

INDUSTRIAL ENGINEERING DEPARTMENT

IE 621

Inventory Control Theory

Fall 2014

Class Schedule: Thursday 11:00-14:00, M 2231.

Instructor: Refik Güllü (refik.gullu@boun.edu.tr)

Office Hours: Thursday 15:00-17:00

Course Objectives:

In this course we aim to cover fundamentals of inventory theory, and introduce recent issues and trends in inventory planning and control. At the end of the course you should become familiar with quantitative modelling and analysis of inventory systems. We will mostly focus on stochastic inventory problems, and we will discuss multi-item, multi-level systems and the interactions between various levels of stocking decisions.

List of Topics:

1. Introduction (1 week)
2. One item with constant deterministic demand rate [a quick review of EOQ-type models] (1 week)
3. Several products and locations under deterministic demand [deterministic multi-product and multi-level models, joint replenishment, ELSP, serial systems] (3 weeks)
4. Single-item Stochastic demand models [DP formulation, with and without capacity, with and without set-up costs, periodic and continuous review models] (4 weeks)
5. Multi-item and multi-echelon inventory models under random demand [Eppen and Schrage model, Axsater's approach] (2 weeks)
6. Capacity uncertainty, and supply disruption in inventory models (2 weeks)

Textbook(s) and References: The course will largely be conducted using lecture notes and articles (to be announced later). The following books will be used as reference:

Zipkin, 2000, Foundations of Inventory Management, McGraw-Hill, New York.

Porteus, 2002, Foundations of Stochastic Inventory Theory, Stanford Business Books.

Silver, Pyke, and Peterson, 1998, Inventory Management and Production Planning and Scheduling, John Wiley & Sons, New York.

Hadley and Whitin, 1963, Analysis of Inventory Systems, Prentice-Hall, Englewood Cliffs.

Course Web Page: <http://moodle.ie.boun.edu.tr/>, Password: echelon

Grading: Homework assignments 30 %, Midterm Exam 30 %, Final Exam 40 %

Eligibility for the Final Exam: (1) Having a grade from the midterm exam (unless you have a proven medical excuse), (2) Obtaining at least 20 % of the midterm and homework assignment total (that is, 12 % of the course grade).