

DSO 534

Discrete-Event Simulation for Process Management

Professor Amy R. Ward

BRI 401H

amyward@marshall.usc.edu

Who should take the course?

Students who are interested in system design – and, in particular, in the design of service and manufacturing systems.

Course objectives

To provide students with the knowledge to codify the behavior of a complex system as an ordered sequence of well-defined events, so that the system behavior can be mimicked on a computer.

Key concepts

- Incorporating variability in process analysis
- System design evaluation
- Delay estimation
- Real-time scheduling
- Software implementation in ExtendSim
- Together, we will build simulation models for
 - Service system design;
 - Delay prediction;
 - Inventory management;
 - Workflow routing.

Course description

Uncertainty and variability have large impacts on system performance. However, process analysis does not provide a reliable methodology for predicting the effect of uncertainty on performance measures such as delay. Discrete-event simulation methodology does. The goal of this course is to build discrete-event simulation models in order to evaluate system design decisions, and to improve them.

In relation to DSO 547 (Designing Spreadsheet-Based Business Models) and DSO 536 (Monte Carlo Simulation and Decision Models), the focus of this course is on the simulation of processes, which cannot be done in Excel. Knowledge of basic probability and statistics (at the level of DSO 516, Probability and Data Models) is assumed.

DSO 534

DIGITAL
MANAGEMENT

