

**ISE 251
PRODUCTION AND INVENTORY CONTROL
FALL SEMESTER 2017**

Instructor: Dr. George R. Wilson

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Office Hours: 12:00—2:00 pm

M-W-F

and by appointment

Teaching Assistant:

E-mail:

Room:

Office Hours:

Course Description:

An investigation of a variety of production planning, scheduling, and distribution models and systems. Heuristic, algorithmic, and analytical methodologies are explored in the context of production systems. Specific topics include job shop and Just-in-Time scheduling, forecasting, single stage and supply chain inventory control, aggregate planning, and production process variability analysis and reduction.

Course objectives:

Upon completion of this course, students will:

- know the basic operations of any production entity, including forecasting for decision-making, inventory control, production scheduling, machine scheduling, transportation planning, and aggregate planning
- be able to analyze data and from this analysis, apply models to forecast future changes for decision-making purposes
- be able to apply analytical models to solve a variety of inventory models, including those with uncertain data, lead times, economies of scale, budgets, and multiple products
- be able to sequence jobs on a machine to optimize various objectives and heuristically apply these rules to multiple machine and dynamic environments
- understand the purpose of MRP/ERP systems and their difficulties and be able to translate a bill of materials into a material requirements plan
- Understand the corrupting influence of variability in production processes and methods for dealing with it

Text:

W.J. Hopp, and M.L. Spearman, Factory Physics, 3rd Edition, Waveland Press, 2008.

Grade Determination:

Exams 1, 2, 3	20 % each
Final Exam	20 %
Homeworks	20 %

Exam Policy:

The final exam will be given during the scheduled final exam period and will cover material over the last portion of the course, only. If any of the first 3 midterm exams is missed due to an excused absence, it will be made up at the earliest possible opportunity.

Homework:

Homework problems will be assigned throughout the semester. The lowest homework grade will be dropped. After homework is handed in, the solution will be posted.

Course Outline:**Chapter Assignments**

Week	Topic	Factory Physics
1	Production Systems Framework	0, 1, 6, 11
1-3	Inventory Control	2
	*** Exam 1 ***	
4	Material Requirements Planning	3
4-5	Basic Factory Dynamics	7
6	Variability Basics	8
7	Corrupting Influence of Variability	9, 12.5
	*** Exam 2 ***	
8	Push & Pull Production Systems	4, 5, 10
9	Pull Planning Framework / Forecasting	13-3
10-11	Production Quota Setting	(13-4,13-5.4), (14-5,-App 14A), (15-3.2)
	*** Exam 3 ***	
11-12	Production Scheduling	15, supplements
13	Aggregate & Workforce Planning, Capacity Management	16, 18
14	Supply Chain Management	17
	*** Final Exam ***	

Accommodations for Students with Disabilities: If you have a disability for which you are or may be requesting accommodations, please contact both your instructor and the Office of Academic Support Services, Williams Hall, Suite 301 (610-758-4152) as early as possible in the semester. You must have documentation from the Academic Support Services office before accommodations can be granted.

Principles of Equitable Community: Lehigh University endorses The Principles of our Equitable Community (http://www.lehigh.edu/~inprv/initiatives/PrinciplesEquity_Sheet_v2_032212.pdf). We expect each member of this class to acknowledge and practice these Principles. Respect for each other and for differing viewpoints is a vital component of the learning environment inside and outside the classroom.