MASSACHUSETTS INSTITUTE OF TECHNOLOGY

15.761 Introduction to Operations Management
(The Strategy of Execution!)

Fall 2017

COURSE SYLLABUS

Course Website	**TBA**
Delivery Team	
Professor:	Nikos Trichakis, E62-576, ntrichakis@mit.edu
Class hours:	Section A: MW 1pm-2:30pm E62-223 Section B: MW 2:30pm-4:00pm E62-262
Office hours:	By appointment (please email professor directly)
Teaching Assistants:	Section A: TBD Section B: TBD
Recitation hours:	F 12pm-1pm E51-376 (tentative), or F 2pm-3pm E51-345 (tentative)
TA Office hours:	TBD
Administrative assistants:	Cindy Arroyave, E62-571, 617-715-4822, cindya@mit.edu

Course Objective

To provide students with concepts, techniques and tools that will enable them to design, analyze and improve core operational capabilities of the firm, as well as strategies of execution. Special emphasis will be given to the strategic effect of uncertainty in business decision making, and to the interplay between high-level financial objectives and operational capabilities. In particular, some of the topics covered include: process analysis and innovation, capacity analysis and ROI, inventory management, postponement, production control, strategic supply chain coordination, supply chain sustainability (including reverse supply chain), risk pooling, operational risk, quality management, revenue management and pricing. The course will include several lectures and many case studies. Many industries and application domains will be covered, such as, airlines, apparel, food, high-tech, digital markets and online services, sustainability, healthcare, financial services, high-tech, automotive, manufacturing and more. A special feature of the course is to engage students in simulation games that provide hands-on demonstration of some of the central concepts. The course will provide a competitive edge in almost every post-graduate career path, particularly, consulting, supply chain and corporate sustainability, supply chain and corporate management, operations, NGOs, product development, financial services, private equity, and healthcare.

The course relies on a combination of case discussions, lectures, readings, and assignments. To pursue the course objective most effectively, you will have to (subject to minor changes):

1. Prepare the assigned cases, readings, exercises, and discuss them in class;

2. Prepare a written analysis of two cases;

3. Prepare a two-page review of the book *The Goal* by E. Goldratt; and

4. Engage in three managerial simulation exercises and prepare related written reports.

Course Material

The required course material includes (subject to minor changes):

- The 15.761 course packet. Course packets are available at CopyTech or online, E52-045

- E.M. Goldratt and J. Cox, *The Goal: A Process of Ongoing Improvement*, North River Press, Third Edition, 2012. (Available at the Coop)

- G. Cachon and C. Terwiesch, *Matching Supply with Demand: An Introduction to Operations Management*, McGraw-Hill Irwin, 2013. (Available at the Coop) This book will be referred to in the following as "MSD."

Academic Integrity

Our general policy for this class is that when preparing cases and assignments you should not receive any related input from anyone who has already participated in a faculty-led discussion of the same material, be it at Sloan or another school. In addition, you should work alone when preparing graded individual assignments. When preparing graded team assignments, your discussions should be strictly limited to the members of your team. When preparing any graded assignment, you may *not* consult or use material not already included in the course packet or posted on the course webpage, unless this has been explicitly authorized by the instructor. In particular, using material from previous editions of this course is strictly prohibited. Also, no individual may be listed as a co-author of a team assignment unless that person has contributed to the work submitted in a substantial manner. Each member of the team is fully responsible for ensuring that each submitted assignment is done according to the expected professional standards and the academic integrity policy.

The academic integrity policy of this course will be enforced, and MIT's Procedures for Dealing with Student Academic Dishonesty will be followed for violators. If at any point during the course you believe that you may be violating this academic integrity policy, or if its implications in your particular situation are not completely clear, you should immediately contact the instructor.

Note that this policy implies in particular that you should:

- Never ask for/obtain/use hints or material relative to an assignment from any student or alumnus who has already taken the class;

- Never perform a search on the internet to find information relative to a graded assignment.

