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Marshall Peer Tutoring Schedule at

<http://students.marshall.usc.edu/undergrad/marshall-peer-tutoring-program/tutoring-schedule/>

### **Course Description**

How do organizations such as financial institutions, health care, and manufacturing meet customer needs and stay consistent with their goals and values? How do organizations make trade-off decisions with respect to quality, cost, and time? Operations Management provides tools and methods to answer these questions optimally in a global business world.

Operations managers are primarily concerned with the design, procurement, production, and delivery of goods and services. They are responsible for the systematic planning, designing, operating, controlling and improving the various procurement, production, storage, and shipping processes involved from the time the product or service is designed till customer delivery occurs. The challenge for operations managers is to produce goods and services and deliver them in an efficient manner and by the business strategy of their company. Typically, this involves balancing the needs for satisfying customer demand, on-time delivery, lower costs, and higher quality.

## **Course Learning Goals**

In this course, you will learn the fundamentals of Operations Management, enhance your managerial insight and intuition, and improve your business decisions.

The main focus of this course is on the Marshall Undergraduate Learning Goals (see pp. 13-14 of the syllabus for a complete description) of “understanding key business areas” and “developing critical thinking skills,” while also supporting the goal of “being effective communicators.” In this course students will:

- Understand the spectrum of operations management activities in the business and to the types of decisions made by operations managers
  - Business Process Management.
  - Capacity Management.
  - Waiting Line Management.
  - Optimization.
  - Revenue Management.
  - Inventory and Supply Chain Management.
- Gain proficiency in a variety of tools and techniques, which enable the business to compete effectively in the marketplace.
- Explore how operations management interfaces with other functional areas such as strategy, accounting, finance, human resources and marketing.
- Analyze what influences and determines trade-offs in decision-making and assess the feasibility of trade-offs in process design, capacity allocation, inventory levels and customer service.
- Understand the global nature of supply chain, meaning the interplay between the levels of supply chain and their locations and resulting implications for pricing, competition, and customer service.
- Predicting, anticipating, and taking into account how operations management interfaces with other functional areas such as strategy, accounting, finance, human resources, and marketing.
- Develop critical thinking skills to assess tradeoffs in process design, capacity allocation, inventory levels, and customer service.
- Apply critical thinking and problem-solving skills in the context of managing a lab (an experiential learning simulation), and make real-time decisions on capacity, quoted lead-times, work-in-process levels, contracts, and inventory.
- Make operational decisions taking into account the global nature of supply chains (an experiential learning simulation), the interplay between levels of the supply chain and their locations, and implications for pricing, competition and customer service.
- Apply optimization tools/techniques including formulating a linear optimization, and solving it in Excel Solver to find an optimal market clearing in a timeshare exchange.

## **Required Materials**

- *BUAD 311 Operations Management* (ISBN: 9781308428116), custom-made textbook available at the bookstore. An eBook is available at <https://Create.mheducation.com/shop/> . Note: eBook has a different ISBN number 9781308430478.
- *The Goal*, Goldratt and Cox, 3<sup>rd</sup> edition, North River Press.

## **Prerequisites and/or Recommended Preparation:**

Co-requisite: BUAD 310

### **Course Notes:**

Each instructor will have his/her own Blackboard site. Please check the Blackboard site and your email daily for class preparation materials or instructions. Lecture notes/slides will be posted on Blackboard. If you would like hard copies of them, it will be your responsibility to print them out.

On Blackboard, you will also find a BUAD 311 Discussion Forum, where practice questions and teaching notes will be posted. You can discuss questions, news story, and real-life findings with the instructors, TA, tutors, and your fellow students under various forum topics as well.

### **No Recording and Copyright Notice**

It is a violation of USC's Academic Integrity Policies to share course materials with others without permission. No student may record any lecture, class discussion or meeting with the instructor without prior express written permissions. The word "record" or the act of recording includes, but is not limited to, any and all means by which sound or visual images can be stored, duplicated or retransmitted whether by an electro-mechanical, analog, digital, wire, electronic or other device or any other means of signal encoding. Marshall reserves all rights, including copyright, to the lectures, course syllabi and related materials, including summaries, PowerPoints, prior exams, answer keys, and all supplementary course materials available to the students enrolled in the class whether posted on Blackboard or otherwise. They may not be reproduced, distributed, copied, or disseminated in any media or in any form, including but not limited to all course note-sharing websites. Exceptions are made for students who have made prior arrangements with DSP and the instructor.

