



COURSE SYLLABUS¹ C60.0001.01 & C60.0001.02

COMPETITIVE ADVANTAGE FROM OPERATIONS

Fall 2007

MEETINGS: Section #1: Monday/Wednesday, 8:00AM – 9:15PM, Tisch LC-10.
Section #2: Monday/Wednesday, 11:00AM – 12:15PM, Tisch LC-12.

INSTRUCTOR: Dr. Gustavo Vulcano, KMC 8-76, 998-4018,
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Office hours: Monday/Thursday 2:30PM – 3:30PM,
or by appointment.

TEACHING ASSISTANT: David Coleman,
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Office hours: Tuesday, 12:30PM-3:00PM,
KMC 8-172.

COURSE WEBSITE: Blackboard (<http://sternclasses.nyu.edu>)

¹ Subject to minor changes

OVERVIEW

Operations is concerned with the systematic design, management and improvement of the processes that transform inputs into finished goods or services. Operations is one of the primary functions of a firm. As marketing induces the demand for products and finance provides the capital, operations produces the product (goods and services).

This course provides a foundation for understanding the operations of a firm. The main objective is to provide you with several skills necessary to critically analyze a firm's operating performance and practices. Unlike many courses, which tend to treat the firm as a "black box", we will be primarily concerned with "opening up" the black box and discovering what makes a firm "tick" - or, for that matter, "stop ticking".

Because the operations of a firm vary widely from one industry to the next, a course like this cannot cover all topics that are relevant to any given industry. Rather, we have selected a set of topics that are fundamental to understanding operations in a wide range of industries. These concepts are then illustrated using cases from a diverse set of businesses.

COURSE GOALS

The specific course objectives are to teach you to:

- Identify the operational capabilities needed to support a business strategy
- Define and characterize key business processes
- Establish clear performance objectives and process measures
- Understand the impact of demand and process variability
- Use data and tools to evaluate and improve the efficiency of processes

MATERIALS REQUIRED

CUSTOM TEXT: COMPETITIVE ADVANTAGE FROM OPERATIONS, Pearson Custom Publishing, 2006, 5th edition.

This customized text was prepared by Pearson Custom Publishing for Stern students. It will be denoted as *H&R* in the outline. Page numbers in the top corner will be used to refer to materials from the book. The book includes chapters from Heizer and Render, *Operations Management*, 8th edition, Prentice Hall, 2006.

CUSTOM CASES: COMPETITIVE ADVANTAGE FROM OPERATIONS, Pearson Custom Publishing, 2005, 1st edition. It will be denoted as *CB* (casebook) in the outline.

HARVARD CASES

- BENIHANA OF TOKYO
- KRISTEN'S COOKIE CO. (A)
- DONNER COMPANY
- L.L. BEAN, INC.: ITEM FORECASTING AND INVENTORY MANAGEMENT
- TOYOTA MOTOR MANUFACTURING, USA, INC.
- ZARA FAST FASHION

NYU READINGS AND CASES

- TERMS USED IN OPERATIONS MANAGEMENT
- ANALYSIS OF AN OPERATION
- FCN SECURITIES DEMO (A), (B) AND (C)
- NETWORK CASES
- FIRST CITY NATIONAL BANK
- SOUTH TREE ELECTRONICS
- OTTO DEVELOPMENT CORPORATION

OTHER MATERIAL (Downloadable from Blackboard)

COLUMBIA CASE

- ACME WIDGET COMPANY

COMPUTER SOFTWARE: EXCEL

OPTIONAL MATERIAL

THE GOAL: A process of ongoing improvement, Third revised edition (buy in Bookstore), Eliyahu Goldratt, North River Press Publishing Corporation. 2004. This is an optional reading that I would recommend to read within the first four weeks of classes.

CODE OF CONDUCT

I expect every student to be familiar with the Stern Code Of Conduct:

<http://www.stern.nyu.edu/uc/codeofconduct>

Some of the ways in which the code applies to this course are discussed below:

- The code of conduct stipulates that no student will lie, cheat, copy or otherwise behave in an unfair manner to obtain academic advantage over other students.
- You may not refer to case write-ups from classes offered in earlier semesters.
- The premise of *the code of conduct* is that ideas should be attributed to their source. Therefore, please acknowledge the main source(s) of data, facts, and ideas (other than from the instructor or textbook) in all your written work and when you make a presentation. If you use material from a source other than the lecturer, the textbooks or the lecture notes, you must attribute the source. For example, say, “I discussed this with the TA” or “I obtained this from the following website.”
- You may discuss the homework with your classmates, TA or me. However, you must do them individually. The discussion is limited to “how to solve” type of questions. The actual solution must be done individually.

