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COURSE SCHEDULE: Tuesday 13.00-14.00 (M2180)
Wednesday 14.00-16.00 (M230)
Friday 12.00-14.00 (M2230)

COURSE DESCRIPTION: This course presents the fundamental concepts of discrete event systems simulation and Monte Carlo Simulation: Modeling, input and output analysis and random variate generation. For Monte Carlo Simulation we will teach and use the “R” package; for discrete event simulation the simulation software (ARENA) will be covered and used for solving real world simulation problems.

The aim of the course is thus to lead the students to understand and experience the theoretical and practical basis of simulation.

No book covers all the topics but most topics are covered by the Banks et.al book below. For Monte Carlo Simulation with R your notes are necessary.

REFERENCE BOOKS:

Banks, Carson, Nelson, Nicol: Discrete event system simulation

Kelton, Sadowski, Sadowski: Simulation with ARENA

Law, Kelton: Simulation Modeling and Analysis

Course Outline:

Introduction to simulation (Banks Chapter 1)

Random number and random variate generation (Banks Chapter 7+8)

Output Analysis (Banks Chapter 11.1-11.4)

Monte Carlo Simulation using R

Basic statistical methods for Modeling input distributions (Banks Chapter 5+9)

Principles of Simulation Implementations and Examples in C (Banks Chapter 3)

Introduction and examples with ARENA

Verification and Validation (Banks Chapter 10)

Steady state simulations (Banks Chapter 11.5)

Comparing two and more systems (Banks Chapter 12)

Variance reduction Techniques

EVALUATION: Midterm 35 % (probably in the end of March)
PS and Final Project: 25 %
Final 40 %

**To get a DD it is necessary to reach at least 50% for the midterm test !!!!!!!!
for the assignments and the final project and to have a weighted total of 50%!!!!!!!**

PLEASE check our Course Webpage: <http://karagoz.ie.boun.edu.tr/moodle/>

You need the “enrollment Key” that I’ll give in the first lecture.