Q&A: Case studies of sensitivity analysis in engineering (1h)
Day 4 Surrogate Models: Classical and AI Approaches	- Lecture: Surrogate models: polynomial approximations, kriging, and AI-based surrogate modeling (2h) - Workshop / Practical work: Building and validating surrogate models using classical and AI approaches (2h)
Day 5 Project Presentations and Discussion	- Student presentations of projects (3h) - Discussion and feedback, wrap-up, and Q&A (1h)