GRADING

| | |
|------------------------------------|-----|
| Midterm 1 (Open book, open notes) | 20% |
| Midterm 2 (Open book, open notes) | 15% |
| Final Exam (Open book, open notes) | 25% |
| Individual Mini-Projects | 15% |
| Class Participation, Attendance | 10% |
| Homework, Quizzes | 15% |

At Stern, we want to ensure fair and consistent grading across core courses. As such, grades for this course will be distributed following the Stern Grading Guidelines for Core Courses at the Undergraduate College:

- 25-35% A's – awarded for excellent work
- 50-70% B's – awarded for good or very good work
- 5-15% C's (or below) – awarded for adequate or below work

INDIVIDUAL MINI-PROJECTS

There will be four individual mini-projects assigned during the term. These projects **will not be accepted late**. They must be prepared **individually** in order to receive credit. They are to be handed-in **at the beginning of the class** when they are due. Please, word process your projects.

ATTENDANCE

Class attendance is mandatory and part of a student's grade. Absences may be excused only in the case of documented serious illness, family emergency, religious observance, or civic obligation. If you will miss class for religious observance or civic obligation, you must inform your instructor no later than the first week of class. **Recruiting activities are not acceptable reasons for class absence.**

Students are expected to arrive to class on time and stay to the end of the class period. Chronically arriving late or leaving class early will have an impact on a student's grade. Students may enter class late only if given permission by the instructor and can do so without disrupting the class.

PARTICIPATION

Participation is an essential part of learning in this course. Students are expected to participate in all facets of classroom learning.

HOMEWORK

You will be assigned homework on a class-to-class basis for each topic. The homeworks are due on the dates (sessions) where the assignments appear in the syllabus. Only homeworks that are specifically designated as **submit** are to be handed-in **at the beginning of class** (only hardcopies are accepted). Please, keep a copy of all homework

submitted for reference during class. When discussion questions are involved, please answer briefly (just few sentences).

Homeworks will be graded and will not be accepted late. They must be **prepared individually** in order to receive credit. Please write clearly or word process your homework. There are nine homework assignments to be submitted in total. I will disregard the lowest score towards the final homework grade.

QUIZZES

A quiz might be given in any class. It will relate to facts given in a case discussed in class, and to reading material required for that particular session. I will disregard the lowest score towards the final quiz grade.

HOW TO PREPARE FOR CLASS DISCUSSIONS

Students are expected to come to class prepared having read text and assigned readings **prior to class**. Participation is an essential part of learning in this course. Students are expected to participate in all facets of classroom learning.

LATE ASSIGNMENTS AND MAKE-UP POLICY

Late assignments will not be accepted unless due to documented serious illness or family emergency. I will make exceptions for religious observance or civic obligation only when the assignment cannot reasonably be completed prior to the due date and the student makes arrangements for late submission with me in advance.

PRENTICE HALL GRADE ASSIST

This supplemental material is useful for you to prepare additional (and optional) exercises on the different topics covered in the course. It is available at

<http://phga.pearsoncmg.com/phga2/classes/cafos1s2/>

CLASSROOM NORMS

Laptops, cell phones, Smartphones and other electronic devices are a disturbance to both students and professors. All electronic devices must be turned off prior to the start of each class meeting.

COURSE CALENDAR

Please, check the course calendar in advance (see page 17), and **make sure not to schedule any job interview or personal appointment that overlaps with any of the exam sessions.**

SYLLABUS

COMPETITIVE ADVANTAGE FROM OPERATIONS

FALL 2007

MODULE 1: Introduction to Operating Systems: Process Design and Analysis

Sep 05 SESSION 1: INTRODUCTION – OPERATIONS AS A SOURCE OF COMPETITIVE ADVANTAGE

Class Plan:

In this session we discuss the course contents. The main themes in this session are: what are business processes, how operations management involves the design, planning, and management of business processes, and how operations management is a source of competitive advantage for a firm.

1. I suggest to start reading “The Goal” by E.M. Goldratt

Sep 10 SESSION 2: PROCESS DESIGN AND FIRM STRATEGY

Class Plan:

In this session, we discuss the strategy of Benihana. We shall observe how various elements of the operations strategy of Benihana come together to support its business strategy. This will enable us to identify the key factors that determine success and failure from an operations viewpoint for this chain of restaurants. We will also get our first look at a business process and see how to map it out and analyze its cost etc.

