B01.2314: COMPETITIVE ADVANTAGE FROM OPERATIONS
SPRING 2007
COURSE SYLLABUS

MEETINGS: Monday Section: 6:00 – 9:00pm Room 3-50
           Wednesday Section: 6:00 – 9:00pm Room 3-50

INSTRUCTOR: Ganesh Janakiraman, Room KMC 8-71
             Ph: 212-998-0846, E-mail: gjanakir@stern.nyu.edu

OFFICE HOURS: By appointment.
               You are also welcome to drop by my office any time to
               discuss course-related issues if I am available.
               In general, I will usually be available in my office Tuesdays
               and Thursdays 5-6 p.m.

TEACHING FELLOWS: Jason Levine (Monday section)
                   E-mail: jason.levine@stern.nyu.edu
                   Office hours: Tuesday and Thursday 9-10 pm (KMC 3-50)

                   Karel Bourgois (Wednesday section)
                   E-mail: karel.bourgois@stern.nyu.edu
                   Office Hours: Monday 5-6 pm (KMC 8-172)
                                 Wednesday 5-6 p.m. (KMC 4-110)

Both teaching fellows would also be accessible by e-mail. Both office
hours will be available to you irrespective of which section (Monday
or Wednesday) you belong to.

COURSE WEBSITE: Blackboard (http://sternclasses.nyu.edu/).
COURSE DESCRIPTION AND OBJECTIVES

This course provides a general introduction to operations management. Operations management is the management of business processes, that is, the management of the recurring activities of a firm. Along with finance and marketing, Operations is one of the three primary functions of a firm. At the risk of being simplistic, one may say that marketing induces the demand for products (goods and services), finance provides the capital, and operations produces the product. More generally, Operations spans the entire organization.

This course aims to (1) familiarize you with the problems and issues confronting operations managers, and (2) to provide you with the language, concepts, insights and tools to deal with these issues in order to gain a competitive advantage through operations. This course should be of particular interest to people aspiring for a career in designing and managing business processes, either directly (e.g., V.P. of Operations) or indirectly (e.g., management consulting).

The course should also be of interest to people who manage interfaces between operations and other business functions such as finance, marketing, managerial accounting and human resources. Finally, a working knowledge of operations, which typically employs the greatest number of employees and requires the largest investment in assets, is indispensable for general managers and entrepreneurs.

In this course, we will see how different business strategies require different business processes, and vice versa, how different operational capabilities allow and support different strategies to gain competitive advantage. A process view of operations will be used to analyze different key operational dimensions such as capacity management, flow (cycle) time management, supply chain and logistics management, quality management and project management.
ABOUT THE INSTRUCTOR

Ganesh Janakiraman is an Assistant Professor of Operations Management at the Stern School of Business. He teaches the core class in Operations in the Langone MBA program. His research interests are in Inventory Management and Supply Chain Management.

Ganesh holds a B.Tech. degree in Mechanical Engineering from the Indian Institute of Technology, Madras, and, M.S. and Ph.D. degrees in Operations Research from Cornell University.

GRADING

Each student’s grade will be based on the following items and weights:

- Short Papers (Homework) 20%
- Class Participation 10%
- Midterm Exam 35%
- Final Exam 35%

Homework:

Only assignments that say SUBMIT in parentheses need to be submitted. These assignments can be done individually or in groups of up to three students. Assignments submitted by groups of four or more students will not be accepted for credit. In the same spirit, groups should not collaborate with each other for the purpose of doing the assignments.

The assignments serve two purposes: some of them are meant to enable you to apply the concepts and tools learnt in the course and others are meant to help you prepare for class. Those assignments which are due before the relevant materials are covered in class are intended only to encourage you to think analytically about the case before you come to class. All such preparatory assignments are very short (typically requiring an answer in half a page or less) and should take very little time in addition to the time you would spend on reading the case.

All assignments will receive light grading. Specifically, the grader will determine whether an assignment represents a good faith effort to complete the work, and if so, the assignment receives full credit. Assignment submissions should reflect an honest attempt at a solution to each question. The accuracy of the responses will be judged to the extent that concepts have been covered in class before the assignment due date.

Submissions should be up to two pages in length (unless specified otherwise) and should be submitted at the beginning of the class in which they are due. Keep a copy for your reference.
during class. Show all the work if your response requires a calculation. Electronic submissions are not acceptable unless permission is obtained from the instructor before the due date.

