

EE/CPE 345 Modeling and Simulation

This course focuses on the development of deterministic and non-deterministic models for physical systems with a focus on discrete event driven stochastic system simulations. A discrete-time event driven simulation environment is introduced as a simulation tool and it is used to develop the final project.

Topics:

1. Discrete event-driven systems
2. Manual simulation and Future Event List
3. Review of probability with applications for system and input data modeling
4. Queueing systems
5. Introduction to OMNET++ programming
6. Random number generators
7. Tests for randomness – Goodness of Fit Tests
8. Verification and Validation
9. Output Analysis: Point Estimators and Confidence Intervals

Textbook: Banks, Carson, Nelson & Nicol, “*Discrete Event System Simulation*”, Prentice Hall, 2005.

Additional Reading Materials: Omnet++ Manual

Grading:

- Homework: 20%
- Quizzes 15%
- Class participation – 5%
- Midterm 30%
- Project 30% - small teams