Team and Individual Work

- Students are required to form teams of at most 3, and all team members have to be from within the same section (these are strict constraints). The students will work in their teams in preparing the two case analyses as well as playing the simulation games (see below). In team assignments the students are allowed to discuss the assignment <u>only</u> with their team members. (For more details

see the Academic Integrity section above.)

- In individual assignments you should not consult any other student including your team members.
- For both team and individual work, you should clearly acknowledge any source of information that your work is based on.

Professional Standards and Other Important Miscellaneous

- We ask that you please put a name card in front of you in every class.
- As per the school policy, please refrain from using laptops, notebooks, cell-phones and any other electronic devices during class.
- IMPORTANT: Please turn in all assignments with your ID number on it. Do not put your name on the assignment
- Attendance: There are 20 class sessions in this course. We consider this the minimum required to cover the essentials of operations management. As per the school policy, job interviews are not a legitimate reason to miss a class. Students having more than two such absences would risk reduction in their participation and overall grade in the course. It is difficult to receive a passing grade in 15.761 without regular attendance. A student who is going to miss a class should notify the TA prior to class.
- Lateness: As per the school's policy we will not allow late shows to the class. Once the class discussion starts the TA will put a sign "class in session" on the classroom's door. Please refrain from entering the class if the sign is on the door upon your arrival.
- Please be prepared for every class. It is your responsibility to inform the instructor by email several hours before class if for any reason you have not been able to prepare adequately.
- For communications about registration status issues, swap and wait lists, attendance and absences from class, please email the TA. For any issue concerning access to course material (course packet, textbooks, readings), please email the course administrator (cindya@mit.edu). For any other communication related to the course, please send an email to both the professor and the TA (unless it is of a highly personal/confidential nature, in which case you should email the professor only).

Grading and Assignments

The grading of 15.761 will be based on the following weights (subject to minor changes):

Class Participation (individual)	15%
Case Analyses (team)	30% (15% each)
Homework Assignments (individual)	15% (7.5% each)
Goal Book Report (individual)	10%
Simulations (team)	30% (20% Littlefield, 10% Retailer)

Class Participation (individual)

Class participation will be determined on the basis of your comments in each class session. Some of the criteria that we will use to judge effective class participation include:

1. Is the participant a good listener?
2. Is the participant concise and articulate?
3. Are the points made relevant to the current discussion? Are they linked to the comments of others?
4. Do the comments show clear evidence of appropriate and insightful analysis of the case?
5. Is there a willingness to participate?

Case Analyses (team) (subject to minor changes)

These two write-ups should contain your answers to the specific preparation questions for the two corresponding cases that are provided later in this document. In preparing for these assignments, please adhere to the following guidelines:

1. Work in teams of at most 3 students (see above). This is a firm constraint, no exceptions.
2. Written assignments are to be turned in at the beginning of class, in the classroom, on the day they are due.
3. Hand in one paper copy of the case write-up for each group (email attachments will not be accepted).
4. Each student should have a personal copy of his/her team write-up for the corresponding class discussion.
5. Case analysis assignments must be less than 4 pages in length (excluding appendices) and use text fonts no smaller than 12.
6. Every graph or table/spreadsheet showing the results of computations must be accompanied by both a clear description of what all numbers shown represent qualitatively, and an exhaustive explanation of how they are computed, including a statement of all the relevant mathematical formulas or algorithms. Please do not submit a table copied from a spreadsheet assuming that the instructors will try to figure out by themselves how the numbers it shows are calculated – they won't.

Homework Assignments (individual) (subject to minor changes)

There will be two short homework assignments that will aim to test your grasp of some of the quantitative material taught in the course:

1. The assignments should be done individually and submitted at the beginning of class on the day they are due. **We do not expect that the assignment should take more than 45-60 minutes to prepare.**
2. Homework assignments should be 1 page of text font no smaller than 12.

The Goal Book Report (individual) (subject to minor changes)

Each student in the class should individually prepare and turn in a report of at most 2 pages containing answers to the following questions:

1. What are the methods described in *The Goal* for identifying a bottleneck?
2. After bottlenecks have been identified, what are the concrete factory floor-level actions described in the book for improving overall system performance?

