ENG SE/ME 766: Advanced Scheduling Models and Methods

Prerequisites: EK 500, EC 505, or EC 534, **and** SE/ME 510 or SE/EC/ME 501, **or** consent of instructor. Experience using a simulation package is encouraged.

Meeting Time and Location: Tuesdays & Thursdays 4:00 - 6:00 p.m. in GCB 206

Instructor Information:

Professor Perkins
Office: 15 St. Mary's Street, Room 146
Phone: 353-4991
Email: perkins@bu.edu

Office Hours: Tuesdays & Thursdays 12:15 - 1:15 p.m. and by appointment

Course Web Site: people.bu.edu/perkins/SE766

Course Materials: There is no required textbook. Supplemental reading will consist of technical journal articles and other course handouts.

Course Assignments:

Assignments/Mini Projects:

There will be 4 or 5 assignments worth 60% of the course grade. Each of these mini-projects will investigate a different scheduling model/method, with emphasis on one or more of the following:

- Literature review
- Numerical or analytical techniques
- Simulation

Term Project:

Students will write a 8-12 page report and, possibly, give a presentation. This will be worth 20% of the course grade. There will be several options for the project including, but not limited to:

- Students may choose a scheduling model/method and "teach" it to the class.
- Continued work on, and extensions of, any of the more difficult problems from the homework assignments.
- More detailed investigation of some of the models/methods discussed in class.

Attendance/Participation:

Class attendance, participation, and problem recitation will be 20% of course grade.

Detailed Topics:	**Classes**
Introduction and background material	1
Classical/neoclassical scheduling: Gantt charts, static scheduling, scheduling humans	3
Deterministic scheduling: linear and integer programming models, maximum principle, Lagrangian relaxation, Petri nets	4
Stochastic scheduling: flow control models, queueing theory models, diffusion approximations and heavy traffic limits	6
Scheduling heuristics: policies (CAF, round-robin, least slack) and search methods (neural networks, genetic algorithms, simulated annealing)	6
Network scheduling: heuristics (least slack, EDD, CLB, LBFS), linear programming approaches, takt time scheduling, probabilistic controls	6