1. Read Chapter 1 in H&R, pages 1-21.
2. Read “Terms used in operations management”, pp. CB 1-3.
3. Read, analyze, and be prepared to discuss the Benihana of Tokyo case (pp. CB 91-108). Use the following study questions as an aid in analyzing the case.
 - (a) What is the Benihana concept? How does the operating system support this concept?
 - (b) How does the cost structure of a Benihana restaurant compare with that of a typical American restaurant? How does Benihana get its competitive advantage?
 - (c) Describe Benihana as an operating system. (Draw a process flow diagram.) List the relevant input, process and output elements in three columns.
 - (d) Calculate the average bar wait time for Benihana West and Benihana Palace
4. *Homework #1*: Download from Blackboard. **Submit. Retain a copy of homework submitted.**

Sep 12 SESSION 3: OPERATING SYSTEMS – TYPES OF OPERATING PROCESSES

Class Plan:

In this session we discuss process choice. Two of the variables that affect the choice of a process are volume and variety. The choice of process goes beyond determining whether to mass produce or make by hand. It also influences the labor skills, the degree of automation, the controls used, the information systems, etc. We also study service operations. Here, the key factors are the degree of customer/server contact, the sales opportunity and the production efficiency.

1. Read Chapter 7 in H&R, pages 253-270.
2. Prepare to discuss questions 2,9,10,11, and 12 (H&R page 280).
Note: `prepare` means read and get familiar with the answers, without submitting them. However, some of these questions may appear in a quiz or in the exams.

Sep 17 SESSION 4: PROCESS ANALYSIS: PROCESS CAPACITY AND PROCESS COST, TIME, VARIETY.

Class Plan:

In this and the next session, we learn to analyze a business process in detail. The objectives of the analysis are: identify the process capacity, process cost, and time to serve customers. Additionally, understand how to execute orders, schedule labor, and identify bottlenecks.

Using a simple setting, we pick up useful tools and techniques such as capacity calculations, throughput time calculations, work assignment, and scheduling. We also learn about Gantt charts and their uses.

The second session will focus more on the effect of product-mix on capacity. Together, the sessions provide insights into capacity management techniques that are used every day in businesses.

1. Read “Analysis of an operation”, CB pages 5-10.
2. Read, analyze and be prepared to discuss the Kristen's Cookie Company case utilizing the six key questions at the end as guides (CB pages 109-112). What are the cycle time, throughput time, and capacity of each operation and the whole production system?

Sep 19 SESSION 5: PROCESS ANALYSIS: PROCESS CAPACITY AND PROCESS COST, TIME AND VARIETY

Class Plan:

We continue the discussion of the Kristen's Cookie Co. case. The theme in this session is to understand how factors such as lot size and product variety affect the capacity of an operation. We will also briefly touch upon process improvement. We come back to the strategy of the firm and the design of the process.

1. Read “Analysis of an operation”, CB pages 11-21.

2. *Homework #2*: Download from Blackboard and **submit**.

Sep 24 **SESSION 6: THE EFFECTS OF SET-UP TIME ON CAPACITY**

Class Plan:

In this class, we study the effect of set-up time on capacity. The Donner Company case will also serve as another example for analyzing processes. The process in this case is quite complex, but we will see that the simple but powerful ideas of capacity management that we have learnt so far, such as, identifying and managing the bottleneck, will prove to be adequate even for managing the most complex processes. I urge you to explore the spreadsheets before class.

1. Read the Donner Company case (CB pp. 113-126). Use the EXCEL spreadsheets Donner.xls and Donner1.xls (downloadable from Blackboard) to analyze and understand the relationships between number of orders (set-ups) in a month, order size, and capacity
2. Use the following study questions as guides in analyzing the case:
 - a) How would you define Donner as an operating system, in terms of the product-process matrix? How does Donner get its competitive advantage?
 - b) Draw a flow diagram for a typical 8-board panel.
 - c) Use breakeven analysis of capacity to set a criteria for choosing between manual drill and CNC drill. What is the maximum order size to start using CNC? Why does Donner choose a larger number instead?
 - d) What is the capacity of the DFPR operation? Assume 8 working hours per day, and order sizes of 8 boards. Compare it with the order sizes of 80 boards and 800 boards. What can you conclude?
 - e) What are the causes of the major problems described at the end of the case? How would you propose to resolve them?