### **ASSIGNMENTS AND GRADING DETAIL**

The course grade, which will be curved, is based on two midterms, a cumulative final exam, in-class quizzes (there will be three quizzes, but only the best two will count towards the course grade), homework (there will be three homework assignments, but only the best two will count towards the course grade), write-ups (there will be three write-ups for the cases, but only two submissions will count towards the course grade), performance on Littlefield Simulations, and class participation according to the following weights:

Participation	4%
Homework	8%
Quizzes	8%
Littlefield Simulations	6%
Write-ups	4%
Presentation/Video (extra credit)	1%
Forum Participation (extra credit)	1%
Midterm 1	20%
Midterm 2	20%
Final Exam	30%

Students may earn extra credit via class presentation or forum participation. Each instructor may post a list of potential time slots and topics, where a team of 3-5 students may choose to conduct a 5-minute in-class presentation or submit a 5-minute video on the related topics. The submission from the past includes a bottleneck analysis project on Lemonade, an interview with a pilot on

overbooking, summary and analysis of the news articles. The winning teams of the Littlefield Simulation may also share their planning and executions. Some instructors may also allow an extra credit if you post relevant news articles/real-life experiences on BUAD 311 Discussion Forum and help out your fellow students through forum discussions.

The weights listed above will be used to come up with your overall score for the class. Final grades represent how you perform in the class relating to other students. Your grade will not be based on a mandated target, but on your performance. Historically, the average grade for this class is around a “B.” Your grade will be based on your overall score for the course, as well as your ranking among the students in the section(s) taught by your instructor.

### **Class Attendance & Participation:**

It is critical for each student to actively participate in the class discussion. Read the assigned material before the class and make sure you are familiar with the main issues to be discussed in class. Your participation is evaluated mainly on the quality of your contribution and insights.

Students must complete the assigned readings and homework assignments prior to coming to class. **Some instructors accept homework assignments only via Blackboard; other instructors may only accept homework assignments in class. Please check with your instructor. Late submissions will not be accepted.**

### **Homework:**

Discussion of homework problems is permitted and encouraged; however, each student is required to prepare and submit his or her solutions, including computer work, independently. Instructors reserve the right to bring any potential cheating issues to the administration for further penalties.

### **Write-up for Case Analysis:**

During the course, we will analyze three case studies. All cases will be analyzed and discussed in class. For each case, a PASS/FAIL credit will be given for one-page write-up answering posted discussion questions.

### **Littlefield Simulation:**

Littlefield Labs is a competitive web-based lab simulation (<http://www.responsive.net>). The student teams will compete to make the most money by managing a lab. It consists of two assignments; each takes one session. Some instructors may allow 1% extra credit for the presentation/video from the winning team.

Every student must purchase a Littlefield Labs Access Code from the bookstore or directly from the vendor (<http://mgr.responsive.net/Manager/ShowClient>) and register the teams before Session 6. Each team should have 3 or fewer students. In addition to the Access Code, you need the following course code to register: **usc**.

### **eBeer Game:**

To understand the supply chain dynamics and the bullwhip effect, we play the eBeer Game. The license fee is covered in the Littlefield purchase. Each student must register by Session 23 using course code: usc.

### **Quizzes and Exams:**

All exams/quizzes are closed books. You are allowed to use one double-sided crib sheet (8.5x11) on each quiz/exam. **No make-up exams or quizzes are offered** – accordingly, all quizzes must be taken on their assigned date and in the section in which students are registered. Students are not allowed to attend other sections – and attendance may be called randomly throughout the semester.

Scores for individual student contributions to team projects are assigned by me, based on my observations of the team's working dynamics, my assessment of the team's project quality, and thoughtful consideration of the information provided through your peer evaluations.

The final examination will take place on **Thursday, May 4** from **11:00 AM—1:00 PM**. The final exam is comprehensive, but greater emphasis will be given to the material taught after midterm 2. You **cannot** be exempted from this final under any circumstances. **The final exam will not be given at any other time.** According to the USC Office of Academic Records and Registrar, *"No student in a course with a final examination is permitted to omit the final examination or take the final examination prior to its scheduled date, and no instructor is authorized to permit a student to do so. No student is allowed to re-take a final examination or do extra work in a course after the semester has ended for purposes of improving his or her grade."* **Collaboration of any sort on quizzes and exams is prohibited and will result in an F in the letter grade.**

## **MARSHALL GUIDELINES AND USC POLICIES**

### **Add/Drop Process**

BUAD 311 will remain in open enrollment (R-clearance) for the first three weeks of the term. If there is an open seat, students will be freely able to add a class using Web Registration throughout the first three weeks of the term. If the class is full, students will need to continue checking Web Registration to see if a seat becomes available. There are no wait lists for these courses, and professors cannot add students. An instructor may drop any student who, without prior consent, does not attend the first two sessions; the instructor is not required to notify the student that s/he is being dropped. If you are absent three or more times prior to the end of week 3 (the last day to withdraw from a course without a grade of "W"), your instructor may ask you to withdraw from the class by that date. These policies maintain professionalism and ensure a system that is fair to all students.