3. Relate the notions of *statistical fluctuations* and *dependent events* mentioned in the book to concepts covered during the course. Also explain and relate to course concepts the statement made by Jonah that a factory "balanced with demand" will soon experience bankruptcy.

4. Several times in the book, lot sizes are reduced in order to decrease cycle time. What are the limits to this strategy?

5. When designing an operational process from scratch, which process step(s) should be the bottleneck(s)?

6. Leaving writing style and other delivery issues aside (e.g., romance novel format), what substantial critiques would you make about the part of this book pertaining to the management of business operations?

Factory Simulation Exercises (team)

As part of your team of at most 3 students, you will get to manage a virtual factory in two separate web-based simulation exercises. The goal of this assignment is to let you adapt and apply concepts from the first half of the class in a managerial situation; it will also give you a chance to formalize your own decision models and test their relevance and effectiveness.

The first exercise will be from **6 – 9pm, Sunday, September 10**. The second exercise will be from **5pm, Sunday, November 12 to 5pm, Friday, November 17**. The first exercise involves a reduced set of managerial decisions and is designed to help your team create its decision models before the full version of the game is played as part of the second exercise. **We do not expect each team to spend more than 1-2 hours preparing for the first game.** After the second simulation is over, each team will turn in a written report of at most 4 pages (excluding appendices) about this final exercise which should contain your answers to the following questions[1]:

1. How did you forecast demand? For what decisions in the game did you find it most useful to have a demand forecast available? A posteriori, were you happy with your demand forecasting technique and would you use the same one if the game was to start over again? If not, define precisely how you would forecast demand for another potential run of the simulation.

2. What models and/or considerations did you use to decide how many machines of each type to buy initially? Later on during the simulation, how did you decide how many more machines to buy or sell? A posteriori, were you happy with your capacity decision process and would you use the same one if the game was to start over again? If not, define precisely how you would make capacity decisions for another potential run of the simulation.

3. How did you decide on the parameters of your (R, Q) inventory replenishment policy? How did you update these parameters over time? A posteriori, were you happy with your inventory model and would you use the same one if the game was to start over again? If not, define precisely how you would set inventory replenishment parameters decisions for another potential run of the simulation.

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[1] IMPORTANT: Whenever asked for what you would do for another potential run of the simulation, you should not just state that you would use a better strategy relying on some analysis or model, but instead actually provide that analysis and/or implement that model so you can describe it in detail in your report. For example, only stating "If the game started again we would use a better model taking X into account." will not receive any credit unless you define that better model explicitly and show exactly how it takes X into account.

4. How did you decide initially and later in the game what type of contract to go after? A posteriori, were you happy with your method/model for quoting lead-times and would you use the same one if the game was to start over again? If not, define precisely how you would choose which contract type to use for another potential run of the simulation.

5. Describe your factory's performance during the simulation, both in absolute and relative terms, and provide an interpretation. Is there anything not already mentioned in any of your previous answers which you would do in order to improve your performance if you were to play the game a second time?

6. What are the most important lessons you learned or insights you gained from playing this simulation game?

Retailer Pricing Simulation Exercise (team)

Your team's goal in this assignment is to develop a generic markdown pricing strategy for a retailer seeking to maximize revenue when selling some inventory over a limited time period. The required simulation software (retailer.zip) can be downloaded from the course website and executed from any windows-based computer. In addition, the game folder contains some historical sales data (retail.xls) on which you can perform statistical analysis. You can start playing the game as early as you want during the course, but we recommend that you give yourself at least a week before the assignment is due in order to develop and test your strategy. A couple of days before the due date, you will receive an email containing some random seed numbers (a computer code which determines the random scenario you will be facing) on which you should apply the strategy you will have developed by then.

Your team's assignment for this simulation exercise consists of a report of at most 4 pages (including the computer printouts) containing your answers to the following questions:

1. Provide a detailed description of the strategy you have developed for making price markdown decisions during the game. This description should be generic, i.e., it should enable the reader to apply your strategy exactly in any instance of the game.

2. What is the rationale underlying the strategy you described in the previous question, i.e., why do you think it is a good strategy?

3. Provide a commented example of the application of your strategy to the scenario generated by the first random seed provided.

