

## Department of Industrial & Management Systems Engineering

### EIN 6336 Production Control Systems

*Fall 2007*

**Time & Place** MW 11:00 am - 12:15 pm, room ENC 2001.

**Instructor** Dr. Alex Savachkin, ENC 2201; E-mail: [savachki@eng.usf.edu](mailto:savachki@eng.usf.edu); Tel: 813-974-5577.

**Office Hours** Monday 08:00 am - 10:00 am. *Feel free to drop by at any time.*

**Textbook** S. Nahmias, *Production & Operations Analysis*, 5th ed., ISBN: 0073018651.  
About 25% of the discussed material will be from sources other than the textbook (instructor's notes and journal articles).

#### Course Objectives

1. Get exposed to modern production planning, inventory control, and supply chain problems.
2. Build foundations for deterministic and stochastic models needed to solve these problems.

#### Grading Policy

Quizzes	- 10%
Midterm I (tentatively October 02)	- 30%
Midterm II (tentatively November 01)	- 30%
Midterm III (tentatively December 06)	- 30%.

#### Miscellaneous Policies

Make-up examinations will only be given with *prior* arrangements. If a test/quiz is missed, you must have a *written authorized* excuse to be able to have a make-up. Grade appeals are considered within a 10-day period. Academic misconduct will not be tolerated; violations of academic honesty will be dispatched in accordance with the University policy.

#### Topics

##### *Part I*

1. **Forecasting:** general forecasting procedure and mathematical models; measures of forecasting accuracy; forecasting stationary time series; forecasting linear trend series.
2. **Aggregate Production Planning:** single period stochastic product mix/blending models: chance-constrained model, budget constraint model; process selection models.
3. **Capacity Planning:** TVM/economic factors (overview); dynamic capacity expansion model with a linear trend demand; dynamic capacity maintenance/equipment replacement model; dynamic stochastic inventory/production planning model.

*Part II*

4. **Inventory Control with a Deterministic Demand:** EOQ model; EOQ model with a positive lead time; sensitivity analysis; EOQ with a finite production rate; EOQ with quantity discounts (all-units and incremental); various extensions.

5. **Inventory Control with a Stochastic Demand:** single period newsboy model; extensions of the newsboy model (starting inventory, infinite period planning horizon with a full backordering of demand and lost sales); various extensions (discussion of papers).

*Part III*

6. **Supply Chain Management:** shortest route/maximum flow problem; transshipment models; advanced topics on design of global supply networks (discussion of papers).

7. **Operations Scheduling:** sequencing rules: FCFS, SPT, EDD, CR (discussion of papers); sequencing for a single machine; Moore's and Lawler's algorithms.

*Have fun and good luck!*