### **Statement for Students with Disabilities**

Any student requesting academic accommodations based on disability is required to register with Disability Services and Programs (DSP) each semester. A letter of verification for approved accommodations can be obtained from DSP. Please be sure the letter is delivered to the instructor as early in the semester as possible. DSP is located in STU 301 and is open 8:30 a.m.–5:00 p.m., Monday through Friday. The phone number for DSP is (213) 740-0776. For more information visit [www.usc.edu/disability](http://www.usc.edu/disability).

### **Support Systems**

Students whose primary language is not English should check with the *American Language Institute* <http://dornsife.usc.edu/ali>, which sponsors courses and workshops specifically for international graduate students. *The Office of Disability Services and Programs* ([www.usc.edu/disability](http://www.usc.edu/disability)) provides certification for students with disabilities and helps arrange the

relevant accommodations. If an officially declared emergency makes travel to campus infeasible, *USC Emergency Information* (<http://emergency.usc.edu/>) will provide safety and other updates, including ways in which instruction will be continued by means of blackboard, teleconferencing, and other technology.

### **Academic Integrity and Conduct**

USC seeks to maintain an optimal learning environment. General principles of academic honesty include the concept of respect for the intellectual property of others, the expectation that individual work will be submitted unless otherwise allowed by an instructor, and the obligations both to protect one's own academic work from misuse by others as well as to avoid using another's work as one's own (plagiarism). Plagiarism – presenting someone else's ideas as your own, either verbatim or recast in your own words – is a serious academic offense with serious consequences. All students are expected to understand and abide by the principles discussed in the *SCampus*, the Student Guidebook ([www.usc.edu/scampus](http://www.usc.edu/scampus) or <http://scampus.usc.edu>). A discussion of plagiarism appears in the University Student Conduct Code (section 11.00 and Appendix A).

Students will be referred to the Office of Student Judicial Affairs and Community Standards for further review, should there be any suspicion of academic dishonesty. The Review process can be found at: <http://www.usc.edu/student-affairs/SJACS/>. Failure to adhere to the academic conduct standards set forth by these guidelines and our programs will not be tolerated by the USC Marshall community and can lead to dismissal.

Discrimination, sexual assault, and harassment are not tolerated by the university. You are encouraged to report any incidents to the *Office of Equity and Diversity* <http://equity.usc.edu/> or to the *Department of Public Safety* <http://dps.usc.edu/contact/report/>. This is important for the safety of the whole USC community. Another member of the university community – such as a friend, classmate, advisor, or faculty member – can help initiate the report or can initiate the report on behalf of another person. *Relationship and Sexual Violence Prevention and Services* (RSVP) <https://engemannshc.usc.edu/rsvp/> provides 24/7 confidential support, and the sexual assault resource center webpage <https://sarc.usc.edu/reporting-options/> describes reporting options and other resources.

### **Class Notes Policy**

Notes or recordings made by students based on a university class or lecture may only be made for purposes of individual or group study, or for other non-commercial purposes that reasonably arise from the student's membership in the class or attendance at the university. This restriction also applies to any information distributed, disseminated or in any way displayed for use in relationship to the class, whether obtained in class, via email or otherwise on the Internet or via any other medium. Actions in violation of this policy constitute a violation of the Student Conduct Code, and may subject an individual or entity to university discipline and/or legal proceedings.

### **Emergency Preparedness/Course Continuity**

In the case of a declared emergency if travel to campus is not feasible, USC executive leadership will announce an electronic way for instructors to teach students in their residence halls or homes using a combination of Blackboard, teleconferencing, and other technologies.

Please activate your course in Blackboard with access to the course syllabus. Whether or not you use Blackboard regularly, these preparations will be crucial in an emergency. USC's Blackboard learning management system and support information are available at [blackboard.usc.edu](http://blackboard.usc.edu).