4. Provide a printout of the outcomes of the application of your pricing strategy to the scenarios generated by the five subsequent random seeds provided. How much revenue have you generated in total?

COURSE SCHEDULE AT-A-GLANCE

(subject to minor changes)

Day	Date	Contents	Required Readings	Textbook Coverage	Optional Readings	Assignments Due	Sim
W	Sep 6	Course Introduction		2.2-2.3,3.1			
M	Sep 11	Case: Burger King & McDonalds	Production Processes	2.6	Types of Processes		
W	Sep 13	Lecture: Capacity and Variability	Wait-in-Line Blues	3.2-3.5, 7-9			
M	Sep 18	Case: Jet Blue (JB)	JB: Deicing at Logan JB: Valentine's Day 07				
W	Sep 20	Lecture: Process Analytics					
M	Sep 25	Case: PATA	PATA			Case Report (team)	
W	Sep 27	Lecture: Inventory 1		12, 13.1-13.3			
M	Oct 2	Case: Yedioth	Yedioth	15		Individual HW 1	
W	Oct 4	Lecture: Inventory 2 (EOQ + Multiperiod Models)		7.1-7.7, 14.1-14.9			
W	Oct 11	No class					
M	Oct 16	Case: Barilla	Barilla	17			
W	Oct 18	Case: HP Deskjet	HP Deskjet			Case Report (team)	
M	Oct 30	No class					
W	Nov 1	Case: Hamptonshire Expr.	Hamptonshire Expr.	17	PRM at HP	Goal Report (individual)	
M	Nov 6	Case: Zara	Zara				
W	Nov 8	Case: AutoFlex Network	AutoFlex Network			Individual HW 2	
M	Nov 13	Lecture: Quality Case: Toyota	6-Sigma, Toyota	10, 11			
W	Nov 15	Case: CREDEM: Banking on Cheese	CREDEM				
M	Nov 20	No class					
W	Nov 22	No class					
M	Nov 27	Case: Li and Fung	Fast, Global & Enterp.				
W	Nov 29	Lecture: Revenue Management 1		16		Retailer Game Report (team)	
M	Dec 4	Lecture: Revenue Management 2 Case: Break.com	Yield Management	15			
W	Dec 6	Course Wrap-Up				Littlefield Report (team)	

SCHEDULE OF TUTORIALS

(subject to minor changes)

Day	Date	Contents
Fri	Sept 8	Simulation Game 1
Fri	Sept 15	Capacity
Fri	Sept 22	Queues
Wed	Sep 27	PATA – case debrief (4-5PM)
Fri	Oct 6	Inventory 1
Fri	Oct 13	Inventory 2
Fri	Nov 3	Simulation Game 2
Fri	Nov 17	Retailer Game
Fri	Dec 1	Revenue Management

DETAILED COURSE SCHEDULE AND ASSIGNMENT QUESTIONS

(This version: Fall 2017) *(subject to minor changes)*

Lecture: Course Introduction   Sep 6

Readings: COURSE SYLLABUS (THIS DOCUMENT)
MSD Cover: 2.2-2.3, 3.1

Simulation Exercise

Live from **Sunday, Sep 10 at 6pm** until **Sunday, Sep 10 at 9pm**

Readings: LITTLEFIELD TECHNOLOGIES: OVERVIEW (posted on Stellar)
               MANAGING CAPACITY AND LEAD-TIME AT LITTLEFIELD TECHNOLOGIES (posted on Stellar)

NOTE 1:   In order to familiarize yourself with the simulation game interface, analyze early demand data and plan your strategy for the game, you can access your factory as early as **Sunday, Sep 10 at 2 pm** using the following URL:

http://op.responsive.net/lt/mit/entry.html

You will then receive additional customer orders and gain the ability to manage your factory (using the same URL as above) during the respective 'Live' periods.

NOTE 2:   Experience demonstrates that **advance planning** and **sound use of quantitative models blending physical and financial considerations** provide key competitive advantages in this game.

