

IE 251: Production and Inventory Control

Fall 2003

Syllabus

Instructor: Prof. Larry Snyder

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Class Hours: MWF 10:10–11 AM

Office Hours: M 11 AM–12:30 PM, W 12–1:30 PM, and by appointment

Teaching Assistant: Ashutosh Mahajan (asm4), office hours TTh 3:30–5 PM

Course Description: This course will provide the tools necessary to solve problems arising in the production and service industries. Topics include demand forecasting, inventory policies, logistics, supply chain management, production systems (MRP and JIT), operations and project scheduling, and facility location and layout.

Textbook: Steven Nahmias, *Production and Operations Analysis*, 4th Edition, McGraw-Hill/Irwin, 2001.

Course Scope: We will cover Chapters 1–10 of the textbook, with the exception of Chapter 3. The material in these chapters breaks down into four sections:

1. Forecasting
2. Inventory control
3. MRP & Supply Chain Management
4. Scheduling

Course Objectives: Upon completion of this course, you will be able to:

1. Interpret historical demand data and use them to identify demand patterns and to make predictions about future demand levels
2. Use mathematical models to determine inventory policies, including those with random demand, non-zero lead times, economies of scale, and multiple products
3. Translate a bill of materials into a materials requirements plan
4. Sequence jobs on one or more machines to optimize various objectives

5. Schedule a workforce to meet labor requirements
6. Formulate and solve models for locating distribution centers and other facilities to minimize location and/or transportation costs
7. Understand the purpose and application of MRP/ERP systems and their shortcomings
8. Develop MRP software in Excel/VBA

Prerequisites: IE 221 (either previously or concurrently) and IE 121 and 222.

Computers: In this class we will make extensive use of Microsoft Excel, including Visual Basic for Applications (VBA). You will have a software project that requires you to produce a simple self-contained software package in VBA. We will review the fundamentals of VBA briefly in class, but if your VBA skills are feeling rusty, take the time to polish them up early!

Exams: You will have two fifty-minute in-class midterm exams and a two-hour final exam. The final exam will be cumulative. The exams will be closed-book, closed-notes.

Homework: You will have regular homework assignments consisting of problems from the textbook and one or more additional problems that are more open-ended. The goal of the book problems is to reinforce the material you learn in class and from the textbook. The goal of the additional problems is to apply your skills to situations you might face in the real world, where problems aren't neatly defined and don't follow section numbers. Your TA will grade the textbook problems, while I will grade the additional problems—*therefore, please staple them separately before handing them in.*

You may work on the assignments in small groups; if you do, you must write up your answers alone, *and without looking at anything you wrote down while working with your group.* On your write-up, list the names of the students you worked with. If you asked another student for help with a particular problem, cite him or her in your write-up for that problem.

Homework must be typed or written *neatly* and with problems in the correct order. If we have difficulty reading or following your homework, we will not go to great lengths to decipher it!

You may have an extension on *one* homework assignment during the semester. An extension allows you to turn in the assignment one class meeting after it is due. In no case will homework be accepted after the class meeting following the due date, since I will hand out solutions on that day. You must let me know that you will be using your extension no later than 5 PM on the day before the homework is due. Homework turned in late or not at all will receive a grade of 0.

Grading: Your grade will be calculated as follows:

Homework:	30%
Software Project:	10%
Mid-Term Exams:	30% (15% each)
Final Exam:	25%
Class Participation:	5%

Preparing for Class: You will be expected to read the relevant sections of the textbook before we discuss them in class. I will post a class schedule on the Blackboard system so you know what's coming up when.

If you have a documented learning disability and will be requesting academic accomodation for this class, please contact Dean Cheryl Ashcroft in the office of the Dean of Students, UC 212, at ×84152, or by e-mail at caa4@lehigh.edu. She will establish the appropriate accomodations for you.