

## 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 2:00 - 4:00 p.m. in PSY B42

### Instructor Information:

Professor Perkins

Office: 15 St. Mary's Street, Room 146

Phone: 353-4991

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**Office Hours:** Tuesdays & Thursdays 12:45 - 1:45 p.m. and by appointment

**Course Web Site:** [people.bu.edu/perkins/SE766](http://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