MODULE 2: Managing Waiting Times

Sep 26 SESSION 7: THE EFFECTS OF UNCERTAINTY - WAITING LINES

Class Plan:

Demand and supply often do not match. The mismatch creates special problems for managers. To understand these problems it is important to understand the *time-scale* at which these uncertainties happen. Very long and gradual changes in demand can be dealt with using techniques for managing seasonal demand. Medium term uncertainties, such as day-to-day fluctuations in demand levels, can be dealt with using staffing solutions and overtime. Demand uncertainties on the *same* time scale as operational variables such as processing time or set-up time need special techniques. These techniques are called waiting line or queueing techniques. We learn a bit about the other two and lot more about the waiting line techniques in this and the next session.

Regarding waiting lines, we learn: why does uncertainty in processing times as well as arrival patterns create delays? These delays are due to queues. We learn why queues form? How to estimate the queueing delays? How to plan to extra capacity to reduce unwanted delays? And how to reduce uncertainty?

1. Read Quantitative Module D on Waiting Lines Models in H&R (pp. 743-749).
2. Prepare discussion questions 1 to 8 in page 762.
3. *Mini-Project #1: Process Analysis*. **Submit.**

Oct 01 SESSION 8: QUEUING THEORY IN ACTION

Class Plan:

In particular, we discuss whether multiple lines are better than single lines, whether and when specialization using dedicated servers is preferred. We also discuss several psychological factors that affect the perception of "waiting" in lines.

1. Read Quantitative Module D on Waiting Lines Models in H&R (pp. 750-755).

Oct 03 SESSION 9: QUEUING THEORY IN ACTION

Class Plan:

We apply waiting line techniques to analyze the First City National Bank case.

1. Read, analyze, and be prepared to discuss the First City National Bank case (CB pp. 83-88). The following study questions will help:
 - a) Considering the data supplied for arrival and service times, how would you calculate an average arrival rate and service rate?
 - b) As Mr. Craig, what characteristics of this queueing system would you be most interested in observing?
 - c) What is the best number of tellers to use?
 - d) Calculate the waiting time for a customer (time spent in the queue before service) and determine which of the two line configurations you would

recommend. Support your result with the appropriate quantitative queuing analysis.

2. *Homework #3*: Available from Blackboard. **Submit.**

Oct 10 SESSION 10: MIDTERM 1

MODULE 3: Simulation

Oct 15 SESSION 11: AN INTRODUCTION TO SIMULATION

Class Plan:

Simulation is a useful tool to study processes. It is widely used in practice to answer different types of questions, such as, what should be the configuration and capacity of facilities, what scheduling rules should be used, how should due-dates be assigned to customer orders, how does yield impact process performance etc. In this session we shall learn about discrete event simulation. The technique will be applied to simulate alternate waiting line rules in the First City National case.

1. Read Quantitative Module F on Simulation (H&R pages 785-798).
2. Prepare to discuss questions 1 through 7 (H&R p. 798)
3. Prepare problem F.1 in H&R (p.799)
4. *Mini-Project #2: Waiting time management.* **Submit.**

Oct 17 SESSION 12: USE OF SIMULATION AS A PROBLEM SOLVING TOOL
FOR OPERATING SYSTEMS

Class Plan:

We apply simulation to study alternative scheduling rules in the First City National Bank case. We also discuss other applications of simulation, such as, to project management and analysis of cash flows.

1. Consider the First City National Bank case again. What are the advantages of using simulation to study this operation? What are the limitations?
2. Which alternative arrangement of teller lines should Mr. Craig select based on the simulations?

MODULE 4: Managing for Competitive Advantage: Quality as a Strategic Issue

Oct 22 SESSION 13: QUALITY – ITS DEFINITION AND BASIS FOR COMPETITION

Class Plan:

In this session we discuss quality management. The objectives of the session are to understand what is quality, what are the costs associated with it, and raise questions about managing quality in the age of super-mass production. These questions will be answered in the next two sessions.

1. Read Chapter 6 in H&R, pages 191-206.
2. *Toyota Motor Manufacturing, USA Inc* (available in Course-Packet). Read, analyze, and be prepared to discuss the Toyota case. Use the following study questions as an aid in analyzing the case:
 - a) What are the principal components of the Toyota Production System? What capabilities must an organization possess in order to implement TPS effectively?
 - b) How does “quality control” work at Toyota Motor Manufacturing?
 - c) As Doug Friesen, what would you do to address the seat problem? What options exist? Where would you focus your attention and solution efforts? What would you recommend and why?
3. *Homework #4*: Download from Blackboard. **Submit**.

