Aim

- Providing a basic treatment of the important aspects of discrete-event simulation

Outline

1) Introduction
2) Introduction to MATLAB
3) General Principles and Examples
   a) Concepts of discrete-event simulation
   b) List processing
   c) Some examples of simulation
4) Patterns of Simulation Systems
   a) Simulation system structures
   b) Sorted list processing (Heap)
   c) Expressing systems for simulation
5) Statistical Models
   a) Review of basic probability and statistics
   b) Discrete distributions
   c) Continuous distributions
   d) Empirical distributions
6) Generating Random-Numbers
   a) Properties of random numbers
   b) Techniques for generating random numbers
   c) Testing random number generators
7) Generating Random-Variates
   a) Inverse-transform technique
   b) Acceptance-rejection technique
   c) Composition
   d) Convolution
8) Input Modeling
   a) Data collection
   b) Assessing sample independence
   c) Hypothesizing distribution family with data
   d) Parameter estimation
   e) Goodness-of-fit tests
   f) Selecting input models in absence of data
   g) Models of arrival processes
9) Verification and Validation of Simulation Models
10) Output Data Analysis
    a) Transient and steady-state behavior of a stochastic process
    b) Types of simulations with regard to output analysis
    c) Statistical analysis for steady-state parameters
11) Experiment Design and Sensitivity Analysis (1.5 weeks)
12) Further Studies in Simulation
   a) Monte-Carlo simulation
   b) Real-world simulation

References