Case: Burger King & McDonalds   Sep 11

Readings: PRODUCTION PROCESSES
               TYPES OF PROCESSES
MSD Cover: 2.6
Case: Students with last names beginning with A-L work on the BURGER KING CORPORATION case and skim the MCDONALD'S CORPORATION case; students M-Z work on the MCDONALD'S CORPORATION case and skim the BURGER KING CORPORATION case.

Questions:

1. Draw a process flow diagram showing the major process steps, inventories and flows for hamburger production in your case.
2. For the case you read, analyze the peak hourly capacity and peak hourly demand for burger patties. Can they produce enough burgers?

Lecture: Capacity and Variability
Sep 13

Readings: PRESCRIPTION FOR THE WAITING-IN-LINE BLUES: ENTERTAIN, ENLIGHTEN AND ENGAGE
MSD Cover: 3.2-3.5 and 7-9

Case: Jet Blue
Sep 18

Readings: JETBLUE AIRWAYS: DEICING AT LOGAN AIRPORT
Case: JETBLUE AIRWAYS: VALENTINE'S DAY 2007
Questions:

1. What is the value proposition of JetBlue? What are its operational characteristics?
2. What is the operational impact of de-icing capacity at Logan?
3. What are the major failures that led to the February 14 crisis?
4. What changes would you recommend to the operations and logistics system of JetBlue to prevent an occurrence of such crisis?

Case: Process Analytics
Sep 20

Readings: TBD

Case: PATA
Sep 25
NOTE: GRADED CASE WRITE-UP DUE AT THE BEGINNING OF CLASS

Case: MASSACHUSETTS GENERAL HOSPITAL: PRE-ADMISSION TESTING AREA
Questions:
1. Construct a process flow diagram of the PATA visit from a patient's perspective. Calculate the capacity and utilization rate at each step in the process.
2. Use capacity analysis tools (build-up diagrams or/and queuing) to decide if and where there is a bottleneck in the clinic. If a bottleneck does indeed exist, how long do patients wait as a result of the bottleneck? (As an approximation, assume that all appointment slots were filled and patients arrived on time.)
3. Evaluate the three Task Force diagnoses - not enough time between appointments, not enough rooms, not enough physicians. Are these diagnoses valid? If so, are they primary contributors to long patient wait times? Why or why not?
4. What factors contribute to variability in PATA process flow and what control, if any, does the clinic have to eliminate it?
5. What changes would you recommend to improve PATA?

Lecture: Inventory 1
Sep 27

MSD Cover: 2.4-5, 6.4-5, 11.1-7

Case: Yedioth Oct 2
NOTE: SHORT INDIVIDUAL HOMEWORK DUE AT THE BEGINNING OF CLASS

Case: YEDIOTH

Questions:

1. In the current distribution model, where each retailer is supplied once a week independently of all other retailers, what would be a good method to compute the quantity shipped to each retailer to guarantee that 99% of customers will be served? Apply your approach to compute recommended quantities to the 50 retailers (explain the methodology in the body of the report and provide the results in appendix).
2. If Yedioth could implement full pooling among all of the 50 retailers what would be the estimated benefit in terms of total production levels and returns if the required service level is 99%? (Note: Full pooling means that somehow all of the retailers could be supplied in-real-time from the same pool of inventory.)
3. Suppose that one could implement full pooling only among retailers that are treated by the same sales agent. What would be the potential benefit in terms of production levels and returns, assuming 99% service level. Compare to your #2 answer.
4. Propose more realistic processes/strategies that leverage the fact that the sales agent visits each retailer in the middle of the week. What would the benefit be of these processes/strategies?
5. What do you think are the organizational challenges that Assaf will have to address?

Lecture: Inventory 2 (EOQ & Multiperiod models) Oct 4

MSD Cover: 13, 14.1-3

Case: Barilla Oct 16

Readings: BARILLA SPA (A)
MSD Cover: 17
Questions:

1. What problems was JITD designed to solve? What are its underlying causes?
2. What are the key components of JITD? How is it supposed to correct or mitigate the problem you described in 1?
3. How can Barilla implement this program?