## **COURSE CALENDAR**

1	M 1/9 & T 1/10	Introduction and Overview	
2	W 1/11 & Th 1/12	Process Measures	
M 1/16: No class, MLK Holiday			
3	T 1/17 & W 1/18	The Kristen's Cookie Company	1-page write-up
4	Th 1/19 & M 1/23	More on Process Analysis	
5	T 1/24 & W 1/25	Little's Law	HW 1: Process Analysis
6	Th 1/26 & M 1/30	Waiting Line Management	Deadline for Littlefield simulations registration
7	T 1/31 & W 2/1	Queueing Theory	Quiz 1: Process Analysis
8	Th 2/2 & M 2/6	The Goal	
9	T 2/7 & W 2/8	Littlefield Round 1	
10	Th 2/9 & M 2/13	Midterm 1 Review	
11	T 2/14 & W 2/15	Midterm 1	
Th 2/16, M 2/20: No class, Presidents Day Holiday			
12	T 2/21 & W 2/22	Intro to Linear Optimization	
13	Th 2/23 & M 2/27	Interpreting Linear Optimization	
14	T 2/28 & W 3/1	Timeshare Exchange Fair	1-page write-up
15	Th 3/2 & M 3/6	Additional Optimization Applications	
16	T 3/7 & W 3/8	Decision Tree	Quiz 2: Linear Optimization
3/9, 12-19: No class, Spring Break			
17	M 3/20 & T 3/21	Revenue Management	
18	W 3/22 & Th 3/23	More on Revenue Management	
19	M 3/27 & T 3/28	Guest Speaker	HW 2: Decision Tree and Revenue Management
20	W 3/29 & Th 3/30	Midterm 2 Review	
21	M 4/3 & T 4/4	Midterm 2	
22	W 4/5 & Th 4/6	Inventory Management: EOQ	
23	M 4/10 & T 4/11	Inventory Management: Uncertainty	Deadline for eBeer game registration
24	W 4/12 & Th 4/13	Intro to Forecasting	Quiz 3: EOQ and Newsvendor
25	M 4/17 & T 4/18	Supply Chain Dynamics	
26	W 4/19 & Th 4/20	Zara	1-page write-up
27	M 4/24 & T 4/25	Littlefield Round 2	HW 3: Inventory Management
28	W 4/26 & Th 4/27	Final Review	
Final	Th 5/4 11am–1pm		

## **COURSE OUTLINE/READINGS/CLASS SESSIONS**

### **Module 1: Business Process Management**

**Session 1 – 1/9 (Monday) / 1/10 (Tuesday):** Introduction and Overview

**Question:** What is Operations Management? Why Operations Management?

**Learning Outcomes:** You and your classmates will discover that OM defines business competitiveness and a study in OM prepares you to become business leaders and entrepreneurs by qualitatively and quantitatively assessing trade-offs.

- Define and recognize Operations Management in real-world situations
- Construct and read business processes using flow chart diagrams
- Understand the potential trade-offs in make-to-stock and make-to-order processes

**Text Reading:** pp. 2-8, pp. 24-30<sup>1</sup>

**Session 2 – 1/11 (Wednesday) / 1/12 (Thursday):** Process Measures

**Question:** How do process flows link to the profits? How do we quantify the performance?

**Learning Outcomes:** You will learn that the flow of customers or products into and out of a system determines process measures and ultimately the bottom line.

- Define capacity, flow rate, and utilization rate
- Define flow time and work-in-process
- Understand that a bottleneck governs the process capacity

**Text Reading:** pp. 30-36

**Teaching Note:** Process Analysis

**Session 3 – 1/17 (Tuesday) / 1/18 (Wednesday):** The Kristen's Cookie Company

**Question:** What is the makeup of a small cookie business? How do we determine capacity?

**Learning Outcomes:** Through this case, you will gain a better understanding of the business profitability through business process analysis, evaluate key performance measures under different sales mix, and recognize the impact of the bottleneck on price and profit.

**Text Reading:** pp. 355-357 (Appendix B)

**Write-up Due:** 1 page, spacing 1.5 lines. Check with your instructor for the exact due time.

**Session 4 – 1/19 (Thursday) / 1/23 (Monday):** More on Process Analysis

**Question:** Is it possible to improve utilization rate and capacity at the same time?

**Learning Outcomes:** You will study strategies to meet seasonal demand and how flexible resources help increase the system capacity and utilization rate at the same time. Through several examples, we will also solidify our understanding of calculating metrics such as capacity.

