ECE 6557

Summer 2009

Basic information

Instructor: Professor Yorai Wardi
Email: ywardi@ee.gatech.edu

Synopsis: The course covers discrete-event tools for modelling, analysis, simulation, control, and optimization of manufacturing systems.

Text: C.G. Cassandras and S. Lafortune, *Introduction to Discrete Event Systems*, Springer, 2nd Edition, 2008, ISBN 978-0-387-33332-8

Handouts will be given for material that is not covered in the text

Grading: quiz - 25%; project - 25%; homework - 10%; final exam - 40%.
The project and assignments will require some programming; the MATLAB student version is recommended

Detailed course description:

- Basic probability theory
- Poisson processes
- Markov chains
- Markov chains in manufacturing
- Queueing processes
- Queueing examples in manufacturing
- Petri nets
- Event graphs: liveness and deadlock
- Timed event graphs
- Stochastic event graphs
- Petri nets modelling in manufacturing

- Monte Carlo simulation
- Simulation of queues and queueing networks
- Simulation of Petri nets
- Basics of optimization
- Stochastic approximation
- Simulation-based optimization and IPA