Case: HP Deskjet Oct 18
NOTE: GRADED CASE WRITE-UP DUE AT THE BEGINNING OF CLASS

Readings: THE POWER OF VIRTUAL INTEGRATION: AN INTERVIEW WITH DELL'S COMPUTERS
MICHAEL DELL
CHAPTER 5: THE PRIMACY OF CHAINS
Case: HEWLETT-PACKARD: DESKJET PRINTER SUPPLY CHAIN (A)
Questions:

1. What are the main causes of the inventory/service crisis described in the case?
2. Build and describe an Excel model to recommend quantitative target inventory levels under HP's current supply chain design for the 6 European options assuming a weekly (periodic review) replenishment and a 98% service level (k=2.054) for the following two scenarios: (i) 5-week sea shipment lead-time; (ii) 3-day air shipment lead-time. Evaluate the total supply-chain inventory levels (safety stock, cycle stock, pipeline stock) that will result from the weekly inventory replenishment targets that you recommend for these options.
3. Assuming a 20% gross margin and average selling price of $660 for each printer, inventory holding costs of 50% per year, sea transportation costs of $1 per printer (lead-time 5 weeks) and air transportation costs of $11 per printer (lead-time is 3 days), compute the total supply chain cost (inventory and transportation) for the two scenarios you analyzed in the previous question.
4. Modify the model you built for the previous question in order to quantify the financial impact of localizing HP's Deskjet Printers in Europe instead of Vancouver.
5. What changes would you recommend for HP's supply chain operation and design?

Case: Hamptonshire Express   Nov 1
NOTE: GOAL REPORT DUE AT THE BEGINNING OF CLASS

Readings: HAMPTONSHIRE EXPRESS
MSD Cover: 17

Case: Zara   Nov 6

Video: ZARA'S BUSINESS MODEL OVERVIEW (DOWNLOAD FROM STELLAR & WATCH BEFORE CLASS SESSION)
MSD Cover: 10
Case: ZARA: STAYING FAST AND FRESH
Questions:

1. Draw the entire supply chain of Zara, and also describe the key steps and information sources of their respective design process.
2. How can a buyer at Zara optimize the production order decision under the current supply chain and lead-times?
3. What are the relative benefits and challenges of Inditex and Zara's business models compared to the model of a traditional player in the industry, such as GAP?

Case: AutoFlex Network   Nov 8
NOTE: SHORT INDIVIDUAL HOMEWORK DUE AT THE BEGINNING OF CLASS

Readings: AUTOFLEX NETWORK
Questions:

These assignment questions require the use of the web-based "FlexCap" software that can be accessed at
http://www.bizsimz.com/flexcap/flexcap.html. The software is quite intuitive. User instructions (and a
short demo video) can be obtained by clicking on the "getting started" icon (? on blue background) in the
upper right corner.

Important: Note that all demand and capacity data in Table 1 of the case are in 000's of units, as is
mentioned in the text (page 6).

1. What is the Expected Sales (in 000's of units) for the existing network?
    a. Download the provided FlexCap_BaseConfiguration.xml file
    b. Launch the FlexCap software and load the network structure using the XML file you
        downloaded (File -> Import). You can also manually create the network in the FlexCap
        software and enter the relevant capacity and demand data. There is no uncertainty in plant
        capacity, i.e., capacity stdev = 0 for all plants. You should not need to enter the maximum and
        minimum demands. The software should default to the values in Table 1 (mean demand +/- 2
        standard deviations) but you can check these if you want by selecting "range" in the product
        panel.
    c. Next, select the Units Sold objective and set the number of scenarios to 5000. Click on the
        green "run simulation" icon. It should take ~15 seconds to run. You will see "WORKING"
        displayed while running. (Note because this is a simulation the larger the number of scenarios
        used the more accurate the estimate but the longer the run time.)
    d. Before moving on to Question 2, it is a good idea to save your network using the "save new
        scenario" feature.[1] This will be helpful when you work on Question 2 which will involve
        testing different improvements on this network. You may also want to use the save new
        scenario feature as you test different networks in Question 2. You can also export and import
        files if you prefer.
2. Assuming that the variable contribution margin is $5000 per unit for all models and that each link
    costs $75 million to create, which specific links would you recommend the company add to the
    existing network? (Please clearly specify how many links you add and identify the new links by the
    plant number and model letter: e.g. Link 1-C would mean the company creates a link between Plant 1
    and Model C.) What is the Expected Sales (in 000's of units) of your recommended network?
    a. The link investment cost and variable contribution margin are intended to help guide your
        design strategy but there is no need to conduct a sophisticated financial analysis. For
        simplicity, imagine the network only operates for one year and so links are justified if the
        increase in expected contribution margin (5000 x increase in Expected Sales) exceeds the link
        investment cost.
3. What are the key principles of your strategy? Why did you choose the links you recommended?

