

## **SIE 462 - Production Systems Analysis**

**Credits and Contact Hours:** 3 Credits – Three 50-minute lectures per week

**Instructor's or course coordinator's name:** Michael O'Brien  
ENGR 154, 520-621-2298  
Office Hours: M/W/F: 12:30-2:00 PM

**Class:** MWF 11:00 – 11:50 AM

**Textbook, title, author and year:** Production And Operations Analysis, Steven Nahmias, 7th edition, Waveland Press Inc.

**2016-2017 Catalog Description:** Production systems, quantitative methods for forecasting, aggregate planning, inventory control, materials requirement planning, production scheduling, manpower planning and facility design.

**Prerequisites:** SIE 305 & SIE 340 or consent of advisor.

**Grading:** **Regular grades** are awarded for this course: A B C D E.

30% Two (2) Exams

20% Final Exam

30% Homework/Class Participation

20% 2 Case Studies /Projects

**Course Objectives and Learning Outcomes:**

- Students will be able to recognize technical components of an operational scenario in order to formulate the problem in technical terms including the relevant aspects from the mathematical, natural, and SIE engineering sciences.
- Students will be able to characterize all components of manufacturing and service operations and their connections through supply chains in order to identify opportunities for process improvement.

- Students will be able to identify appropriate modeling approaches in order to construct and evaluate possible solutions.
- Students will be able to model and analyze systems having conflicting criteria and interacting decision variables in order to develop robust and comprehensive process improvement plans.
- Students will be able to assess the impact of proposed solutions on society and the environment in order to avoid unforeseen detriments to society and the environment.

**Topics covered:**

This course is intended to give students background and a foundation in production systems. We will discuss the following topics:

- Historical evolution of operations and supply chain management
- Strategy and competition
- Demand forecasting
- Aggregate planning
- Inventory control
- Just-in-time (JIT) pull production control systems
- Materials requirement planning push production control systems
- Scheduling
- Supply chain management

**Absence Policy:**

On campus students are expected to attend the on-campus classes. All holidays of special events observed by organized religions will be honored for those students who have affiliation with that particular religion. Absences pre-approved by the UA Dean of Students (or Dean's designee) will be honored.

**Expected Classroom Behavior:**

Students are expected to maintain a professional business-like conduct during class and during all class activities

**Policy against plagiarism:**

Students are allowed to work and submit group work on group assignments. Students must submit their own individual work on individual assignments, but may consult with peers unless prohibited by the instructor. Evidence of plagiarism will be handled according to the procedures outlined in the [Student Code of Academic Integrity](#).

**Threatening behavior by students:**

Threatening and disruptive behavior is prohibited and will be handled as outlined in **Threatening Behavior by Students** and **Disruptive Behavior in an Instructional Setting**.

**Required extracurricular activities:**

There are no required extracurricular activities anticipated for this course.

**Special materials required for the class:**

There are no special materials anticipated for this course.

**Notification of offensive material policy:**

If offensive materials will be presented in class, the instructor will notify students via their university email account prior to class and allow students to opt-out of that class session.

**Accessibility and Accommodations:**

It is the University's goal that learning experiences be as accessible as possible. If you anticipate or experience physical or academic barriers based on disability or pregnancy, please let me know immediately so that we can discuss options. You are also welcome to contact Disability Resources (520-621-3268) to establish reasonable accommodations.

Please be aware that the accessible table and chairs in this room should remain available for students who find that standard classroom seating is not usable.

**Changes to this Syllabus:**

The information contained in the course syllabus, other than the grade and absence policies, may be subject to change with reasonable advance notice, as deemed appropriate by the instructor.

**Course Outline:**

1. Strategy and Competition.
2. Forecasting.
3. Sales and Operations Planning.
4. Inventory Control
5. Supply Chain Management
6. Push and Pull Production Control Systems.
7. Scheduling.
8. Facilities Layout and Location