- Understand the impact of variability/seasonality on capacity requirement
- Understand the impact of flexible resources on capacity
- Practice metrics calculation when there are multiple products and yield losses

**Text Reading:** pp. 36-42

**Session 5 – 1/24 (Tuesday) / 1/25 (Wednesday):** Little's Law

**Question:** What is Little's Law? How can it shed insight onto business process performance?

**Learning Outcomes:** There is a significant relationship among key performance indicators of a process. You will learn the powerful formula to help you better understand the performance of the business processes.

- Link various measures using Little's Law
- Discuss related business insights
- Apply the formula in various environments

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<sup>1</sup> Page numbers refer to the page numbers found at the top left/right hand corner of text/eBook.



**Text Reading:** pp. 8-11  
**Due HW 1:** Process Analysis

**Session 6 –1/26 (Thursday) / 1/30 (Monday):** Waiting Lines Management

**Question:** What principles can support us in understanding and managing waiting lines?

**Learning Outcomes:** We wait. Understanding *waiting* as a phenomenon enables us to create schedules, monitor inventory, analyze service, and determine a cost-effective balance for optimal performance and revenues. In this class, you will build a core understanding of three important factors pertaining to the performance of the waiting lines.

- Understand variability and its impact on the waiting performance
- Review utilization rate and its effect on waiting performance
- Identify the risk pooling effect in the waiting line systems
- Recognize the psychology of waiting-lines

**Text Reading:** pp. 48-61

**Teaching Note:** Variability and Queues

**Due:** Littlefield Game code needs to be purchased, and teams need to be registered

**Session 7 –1/31 (Tuesday) / 2/1 (Wednesday):** Queueing Theory

**Question:** How can mathematical calculations support optimal performance and revenues?

**Learning Outcomes:** We wait. You will be able to translate real life into variables for use in formulae and mathematical calculations to determine the waiting line performance.

- Present formulae for various waiting systems to quantify waiting time
- Practice solving for average waiting time using formulae
- Reexamine waiting lines principles using formulae

**Text Reading:** pp. 61-81

**Quiz 1:** Process Analysis and Little's Law

**Observation period for the first Littlefield Game starts at 8:00 pm, Tuesday 1/31**

**Session 8 –2/2 (Thursday) / 2/6 (Monday):** “*The Goal*”

**Question:** What is “the Goal” of a firm? How the concepts we learned interact in a firm?

**Learning Outcomes:** The book “*The Goal*” provides a nice description of the process flows, accounting measures, bottleneck management, and the concepts of Theory of Constraints and continuous improvement. You will better understand the key concepts we have learned in action.

- Link financial measures to operations measures
- Revisit bottlenecks
- Dependent events and statistical fluctuations

**Text Readings:** *The Goal*

**Session 9 –2/7 (Tuesday) / 2/8 (Wednesday):** Littlefield Game Round 1

**Question:** How do we manage capacity and waiting lines in a business? What are the challenges?

**Learning Outcomes:** Using a game simulator, you need to forecast, analyze, plan, and manage your enterprise by managing your resources and policies. Your team will compete with your classmates in real time.

**Session 10 –2/9 (Thursday) / 2/13/16 (Monday):** Midterm 1 Review

**Session 11 – 2/14 (Tuesday) / 2/15/16 (Wednesday):** Midterm 1

## **Module 2: Optimization**

### **Session 12 – 2/21 (Tuesday) / 2/22 (Wednesday):** Introduction to Linear Optimization

**Question:** How do we find the optimal solution? What is a linear optimization? How to solve it?

**Learning Outcomes:** Optimization gives business a critical edge. In this class, you will learn that optimization is a powerful tool that can be applied to various business problems not limited to operations management. You will be able to formulate a linear optimization problem (LOP) and solve small LOPs using Excel Solver.

- Recognize linear optimization as a special optimization tool
- Understand the components of a linear optimization and its graphic presentation
- Formulate linear optimizations and solve it using Excel Solver

**Text Reading:** pp. 88-94.

**Teaching Note:** Linear Programming

### **Session 13 – 2/23 (Thursday) / 2/27 (Monday):** Interpreting Linear Optimization

**Question:** How can we interpret sensitivity analysis reports when the real life challenge is vague?

**Learning Outcomes:** You will practice more advanced LOP in Excel. You will appreciate the value of the Excel reports, which help you understand and interpret how the solutions change when the conditions vary.

- Practice solving LOP using Solver
- Interpret sensitivity analysis based on Excel reports for business insights
- Distinguish scenario analysis from sensitivity analysis

**Text Reading:** pp. 94-95.

### **Session 14 – 2/28 (Tuesday) / 3/1 (Wednesday):** Timeshare Exchange Fair

**Question:** How can we build a successful timeshare exchange business? What is “optimal”?

**Learning Outcomes:** In this case, you will transform a business challenge into a mathematical model. You will also discover optimization is more than linear optimization and learn to formulate an integer optimization problem.

