Matching supply with demand is an enormous challenge for firms: excess supply is too costly, inadequate supply irritates customers. In this course we will explore how firms can better organize their operations so that they more effectively align their supply with the demand for their products and services. Throughout this course we illustrate mathematical analysis applied to real operational challenges – we seek rigor and relevance. These quantitative analyses are made “real simple”. To me “real simple” means hard analysis that is made easy to learn. Such quantitative analysis can help us truly understand issues or make complex business decisions. However, real life business problems seldom fit into a nice clean form that can be solved mathematically. Thus, when discussing significant issues and problems we will always use the quantitative analysis as a baseline and adjust the decision based on qualitative aspects. Our aim is to provide both tactical knowledge and high-level insights needed by general managers and management consultants. We will demonstrate that companies can use (and have used) the principles from this course to significantly enhance their competitiveness.

This course is unique in that it uses a novel and logical approach. The course covers a range of operations management topics that all impact managing supply, managing demand, or both. The emphasis is on managing uncertain demand, both within the firm and across the supply chain. We demonstrate that matching supply to demand is easiest when a firm has a flexible supply process, but flexibility is generally expensive. In this course we will learn (1) how to assess the appropriate level of supply flexibility for a given industry and (2) explore strategies for economically increasing a firm’s supply flexibility. When supply is not flexible, we will learn how to manage demand to better match it to our fixed supply.
Grading

The grading breakdown is as follows:

- Benihana Simulation: 20%
- Case Analysis (3): 30%
- Homework Assignment: 20%
- Exam: 30%

Assignments

The homework assignment is designed to assist you in understanding the concepts taught in class. Everyone must submit their own homework assignment. To promote learning, you may discuss the homework assignment with any student currently enrolled in the course. The National Cranberry Assignment, Sport Obermeyer Assignment, Hewlett Packard Assignment and Benihana Simulation are to be done in groups of two or three. Credit is not given on any assignments unless all work is shown. All assignments are listed on the syllabus according to their due date.

Benihana Restaurant

This simulation models a typical night at a Benihana restaurant. The simulation runs through a single evening demand cycle from 6:00 p.m. to 10:30 p.m. The objective of the simulation is to help students systematically unearth the elements of Benihana’s profitability, determining how each aspect of the operation contributes to superior financial performance. In the process, students learn how to apply important principles of matching supply with demand. Students also learn how variability negatively impacts an operation. Possibly the most important message the simulation conveys is simply that effective operations management practices can have a powerful impact on a firm’s profitability, including a firm that competes in the service sector of the economy. The simulation is organized as a series of challenges, each with a different set of options for managing the operation and demand. Harvard charges a minimum fee of $12.50 per student that must be paid online. I will give you a special registration URL. When you register the simulation will automatically associate you with the correct school/faculty/course and then require you to purchase your “seat” in the simulation. Note: Everyone in the group does not have to purchase simulation.

Class Material

- Matching Supply with Demand: Custom Textbook. This custom book which includes selected book chapters and cases is available at the OSU bookstore.

- Additional readings will be handed out in class or placed on Carmen throughout the quarter.
**CLASS SCHEDULE**

**WEEK 1**
Tuesday (Oct. 20) *Introduction to Synchronizing Supply with Demand*

Thursday (Oct. 22) *Evaluating Process Capacity in Manufacturing*
Read: Cachon & Terwiesch Chapter 3
Read: Kristen Cookies
Kristen Cookies in class exercise

**Week 2**
Tuesday (Oct. 27) *Evaluating Process Capacity in Services*
Due: National Cranberry Analysis
Benihana of Tokyo Simulation Overview

Thursday (Oct. 29) *Demand Management/Forecasting*
Forecasting with Exponential Smoothing
Read Jacobs et al. Chapter 3

**Week 3**
Tuesday (Nov. 3) *Sales and Operations Planning*
Read Jacobs et al. Chapter 4
Due: Benihana Assignment

Thursday (Nov. 5) *Sales and Operations Planning*

**Week 4**
Thursday (Nov. 10) *Newsvendor Model (Constructing a Demand Forecast)*
Read: Cachon & Terwiesch Chapter 12
Due: Homework Assignment #1

Tuesday (Nov. 12) *Newsvendor Model (Performance Measurements)*
Read: Cachon & Terwiesch Chapter 12

**Week 5**
Thursday (Nov. 17) *Quick Response with Reactive Capacity*
Read: Cachon & Terwiesch Chapter 13
Due: Sport Obermeyer Analysis

Tuesday (Nov. 19) *Inventory Models and Analysis in Supply Chains*
Read: Cachon & Terwiesch Chapter 14
Week 6
Tuesday (Nov. 24) Postponement (Risk Pooling Strategies & Delayed Differentiation)
   Read: Cachon & Terwiesch Chapter 15

Tuesday (Dec. 1) Revenue Management
   Read: Cachon & Terwiesch Chapter 16
   Due: Hewlett Packard Case Analysis

Week 7
Thursday (Dec. 3) Supply Chain Coordination (Buy-Back Contracts)
   Read: Cachon & Terwiesch Chapter 17

Tuesday (Dec. 8) Final Exam