

**ENG MN 510: Production Systems Analysis
(Systems Elective)**

Course Information: Fall 2006

Meeting Details

Monday and Wednesday 4:00–6:00 pm
PHO 210, Photonics Building, 8 St. Mary's Street and remote sites

Instructor

Professor Perkins
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Phone: (617) 353–4991
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Course Textbook

“Production: Planning, Control, and Integration,” Sipper and Bulfin, Jr., McGraw-Hill, 1997.

Problem Sets

The 10 problem sets will be 30% of course grade.

Exams

Midterm worth 25% of course grade. Final worth 35% of course grade.

Attendance/Participation

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

Course Topics

- 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, Just-in-Time (**JIT**), Kanban, and flow control
- 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**)