Class Participation:

Positive contributions to the class in terms of insightful comments or discussion (not just any relevant comment) in class at the appropriate times will be rewarded. Disruptive activities (using mobile phones in class, unnecessary talking with each other while the class is in progress, walking out of class abruptly while the class is in progress, walking into class late multiple times etc.) will be penalized. Barring these clearly positive and negative contributions to the class, one can expect to obtain 8 out of the 10 points meant for class participation. Attendance, by itself, is not directly given credit.

HONOR CODE

The Stern Honor Code and Code of Conduct will be adhered to in all matters related to grading. If you have questions regarding any of the grading policies, please clarify with me. If you have questions about the Honor Code, please visit the website http://www.stern.nyu.edu/mba/mjc or contact one of the members of the MBA Judiciary Committee. Some specific clarifications of the ways in which the code applies to this course are discussed below:

- The honor code 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 other sections of the course or from classes offered in earlier semesters for class preparation or submission of assignments.

- There should not be any collaboration across groups for the purposes of doing assignments meant for submission.
Course Materials

Course-packet – **required**

(Competitive Advantage from Operations: Course-packet: B01.2314) (Buy from NYU Bookstore.)

Includes the following Harvard cases/articles:
- Competing on Capabilities
- Benihana of Tokyo
- Donner Company
- National Cranberry Cooperative
- Blanchard Importing and Distributing Co., Inc.
- L.L.Bean, Inc.
- Toyota Motor Manufacturing, U.S.A., Inc.

Course-text – **not required but recommended**

(Competitive Advantage from Operations: B01.2314: Instructors: Araman, Armony, Caldentey, Chernoff, Gaur, Janakiraman, Moses, Nayyar) (Buy from NYU Bookstore.)

- Includes selected chapters from the textbooks, Chase, Aquilano and Jacobs, Operations Management for Competitive Advantage and Stevenson, Operations Management.


In addition to these, some required readings would be posted on the course website.
SESSION DESCRIPTIONS

Modules and Sections

Module 1: OPERATIONS AND CORPORATE STRATEGY: Sessions 1-3
Module 2: Competitive Advantage – Productivity and Service: Sessions 4-10
Module 4: Competitive Advantage – Quality: Sessions 14-16
Module 5: Competitive Advantage – Supply Chain Management: Sessions 17-21
Module 6: Decision Models – Linear Programming: Session 22

Detailed Schedule

The following schedule is given with a two-fold purpose. First, it describes briefly what topics we will study in this course and when. Second, it tells you what preparation is necessary (including reading assignments and assignments to be submitted) for each class so that you will be able to have an approximate idea of the time commitment you have to make before each class.

Note that this schedule is only tentative. Please read the note below.

IMPORTANT NOTE ABOUT READINGS AND ASSIGNMENTS

When you are preparing for a class, say Class 6, for example, you have to visit the Blackboard site for this course and go to the Class 6 folder under the Class Sessions link to see what the assignment(s) due in Class 6 is (are).
Class 1

Session 1: Introduction to and discussion about Operations Management and Operations Strategy

Session 2: Benihana of Tokyo Case Discussion

The Benihana case will illustrate the inter-relationships between strategy, operations and financial impact.

REQUIRED READING: Competing on Capabilities (Casepacket) and BENIHANA OF TOKYO (Casepacket)

Assignment to submit: None

Class 2

Session 3: We will study different types of operating processes and discuss their suitability for producing various goods and services.

Session 4: Using the Kristen's Cookies Case, we will discuss how a process should be analyzed and the managerial benefits of such an analysis.

1. Required Reading: Case: KRISTEN'S COOKIE COMPANY(A)

2. Recommended Readings: Chapter on "Process Analysis" of the text, downloadable noted on Analysis of Operations, chapter on "Manufacturing Process Selection and Design" from the text.

Virtual Plant Tours (Required)

Study at least two of the following three tours.


Assignment 1 (SUBMIT)
This is an assignment requiring you to think of a logical process for measuring the output of KRISTEN'S COOKIE COMPANY and improving it.
Class 3

Sessions 5 and 6: Complete Kristen's Cookies discussion and Start the Donner Case

**Recommended Reading:** Chapter on Strategic Capacity Management from the text

**Required Reading:** DONNER COMPANY (case-pack)

Preparation: Read, analyze and be prepared to discuss the Donner Company case. The production process in this company is complex. Try to identify the problems facing the company and the sources of these problems.