**Text Reading:** pp. 358-368 (Appendix C).

**Write-up Due:** 1 page, spacing 1.5 lines. Check with your instructor for the exact due time.

### **Session 15 – 3/2 (Thursday) / 3/6 (Monday):** Additional Optimization Applications

**Question:** How Internet companies and traditional companies rely on optimization?

**Learning Outcomes:** Optimization has become a backbone for many business. You will investigate some typical business problems where optimizations are applied and understand that Internet companies and traditional companies alike are embracing optimization to solve business problem.

- Recognize some common optimization problems
- Formulate optimization problem and solve it using Excel solver
- Understand building scenario analysis into the optimization formulation

**Reading (case):** “Locating Earthquake Shelters in the San Gabriel Valley.” (On Blackboard)

### **Session 16 – 3/7 (Tuesday) / 3/8 (Wednesday):** Decision Tree

**Question:** How can we optimize our decision in an uncertain world? What is a Decision Tree?

**Learning Outcomes:** The Decision Tree is a schematic model used to manage uncertainty by clearly identifying choices and alternative choices. You will learn how to construct a decision tree -- i.e., its nodes and branches and solve the optimal decision.

- Learn to draw a decision tree
- Distinguish the three types of the nodes
- Practice solving decision trees

**Quiz 2:** Linear Optimization

**Session 17 – 3/20 (Monday) / 3/21 (Tuesday): Revenue Management**

**Question:** What is Revenue Management? How does it help business to increase profit?

**Learning Outcomes:** You will understand the key concepts relating to revenue management. In this lesson, you will be able to utilize control capacity to maximize the revenue.

- Become acquainted with common revenue management tools
- Identify the elements and trade-offs of basic capacity control problem
- Utilize a decision tree to solve for these types of problems

**Teaching Note:** Inventory Management

**Session 18 – 3/22 (Wednesday) / 3/23 (Thursday): More on Revenue Management**

**Question:** How many seats should an airline overbook? How do we markdown our inventory?

**Learning Outcomes:** You will learn the underlying marginal analysis idea that solves both the capacity control problem and the overbooking problem. You will also maximize the revenue for your remaining inventory by analyzing historic data and marking down the price wisely. Your team will compete with your classmates in real time.

- ♦ Identify the tradeoffs associated with the marginal analysis
- ♦ Calculate the optimal number of seats to overbook on a flight
- ♦ Understand that the potential of LOP in solving business problem like markdown

**Session 19 – 3/27 (Monday) / 3/28 (Tuesday): Guest Lecture**

**Question:** What are the tasks and challenges faced by operations management practitioners?

**Learning Outcomes:** In this class, operation practitioners will expose you to the challenges and tasks they face. You will gain a better understanding of operational concepts and tools in action.

**Due HW 2: Decision Tree and Revenue Management**

**Session 20 – 3/29 (Wednesday) / 3/30 (Thursday): Midterm 2 Review**

**Session 21 – 4/3 (Monday) / 4/4 (Tuesday): Midterm 2**

**Module 3: Inventory and Supply Chain Management**

**Session 22 – 4/5 (Wednesday) / 4/6 (Thursday): Inventory Management: EOQ**

**Question:** Why carry inventories? What is “economies of scale”? How can we minimize costs?

**Learning Outcomes:** Inventory is essential for business activities though it can be costly. You will examine the trade-offs between economies of scale and inventory cost and learn how to find the right amount of inventory using the economic order quantity (EOQ) formula.

- Identify the different purposes for keeping inventory
- Learn economies of scale and trade-offs of a basic inventory problem
- Define inventory turn, a key performance measure

**Text Readings:** 11-19, 251-256, 261-264

**Teaching Note:** Inventory Management

**Session 23 – 4/10 (Monday) / 4/11 (Tuesday): Inventory Management: Demand Uncertainty**

**Question:** Why carry inventories? How to ensure customer satisfaction with minimum inventory?

**Learning Outcomes:** Inventory is a necessary evil especially when you face demand uncertainty. You will examine the trade-offs and apply marginal analysis to solve the problem optimally. You will also be able to establish an inventory policy when both economies of scale and demand uncertainty are present.

