

**ENMA 4020, Analysis of Production Systems**

This course is required for the engineering management concentration

Course Coordinator:

Gene Dixon

Catalog Description:

Covers tools and approaches for design and analysis of production systems. Covers strategy, aggregate planning, inventory, location, layout and production control systems.

Course Structure:

Two 75- minute lectures per week (three credits)

Prerequisites:

MATH 3307

Required Materials:

Nahmias, S., *Production & Operations Analysis (5<sup>th</sup> Edition)*, McGraw-Hill Irwin, 2005  
(ISBN 0-07-286538-5)

Course Objectives:

Upon completion of this course, students will be able to:

1. Define strategic impact of production planning
2. Define, Analyze, and Assess *Push* versus *Pull* Manufacturing Processes
3. Solve probabilistic inventory problems
4. Relate product needs to various plant and process layout options
5. Apply optimization tools to production system analysis
6. Apply reliability statistics to production system performance

Lecture Topics

- Introduction to Production Systems (1 class)
- Strategy and Compensation (1 class)
- Inventory Control with Known Demand (2 classes)
- Inventory Control with Uncertain Demand (2 classes)
- Supply Chain Management (2 classes)
- Push & Pull Production Control Systems, MRP, & JIT (2 classes)
- Operations Scheduling (2 classes)
- Forecasting (2 classes)
- Aggregate Planning (2 classes)
- Project Scheduling (2 classes)
- Facilities Layout and Location (2 classes)
- Quality and Assurance (1 class)
- Reliability and Maintainability (1 class)

Relevant Program Outcomes:

Graduates of the BS in Engineering Program having an Engineering Management concentration will demonstrate:

- c) Graduates of the Engineering Program will demonstrate an ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability.
- j) Graduates of the Engineering Program will demonstrate a knowledge of contemporary issues.
- l) Graduates of the Engineering Program will demonstrate an ability to apply engineering concepts to an area of concentrated study, chosen from systems engineering or engineering management.

Professional Component Content:

Math/Science: 0;      Engineering: 3 credits;      General Education: 0

Assessment Requirements:

Student Work Samples

- Applied Project Presentation and Report (outcome c, j and l) related to semester project covering facility design, inventory management, and/or production systems.

Exam questions (outcome l)

- Targeted questions on analysis of demand forecasts.
- Targeted questions on quantitative analysis of inventory management.

Student Course Survey

Last Review:

May 14, 2008 by Gene Dixon