**Assignment 2A (SUBMIT):**
**Kristen’s Cookie Case:**

This is an assignment that will help you familiarize yourself with process or capacity management concepts. You will have to calculate the capacity of the system under different scenarios, for example.

**Assignment 2B (SUBMIT):**
**Donner Case:**

This assignment will have 2-3 questions that are intended to help you prepare for class.

Class 4

Sessions 7 and 8: We will discuss an important aspect of customer service, namely waiting times of customers in service systems – for example, call centers, banks etc. We will study the basics of “Queuing Models” that will help us determine how long customers wait on average in a system.

1. **Recommended:** Technical Note in the text on Waiting Line Management

2. **Required:** First City National Bank Case (downloadable)

**Assignment:** NONE
**Class 5**

Sessions 9 and 10: Buffers, NYPD Case, Simulation

In this session, we will discuss the role of buffers in service systems and manufacturing systems. Then, we will discuss how queuing models can be applied in the NYPD case. Finally, we will see a basic introduction to the topic of simulation, which is extremely important in practice.

**Required:** NYPD Case (downloadable)

**Assignment 3A (SUBMIT)**
In this assignment, you will calculate the average waiting times in First City National bank under a few scenarios and recommend the correct number of tellers to use under different scenarios. A spreadsheet will be provided to assist you in these calculations.

**Assignment 3B (SUBMIT)**
In this assignment, you will be asked how the process at National Cranberry can be improved.

**Class 6**

The mid-term exam will take place in the first half of the class. It will be followed by an introduction to Project Management.

**Recommended Reading:** Chapter on Project Management in the text.
Class 7

Session 13: Project Management: The concept of crashing and the Program Evaluation and Review Technique will be introduced.

These concepts are important in understanding what parts of a project are time-critical and by how much these parts have to be expedited to complete a project on time.

Session 14: Discussion of the Toyota Case and the Toyota Production System

In this class, we will discuss the Toyota Production System and understand some important concepts that are applicable in business environments other than manufacturing also.

Required Readings:

1. Read the FCN-A, FCN-B and FCN-C cases. (These are all very short cases.) (Download)
2. Read the Toyota Motor Manufacturing Case.

Assignment 4 (SUBMIT)

You will have to perform Project Management calculations for the FCN-A case.

Class 8

Statistical Process Control and Six Sigma

Six-sigma is a popular concept in several industries with GE being one of its biggest supporters. Directly tied to this movement is the concept of Statistical Process Control.

Recommended: Technical Note: "Process Capability and Statistical Quality Control" from the text.

Assignment 5 (SUBMIT)

In this assignment, you will apply the concept of “crashing a project” to a short case (Specialty Contractors: download).
**Class 9**

**SESSIONS 17 and 18: Inventory Management**

We will discuss important concepts in Inventory Management, including metrics. Then, we will see what role economies of scale play in inventory management and discuss this in the context of the Xenon case.

**Required Reading:** Xenon Case (Download)

**Recommended Reading**
Chapter on Inventory Control in the text (you can just skim through any quantitative analysis because we will do that in detail in class)

**Assignment 6 (Submit)**

You will perform some statistical process control analysis on two given sets of data.

**Class 10**

**Inventory Management under Uncertainty**

In this class, we will discuss the effect of uncertainty on inventory management. We will study a model, called the newsboy model (or newsvendor model), and see how it is used to plan inventory when demand cannot be forecasted accurately. We will also introduce the concept of safety stock.

This will be followed by a discussion of the L.L.Bean Case.

**Required Reading:** L.L.Bean Case

**Assignment 7 (Submit):**

In this assignment, you will answer some supply chain design questions from the Xenon Drives Case using the EOQ model discussed in the previous class.
Class 11

We will discuss several important concepts in Supply Chain Management building on the inventory models studied in the previous classes.

We will also discuss an extremely useful tool called Linear Programming which can be used to model a variety of Decision Problems across several fields of business. Furthermore, this tool is available in Excel. Several examples will be solved in class.

Assignment 8 (SUBMIT)

You will use the newsvendor model studied in the previous class to make stocking decisions for L.L.Bean using forecast data that is provided to you.

Class 12

Final Exam