Oct 24 SESSION 14: QUALITY ANALYSIS, MEASUREMENT AND IMPROVEMENT

Class Plan:

In this session we learn about the two faces of quality. What does a customer want? What can a process deliver? And, how to manage their interaction? We shall discuss useful quality management tools, such as, the fishbone chart, Pareto analysis, and process control charts. We will also learn about quality improvement through yield analysis.

1. Read Chapter 6 in H&R, pages 206-211.

Oct 29 SESSION 15: STATISTICAL QUALITY CONTROL

Class Plan:

In this session we learn about statistical process control. We discuss how statistical process control techniques are used in many different manufacturing and service industries.

1. Read the Supplement to Chapter 6 in H&R, pages 221-236.

MODULE 5: Project Management

Oct 31 SESSION 16: TIME BASED COMPETITION

Class Plan:

Competing based on time means being able to execute large projects, on time and within cost. In this session we first discuss the value of time-based competition. Then, in this and the next session, we learn about network techniques for planning and managing large projects. Successful project management involves planning and managing the time to complete the project, monitoring the use of resources during project execution, and increasing the probability of successful completion. Network planning and control techniques provide the tools necessary for undertaking these tasks.

1. Read Chapter 3 in H&R, pages 53-75. Prepare the discussion questions 1 to 8 on page 88.
2. Draw the networks for the projects described in the FCN Securities Demo (A) exercise (CB page 30).
3. *Homework #5*: Available from Blackboard. **Submit**.

Nov 05 NO CLASSES. A make-up review session will be given before the final exam.

Nov 07 SESSION 17: PROJECT MANAGEMENT

Class Plan:

We will touch upon project crashing. We will learn why it is sometimes beneficial to reduce the duration of a project, even though it may increase the cost of the project. We will discuss project crashing techniques that optimally reduce the duration of a project by selectively reducing the duration of only certain activities. If time permits, we will discuss the probabilistic methods for project analysis.

1. Read Chapter 3 in H&R, pages 75-78.
2. Draw the networks for the projects described in the Allied Distributing exercise (CB pages 33-34). Prepare an analysis and solution to the FCN(B) case (page 31).
3. *Homework #6*: Available from Blackboard. **Submit**.

Nov 12 SESSION 18: MIDTERM 2

MODULE 6: Inventory Concepts and Models

Nov 14 SESSION 19: INVENTORY CONCEPTS

Class Plan:

In this and the next two sessions, we discuss inventory management and more broadly *supply chain management*. Material, information and funds flow through *supply chains*. Demand is matched with supply, orders with fulfillment, and products are planned to fill customer needs and to compete against other products in the market. The integrated management of the three flows, material, information, and funds, is called supply chain management. We learn how firms compete using new principles of supply chains. We also learn how inventory, one of the fundamental levers for managing supply chains, can be analyzed and managed.

1. Read Chapter 12 in H&R, pages 473-487.

Nov 19 SESSION 20: THE ROLE OF INVENTORY – THE TRADITIONAL VIEW FOR MATURE PRODUCTS

Class Plan:

In this session we explore the effect of centralization on inventory costs. We see how scale economies can be derived even in very ordinary situations. We then discuss alternate ways of deriving these scale advantages.

1. Read Chapter 12 in H&R, pages 487-489, and 492-495.
2. Read the ACME Widget Company case (downloadable from Blackboard). Focus on the two memos (i.e., skip the first page). What problems did ACME face after launching the warehouse program? What could be the potential causes for those problems?
3. *Homework #7*: Available from Blackboard. **Submit.**

Nov 21 SESSION 21: INVENTORY MANAGEMENT – NEWSVENDOR MODELS

Class Plan:

In some particular situations or businesses, a decision about inventory level should be made just once, without having the opportunity for replenishment (think of a new apparel for Summer season). We discuss how to decide for this ordering or production quantities, taking into account demand and cost tradeoffs.

1. Read the article "A Note on the Newsvendor Model: Inventory Planning for Short Lifecycle Items", available on course website.