- Identify the elements and trade-offs of a basic inventory problem
- Practice marginal analysis and optimize decision making

- Examine the risk pooling effect in inventory systems
- Learn a common inventory policy called (ROP, Q)

**Text Readings:** pp. 257-261, 264-267

**Due:** eBeer Game (individual) Registration

**Session 24 – 4/12 (Wednesday) / 4/13 (Thursday):** Introduction to Forecasting

**Question:** How do we plan without seeing the future? What makes a good forecast?

**Learning Outcomes:** Anticipating the future is no easy task. From astrologers to business managers, we try as best we can to use science and mathematics to demystify the unknown for optimal decision-making. Finance, marketing, as well as production and service, rely on forecasting to make both long-term and short-term management decisions. You will learn the basic methods to forecasting, become skilled at calculating measurement error, and understand the trade-offs between responsiveness and stability in parametric selection.

- Understand basic concepts and components of the forecast
- Measure forecast error of a forecast method
- Apply the simple moving average model and the exponential smoothing method

**Text Readings:** pp. 108-117, 128-130

**Quiz 3:** EOQ and Newsvendor

**Session 25: 4/17 (Monday) / 4/18 (Tuesday):** Supply Chain Dynamics

**Question:** What is the “bull-whip” effect? How do our decisions influence others’ decision?

**Learning Outcomes:** The success of a company relies on its upstream supplier and downstream distribution partners. Incentive and information are two crucial factors in decision making. You will play the root beer game to experience the information distortion in a supply chain.

- Experience the bull-whip effect via the beer game
- Understand this common business phenomenon
- Learn how to combat the bull-whip effect

**Text Readings:** pp. 295-301

**Observation period for the second Littlefield Game starts at 8:00 pm, Monday 4/17**

**Session 26 – 4/19 (Wednesday) / 4/20 (Thursday):** Zara

**Question:** Have you been to a Zara store? How does Zara manage its inventory and supply chain?

**Learning Outcomes:** The fashion business is demanding on inventory management because leftovers get significant markdowns. You will study and understand Zara’s supply chain structure and its inventory policy and examine how its operation strategy aligns with its business strategy.

**Reading (case):** Zara (On Blackboard)

**Write-up Due:** 1 page, spacing 1.5 lines. Check with your instructor for the exact due time.

**Session 27 – 4/24 (Monday) / 4/25 (Tuesday):** Littlefield Game Round 2

**Question:** How do we manage capacity, inventory, and delivery time? What are the challenges?

**Learning Outcomes:** Using a game simulator, you need to forecast, analyze, plan, and manage your enterprise by managing your resources and policies. Your team will compete with your classmates in real time.

**Due:** HW 3: Inventory Management

**Session 28 – 4/26 (Wednesday) / 4/27 (Thursday):** Final Review

**Final is scheduled for Thursday, May 4, 11:00 am – 1:00pm. No early finals are allowed by University policy.**

<b>Contribution of BUAD311 Operations Management to Student Achievement of Marshall's Six Undergraduate Program Learning Goals</b>			
<b>#</b>	<b>Marshall Program Learning Goal Description</b>	<b>Degree of Emphasis</b>	<b>BUAD311 Course Objectives that Support This Marshall Undergraduate Goal</b>
<b>1</b>	<b>Our graduates will understand types of markets and key business areas and their interaction to effectively manage different types of enterprises. Specifically, students will:</b>	<b>High</b>	<b>BUAD311 Course Objectives 1-7 support Goal 1</b>
1.1	Demonstrate foundational knowledge of core business disciplines, including business analytics and business economics.		1. Understand interfaces with other functional areas 2. Analyze trade-offs in decision-making 3. Understand the global nature of supply chain
1.2	Understand the interrelationships between functional areas of business so as to develop a general perspective on business management.		1. Understand interfaces with other functional areas 2. Analyze trade-offs in decision-making 3. Understand the global nature of supply chain 6. Apply operations management tools/techniques 7. Formulate a linear program for optimal product-mix
1.3	Apply theories, models, and frameworks to analyze relevant markets (e.g. product, capital, commodity, and factor and labor markets).		2. Analyze trade-offs in decision-making 3. Understand the global nature of supply chain 4. Learn waiting line and revenue management 5. Apply process analysis and capacity management skills to manage a factory in real-time 6. Apply operations management tools/techniques 7. Formulate a linear program for optimal product-mix
1.4	Show the ability to utilize technologies (e.g., spreadsheets, databases, software) relevant to contemporary business practices.		6. Apply operations management tools/techniques 7. Formulate a linear program for optimal product-mix 8. Communicate case analysis with team presentations
2.1	Understand how local, regional and global markets interact and are impacted by economic, social and cultural factors.		1. Understand interfaces with other functional areas 3. Understand the global nature of supply chain
2.2	Understand that stakeholders, stakeholder interests, business environments (legal, regulatory, competitor) and business practices vary across regions of the world.		1. Understand interfaces with other functional areas 2. Analyze trade-offs in decision-making 3. Understand the global nature of supply chain 5. Apply process analysis and capacity management skills to manage a factory in real-time 6. Apply operations management tools/techniques
<b>3</b>	<b>Our graduates will demonstrate critical thinking skills so as to become future-oriented decision makers, problem solvers and innovators. Specifically, students will:</b>	<b>High</b>	<b>BUAD311 Course Objectives 1-7 support Goal 3</b>
3.1	Understand the concepts of critical thinking, entrepreneurial thinking and creative thinking as drivers of innovative ideas.		1. Understand interfaces with other functional areas 2. Analyze trade-offs in decision-making 3. Understand the global nature of supply chain 4. Learn waiting line and revenue management 5. Apply process analysis and capacity management skills to manage a factory in real-time 6. Apply operations management tools/techniques 7. Formulate a linear program for optimal product-mix
3.2	Critically analyze concepts, theories and processes by stating them in their own words, understanding key components, identifying assumptions, indicating how they are similar to and different from others and translating them to the real world.		1. Understand interfaces with other functional areas 2. Analyze trade-offs in decision-making 4. Learn waiting line and revenue management 5. Apply process analysis and capacity management skills to manage a factory in real-time 6. Apply operations management tools/techniques

