

## **ENG ME 420 Supply Chain Engineering**

### **2008-2009 Catalog Data:**

**ENG ME 420 Supply Chain Engineering** Prereq: ENG ME 345. Coreq: ENG ME 465 and ENG ME 495 or consent of instructor. Emphasizes the integration of product design with the process of delivering products to customers. Review of manufacturing processes for process automation. Supply chain configuration and flow balancing. Seamless introduction of new products. Process reengineering and lean manufacturing techniques in established supply chains. Design of decision support systems. 4 cr.

**Class/Lab Schedule:** 4 lecture hours per week

**Status in the Curriculum:** Required in Manufacturing Program

**Textbook(s) and/or Other Required Material:** D. Simchi-Levi et al., *Designing and Managing the Supply Chain* (3<sup>rd</sup> Ed.), McGraw-Hill, 2008

**Coordinator:** James R. Perkins, Associate Professor, Mechanical Engineering

### **Prerequisites by topic:**

1. An understanding of manufacturing costing principles and operating statements as taught in EK 409 Engineering Economy.
2. An understanding of materials and processes as taught in EK 156 Design and Manufacture.
3. Experience with the concepts and practice of automation as taught in ME 345 Automated Manufacturing and ME 465 Materials Processing.
4. A senior level maturity in industrial problem solving as taught in ME 415 Product Design and ME 495 Senior Project.

### **Goals:**

This course is an introduction to the application of the concepts of lean manufacturing to the entire supply chain. It teaches the integration of new product development and manufacturing together with logistics and information flow. Further, it introduces students to the role of contract manufacturing.

### **Computer Usage:**

This course uses a web site to support the course and requires the use of the Internet for data needed in homework assignments.

**Course Learning Outcomes:**

As an outcome of completing this course, students will:

- i. Have increased their understanding of systems modeling, control, and analysis.
- ii. Have an understanding the elements of a contemporary supply chain and its operation.
- iii. Have experience with the techniques for dynamically balancing the flow of information and material in the supply chain.
- iv. Have gained an understanding of the dynamics of fast and effective new product introduction.
- v. Have developed an ability to identify and implement process improvements throughout the supply chain.
- vi. Gain experience and confidence in working in a team environment.
- vii. Gain a facility for producing well-organized and clearly written engineering reports.

**Course Learning Outcomes mapped to Program Outcomes:**

<b>Program:</b>	A	B	C	D	E	F	G	H	I	J	K	L	M	N
<b>Course:</b>	i,ii		i,iv	vi	i,iii, v		vii	ii, iii	iv	iv, v	i,iii			
<b>Emphasis:</b>	5	1	4	3	4	1	3	4	3	3	4	1	1	1

**Topics (time spent in weeks):**

- 1. Supply Chain Design and Management (3)
- 2. Distribution Strategies (2)
- 3. Introducing New Products (1)
- 4. Supply Contracts (2)
- 5. Smart Pricing (3)
- 6. Decision Support Systems (2)

**Contribution of Course to Meeting the Professional Component:**

Engineering topics: 100%

**Status of Continuous Improvement Review of this Course:**

**Prepared by:** Associate Professor James R. Perkins

**Date:** 6/10/09