Nov 26 SESSION 22: INVENTORY MANAGEMENT – NEWSVENDOR MODELS

Class Plan:

In this class we discuss an application of the newsvendor model: the L.L. Bean case. This case relates forecasting and inventory management concepts in a very interesting setting.

1. Read and be prepared to discuss the L.L. Bean case (CB pp. 139-143).
2. *Mini-Project #3: Inventory management. Submit.*

Nov 28 SESSION 23: INVENTORY IN ACTION: THE BEER GAME

Class Plan:

We will play the Beer Game, which is about simulating the behavior of a supply chain. ***PLEASE, BE FEW MINUTES BEFORE TIME!***

1. *Homework #8*: Available from Blackboard. **Submit.**

Dec 03 SESSION 24: BEER GAME REVIEW AND SUPPLY CHAIN
MANAGEMENT

Class Plan:

We debrief the beer game and discuss how firms manage to smooth product flows in supply chains.

1. Read Chapter 11 in H&R (pp. 429-444).
2. Prepare to discuss questions 1-10 in Chapter 11 (H&R, p. 452).
3. Read, analyze, and be prepared to discuss the *Zara: Fast Fashion* case (available in course packet). Use the following study questions as an aid in analyzing the case.
 - a) What is Zara value proposition to customers? How is Zara's Supply Chain helping this value proposition?
 - b) How is Zara managing the uncertainty in demand?
 - c) Under the Newsvendor paradigm, how would you compare the Overage and Underage costs of Zara and Gap?

MODULE 7: Allocating Resources for Strategic Capacity Planning

Dec 05 SESSION 25: THE BASIC LINEAR PROGRAMMING (LP) PROBLEM

Class Plan:

We begin the last module which is integrative in nature. It deals with the use of linear programming for planning and optimizing systems. We shall discuss several applications of LP to Operations Management problems.

1. Read Quantitative Module B in H&R, pages 691-699.
2. Prepare to discuss questions 1,2,3, and 8 (H&R p.712).

3. Attempt Problem B.1 on page 713.

Dec 10 SESSION 26: GRAPHICAL SOLUTION TECHNIQUE AND SENSITIVITY ANALYSIS

Class Plan:

We learn how to solve LP problems by hand using a graphical technique. We also learn to carry out sensitivity analysis.

1. Read Quantitative Module B in H&R, pages 699-703.
2. Solve problems B.2 (H&R p. 713) and B.3 (H&R p. 714).
3. *Homework #9*: Available from Blackboard. **Submit**.

Dec 12 SESSION 27: SOLVING LP PROBLEMS USING EXCEL AND REVIEW OF COURSE

Class Plan:

We learn how to formulate and solve LP problems using Excel. How to interpret Excel outputs for LP problems. We shall also apply LP techniques to analyze the Otto Development Corporation case. Finally, we summarize the main concepts and findings of our course.

1. Read Quantitative Module B in H&R, pages 703-709.
2. Read, analyze, and be prepared to discuss the Otto Development Corporation case (CB pp. 79-82).
3. *Mini-Project #4: Linear Programming*. **Submit** electronically by Friday Dec 14th at noon.

FINAL EXAM: Monday December 17th, 10:00AM-11:50AM

OVERVIEW OF ASSIGNMENTS TO SUBMIT, AND EXAMS

| DUE DATE | ASSIGNMENT | DETAILS FOUND IN SESSION |
|-----------------|--|--|
| Sep 10 | HW #1: Benihana case | Session 2 |
| Sep 19 | HW #2: Process Analysis & Design | Session 5 |
| Sep 26 | Mini-Project #1: Process Analysis | Session 7 |
| Oct 01 | HW #3: Queuing Management | Session 8 |
| Oct 10 | Midterm #1 | Session 10 |
| Oct 15 | Mini-Project #2: Waiting Time Management | Session 11 |
| Oct 22 | HW #4: Simulation + Toyota case | Session 13 |
| Oct 31 | HW #5: Quality Management | Session 16 |
| Nov 07 | HW #6: Project Management | Session 17 |
| Nov 12 | Midterm #2 | Session 18 |
| Nov 19 | HW #7: Inventory Management | Session 20 |
| Nov 26 | Mini-Project #3: Inventory Management | Session 22 |
| Nov 28 | HW #8: Newsvendor Model | Session 23 |
| Dec 10 | HW #9: Linear Programming | Session 26 |
| Dec 12 | Mini-Project #4: Linear Programming | Submit electronically by Friday Dec 14 th at noon |
| Dec 17 | Final Exam | |