Boston University, College of Engineering
ENG ME 510: Production Systems Analysis

Course Information: Fall 2016

Meeting Details:

Tuesday and Thursday 4:00 - 6:00 pm
PHO 210, Photonics Building, 8 St. Mary's Street and remote sites

Instructor:

Professor Perkins
Office: 15 St. Mary's Street, Room 146
Phone: (617) 353–4991
Email: perkins@bu.edu

Course Website:

Blackboard Learn

Office Hours:

Tuesday/Thursday 2:00-3:00 pm (email me to confirm) and by appointment

Textbook:

Nahmias and Olsen, **Production and Operations Analysis** (7^{th} ed.), Waveland Press, 2015

Problem Sets:

Problem sets will be 30% of course grade. Assigned approximately weekly.

Exams:

Midterm worth 25% of course grade. Final worth 35% of course grade. Midterm date to be determined. Final date (tentative): Tuesday, December 20, 2016, 3:00 pm - 5:00 pm

Attendance and Participation:

Attendance/Participation in class will be 10% of course grade.

Reference Texts:

1. "Production: Planning, Control, and Integration," Sipper and Bulfin, Jr., McGraw-Hill, 1997.
2. "Production & Inventory Management," 2nd ed., Fogarty, Blackstone, and Hoffman, South Western, 1991.
3. "Production and Inventory Management," Hax and Candea, Prentice-Hall, 1984.
4. "Manufacturing Planning and Control Systems," Vollman, Berry, and Whybark, Richard D. Irwin, Inc., 1984.
5. "Performance Modeling of Automated Manufacturing Systems," Viswanadham and Narahari, Prentice-Hall, 1992.
6. "Introduction to Sequencing and Scheduling," Baker, Wiley, 1974.
7. "Sequencing and Scheduling," French, Wiley, 1982.

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Course Topics: Fall 2016

- Deterministic and stochastic inventory models: Economic Order Quantity (**EOQ**), Economic Lot-Sizing Problem (**ELSP**), Dynamic lot-size models, (s,Q), (s,S), and other stochastic models
- Demand forecasting: average, moving average, exponential smoothing, other methods
- Aggregate Production Planning (**PP**) and Master Production Scheduling (**MPS**): linear programming models
- Material Requirements Planning (**MRP**) and production control methods: MRP and MRP-II, Kanban, and Just-in-Time (**JIT**)
- Supply chain management: Enterprise Resource Planning (**ERP**), inventory balancing
- Analysis of throughput, production lead time, and Work-in-Process (**WIP**): Kingman's equation, **CONWIP**, mean value analysis
- Group Technology (**GT**) for capacity planning and plant layout
- Scheduling: classical/static scheduling theory (single and multiple machines, flow shops, and job shops); neoclassical scheduling theory (scheduling of human resources); project scheduling (**PERT/CPM**)