

MG26018 Simulation Modeling and Analysis 仿真建模与分析

Sino-US Global Logistics Institute
Shanghai Jiao Tong University

Fall 2019

Course Syllabus

Course Description

This course covers classical concepts and theories in discrete-event system simulation for graduate students, mainly including queueing models, random variate generation, input modeling, verification and validation of simulation models, and output analysis. It also provides basic training on conducting simulation in Microsoft Excel and Arena.

Instructor Info

- SHEN Haihui 沈海辉
- Office: Middle Hall 305
- Email: shenhaihui@sjtu.edu.cn
- Office Hours: By appointment

Course Website

- <https://shenhaihui.github.io/teaching/mg26018>

Time & Venue

- Time: Thursday 18:00–20:20, Week 1–11
- Venue: Middle Hall 301

Prerequisites

Undergraduate level courses of probability and statistics are assumed. (For those who are not familiar with these contents, supplementary reading will be provided when necessary.) Workable knowledge in linear algebra and calculus is also needed. Programming knowledge will be beneficial, but is not required.

Course Materials

- Lecture Notes
- Online Materials
- Supplementary Reading Materials



Tentative Outline

- Introduction to Simulation
- Queueing Models
- Random Variate Generation
- Input Modeling
- Verification and Validation of Simulation Models
- Output Analysis I: Single Model
- Simulation in Excel and Arena
- Output Analysis II: Comparison and Optimization (if time allows)

Main References

- Banks, Carson II, Nelson, and Nicol (2010). *Discrete-Event System Simulation*. Pearson, 5th Edition.
- Averill M. Law (2015). *Simulation Modeling and Analysis*. McGraw-Hill, 5th Edition.
- 肖田元, 范文慧 (译), Banks 等 (著). 离散事件系统仿真(原书第4版), 机械工业出版社, 2007年.

Course Evaluation

- Homework (may include in-class test) (40%)
- Final Exam (60%)

Class Policy

- Regular and punctual attendance is required.
- A repeatedly disruptive student will have his or her grade reduced. Side conversations during lectures are to be kept to a minimum. However, asking/answering questions and making comments are *always welcomed* and *highly encouraged*.
- **Academic Honesty:** Plagiarism of homework and cheating in exam are both serious fraud, which will be SEVERELY PUNISHED (ranges from point deduction, course failure, to disciplinary sanction from the university). In plagiarism cases, BOTH the giver and the copier will be treated as guilty. It's OK to discuss with others when doing homework, but you have to write the solution BY YOURSELF.