[1] Use the green circle/+ icon if saving for the first time. Use the disc icon is resaving an already named
scenario.

Simulation Exercise

Live from **Sunday, Nov 12 at 5:00pm** until **Friday, Nov 17 at 5:00pm**

Readings: LITTLEFIELD TECHNOLOGIES: OVERVIEW (posted on Stellar)

             MANAGING CAPACITY, INVENTORY AND LEAD-TIME AT LITTLEFIELD TECHNOLOGIES (posted on Stellar)

NOTE 1:   In order to familiarize yourself with the simulation game interface, analyze early demand data and plan your strategy for the game, you can access your factory as early as **Friday, Nov 10** using the following URL:

                          http://op.responsive.net/lt/mit/entry.html

             You will then receive additional customer orders and gain the ability to manage your factory (using the same URL as above) during the respective 'Live' periods.

NOTE 2:   Experience demonstrates that **advance planning** and **sound use of quantitative models blending physical and financial considerations** provide key competitive advantages in this game.

NOTE 3:   The simulation report for your group must be submitted at the beginning of the last class in the course on **Dec 6.** See the detailed description of that assignment at the beginning of the syllabus.

Lecture: Quality
Case: Toyota

Nov 13

Case: TOYOTA MOTOR MANUFACTURING USA, WHAT IS 6-SIGMA?
MSD Cover: 11
Questions:

1. What are the principles and components of the Toyota Production System?
2. Where, if at all, does the current routine for handling defective seats deviate from the principles of the Toyota Production System?
3. As Doug Friesen, what would you do to address the seat problem? Where would you focus your attention and solution efforts?

Case: CREDEM: Banking on Cheese

Nov 15

Readings: CREDEM: BANKING ON CHEESE
Questions

1. What should Credem do with Verdi's loan?
2. What is Credem's role in the supply chain?
3. Why does Credem own a warehousing company, MGT? How does MGT add value to the supply chain?

Case: Li and Fung   Nov 27

Readings: FAST, GLOBAL, AND ENTREPRENEURIAL: SUPPLY CHAIN MANAGEMENT, HONG KONG
STYLE
Questions

1. What is "dispersed manufacturing?" How does this add value to the supply chain?
2. How does Li and Fung make the supply chain more responsive (i.e. reduce response time)?
3. What is the role of the "little John Waynes" in the Li and Fung organization?

Lecture: Revenue Management 1   Nov 29
NOTE: RETAILER GAME REPORT DUE AT THE BEGINNING OF CLASS

Readings: YIELD MANAGEMENT
MSD Cover: 15.1-3

Lecture: Revenue Management 2   Dec 4
Case: Break.com

Case: BREAK.COM
MSD Cover: 15
Questions:

1. Flowchart the information supply chain in the online advertising industry. What is Break.com's value
   proposition?
2. What challenges does Break.com face in managing its display advertising contracts? Assuming that all
   contracts are identical and indivisible, with a $6.5 CPM and 10% make-good under delivery penalty,
   determine how many impressions Break.com should contract on for its homepage during the second
   quarter of 2008.
3. How might Break.com implement revenue management, namely uses price differentiation? Based on
   Exhibits 6 and 7, determine which advertising contracts are the most attractive to Break.com.
4. What are the implementation challenges and risks associated with revenue management in the online
   display advertising industry?

Course Wrap-Up   Dec 6
NOTE: LITTLEFIELD SIMULATION TEAM REPORT DUE AT THE BEGINNING OF CLASS