			7. Formulate a linear program for optimal product-mix
3.3	Be effective at gathering, storing, and using qualitative and quantitative data and at using analytical tools and frameworks to understand and solve business problems.		4. Learn waiting line and revenue management. 5 Apply process analysis and capacity management skills to manage a factory in real-time 6. Apply operations management tools/techniques 7. Formulate a linear program for optimal product-mix
3.4	Demonstrate the ability to anticipate, identify and solve business problems. They will be able to identify and assess central problems, identify and evaluate potential solutions, and translate a chosen solution to an implementation plan that considers future contingencies		1. Understand interfaces with other functional areas. 2. Analyze trade-offs in decision-making 3. Understand the global nature of supply chain 4. Learn waiting line and revenue management. 5 Apply process analysis and capacity management skills to manage a factory in real-time 6. Apply operations management tools/techniques 7. Formulate a linear program for optimal product-mix
4	<b>Our graduates will develop people and leadership skills to promote their effectiveness as <i>business managers and leaders</i>. Specifically, students will:</b>	High	<b>BUAD311 Course Objectives 1-7 support Goal 4</b>
4.1	Recognize, understand, and analyze the motivations and behaviors of stakeholders inside and outside organizations (e.g., teams, departments, consumers, investors, auditors).		1. Understand interfaces with other functional areas 2. Analyze trade-offs in decision-making 3. Understand the global nature of supply chain 4. Learn waiting line and revenue management
4.2	Recognize, understand and analyze the roles, responsibilities and behaviors of effective managers and leaders in diverse business contexts e.g., marketing, finance, accounting.		1. Understand interfaces with other functional areas 6. Apply operations management tools/techniques
4.3	Understand factors that contribute to effective teamwork.		5 Apply process analysis and capacity management skills to manage a factory in real-time 6. Apply operations management tools/techniques
5	<b>Our graduates will demonstrate ethical reasoning skills, understand social, civic, and professional responsibilities and <i>aspire to add value to society</i>. Specifically, students will:</b>	Low	<b>BUAD311 Course Objectives 1-2 support Goal 5</b>
5.1	Understand professional codes of conduct.		1. Understand interfaces with other functional areas
5.2	Recognize ethical challenges in business situations and assess appropriate courses of action.		1. Understand interfaces with other functional areas 2. Analyze trade-offs in decision-making
6	<b>Our graduates will be effective communicators to facilitate information flow in organizational, social, and intercultural contexts. Specifically, students will:</b>	Mode rate	<b>BUAD311 Course Objectives 1 and 6 support Goal 6</b>
6.1	Identify and assess diverse personal and organizational communication goals and audience information needs		1. Understand interfaces with other functional areas 6. Apply operations management tools/techniques
6.2	Understand individual and group communications patterns and dynamics in organizations and other professional contexts		
6.3	Demonstrate an ability to gather and disseminate information and communicate it clearly, logically, and persuasively in professional contexts.		6. Apply operations management tools/techniques, create and defend well-reasoned solutions