Spring 2XXX

Department of Systems Engineering
and Department of Public Policy and Management
University of Pennsylvania

Systems 250/Transportation 204

LOGISTICS, MANUFACTURING, AND TRANSPORTATION

Instructors:

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Course Description:

This course is intended to introduce *lower division undergraduates* to the complexity of the physical processes involved in the production and distribution of goods and to the roles of managers and engineers in the design and operation of such systems.

Extensive use is made of experiential learning, in which students operate simulated manufacturing and transportation systems, identify problems, revise designs and operating strategies to improve the system, and then evaluate the results.

Specific topics include: inventory flows and controls, transportation modes and service-cost tradeoffs, logistics costs, and supply chain integration

This course is designed to teach you to think about problems and create solutions to them in the manufacturing and distribution field. The problems will be encountered through a hands-on simulation of production and distribution activities of a firm.

Rather than having the problem described in a lecture setting, you will be exposed to data and the physical analogue to raw material assemblage, production, storage, shipping, and delivery. You will make procurement, production, inventory, and transportation decisions. This will be done in a laboratory setting where the results of your decisions will be physically visible. Bottlenecks will become visible as your decisions come up against the physical constraints of the factories, warehouses, suppliers, and transportation system, as well as the decisions of other groups which have decision-making roles in other parts of the system.

Each laboratory learning module will provide you with the ability to vary the design of the portion of the system being considered, and thus the opportunity to modify the system and evaluate and refine your design.

Some of your work will be done as individuals, e.g., some of the assignments, and other work will be done in teams, e.g., your role playing as shippers, producers, etc.
Prerequisites: Sophomore standing in SEAS or Wharton and permission of the instructor.

Readings: The primary text for the course is a course Reading Pack, which may be obtained from the SEAS Copy Center.

Assignments: Individual and team assignments are due as indicated; some credit is lost for late assignments.

LEARNING MODULE I: INTRODUCTION TO SUPPLY CHAINS (1 week)

Lecture: Role and Importance of Transportation/Logistics in Business (315 TB)

Readings (to be read in the time frame of x/xx – x/xx—all contained in coursepack):

Discussion of Results of Learning Module I (315 TB)

LEARNING MODULE II: TRANSPORTATION (4 weeks)

Lecture: Transportation and Production, Modes, and Trends(315 TB)

Lecture: Cost Concepts (315 TB)

Lecture: Transportation Cost Models (315 TB)

Shipper Costs and Mode Choice (315 TB)

Service Redesign (Laboratory) (12 TB)

Review for Mid-Term Exam (315 TB)

MID-TERM EXAM (315 TB)

Team Presentations: ASSIGNMENT II-5 (315 TB)

SPRING BREAK (x/xx-x/xx)

LEARNING MODULE III: DESIGING THE SUPPLY CHAIN (4 weeks)

Lecture: Role of Inventory In Supply Chain Management (315 TB)

Lecture: Basic Economic Order Quantity and Extensions (315 TB)

Computer Simulation (laboratory) (12 TB)

LEARNING MODULE IV: RE-ENGINEERING THE SUPPLY CHAIN (3 weeks)

Root Beer Supply Chain / Train Game

(Laboratory) (12 TB)

Teams present diagnosis and reengineering results; debriefing (12 TB)

FINAL EXAM

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