

Instructor: Professor Kathy Takayama

Office Hours: Tue, 9:30-11:00 AM, Wed, 7:00-8:00 PM Pacific

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Course Description

How do organizations such as financial institutions, health care providers, manufacturing plants, and tech companies 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 systematically in the global business world.

Operations managers are primarily concerned with the design, procurement, production, and delivery of goods and services. They are responsible for planning, designing, operating, controlling and improving the various procurement, production, storage, and shipping processes involved, from the time the product or service is designed until customer delivery occurs. The challenge for operations managers is to produce goods and services and deliver them in an efficient manner according to the business strategy of their company. Typically, this involves balancing the trade-offs between 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 focus of this course is on the Marshall Undergraduate Learning Goals (see pp. 16-17 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.” Upon successful completion of this course, students will be able to:

- Goal 1: Describe the spectrum of operations management activities in a business, and the types of decisions made by operations managers.
- Goal 2: Utilize a variety of tools and techniques effectively to compete successfully in the marketplace, including:
 - Business Process Management.
 - Capacity Management.

- Waiting Line Management.
- Optimization.
- Revenue Management.
- Inventory and Supply Chain Management.
- Goal 3: Predict, anticipate, and take into account how operations management interfaces with other functional areas such as strategy, accounting, finance, human resources, and marketing.
- Goal 4: Demonstrate critical thinking skills to assess trade-offs in process design, capacity allocation, inventory levels, and customer service.
- Goal 5: Apply optimization tools and techniques to practical problems; for example, use the Excel Solver to formulate and solve a linear optimization problem.
- Goal 6: Apply critical thinking and problem-solving and make real-time decisions on capacity, quoted lead-times, work-in-process levels, contracts, and inventory.
- Goal 7: Make operational decisions taking into account the global nature of supply chains (via an experiential learning simulation), the interplay between levels of the supply chain and their locations, and its implications for pricing, competition and customer service.

Materials

For most of the class, lecture notes and materials on blackboard will be sufficient. You may choose to purchase a copy of the custom BUAD 311 textbook or access pertinent chapters from ARES at no cost (see below).

- *BUAD 311 Operations Management*: Custom-made textbook available in eBook format at <https://create.mheducation.com/shop/>, ISBN: 9781308430478. (This is optional)
- Four relevant chapters (Textbook chapters 2, 3, 8 and LP with Solver) from the text are available for free on ARES. To access these chapters
 1. Login to <https://reserves.usc.edu> using your USC net-id and password.
 2. Under Student Tools, select Search Courses. In the Course Number Contains field, type 311 then click Go.
 3. Click Add Course to add it to your Ares library.
 4. When you click View Course, you will see Chapters 2, 3, 8 and LP with solver, which are the only chapters required for BUAD 311. If you would like additional chapters, you can purchase the eBook listed above.
 5. For more information on how to use course reserves, check here <https://libguides.usc.edu/distancelearning/coursereserves>

Prerequisites and/or Recommended Preparation

Co-requisite: BUAD 310 or BUAD 312 or EE 364 or MATH 407

Course Notes

Please check the Blackboard site and Slack daily for class preparation materials or instructions. Lecture slides will be posted on Blackboard. If you would like hard copies of them, it will be your responsibility to print them out.

Copyright Notice

All Zoom lectures will be automatically recorded and available on Blackboard. **No student may record any lecture, class discussion, office hours or meeting with the instructor without prior express written permissions.** It is a violation of USC's Academic Integrity Policies to share course materials with others without permission. 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 only for students who have made prior arrangements with DSP and the instructor.

ASSIGNMENTS AND GRADING DETAIL

| | |
|-----------------------------|-----|
| Participation | 10% |
| Write-ups (2 cases) | 2% |
| Quizzes and Exams | |
| • Quizzes (best 3 out of 4) | 18% |
| • Midterm | 35% |
| • Final Exam | 35% |

The weights listed above determine a student's overall course grade for this class. The course grade represents one's performance relative to other students in the class. 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 your section.

Class Attendance & Participation

Students are expected to attend all class sessions in their enrolled section. Your participation score is based on your contributions to the lectures including, but not limited to thoughtfully responding to the instructor's prompts (including chats, polls, breakout rooms, etc.); asking questions; answering other students' questions; and sharing personal or professional experiences related to course content.

You can also earn participation points by posting articles or sharing your experiences on Slack, including replies and emojis. You can get to the class Slack channel by going to <http://usc.slack.com> and selecting the USC Marshall Workspace (login with USC Single Sign On – SSO). You are automatically enrolled in our section. *For the first week of class, you can earn bonus participation points by adding your favorite emoji on the "Welcome" post.*

BUAD 311 involves several simulation games, particularly in the second half of the course. Your performance on these simulation games will be included when computing your participation grade.

EBeer Game

We will be playing the EBeer game, which is based on a board game simulation developed at MIT. You will be required to purchase a game code for **\$12** to participate in the simulation. Through this game you will

learn about system dynamics in the context of a supply chain. Four team members each take a different position on a simple linear supply chain: retailer, wholesaler, distributor, and factory, with a goal to minimize inventory and backlog costs.

Because this is an interactive simulation, you must be present to participate (and to get participation points). Accessing the simulation is a two-step process (please use your USC email address when registering):

- 1) **Purchase** your *individual code* by going to <http://eb.responsive.net/in/usc/> and clicking where it says "Click here to purchase your individual code" in the 2nd paragraph.
 - a. Step 1: Institution = USC Marshall
 - b. Step 2: use your @usc.edu email address; do NOT use your top secret password since your professor can see the password; pick a password that is easy to remember
 - c. Step 3: Although it says Optional, your First Name and Last Name are required for my class
 - d. After you click Submit, purchase a Student Registration Code; **Remember the code** - you will need this code for the "Registration" step
- 2) **Register** for our section by going to <http://eb.responsive.net/in/usc/> and clicking on your section in the list.
 - a. Click on the **Register** button
 - b. For your **Login ID**, use your @usc.edu email address
 - c. Do **not** use your favorite password since the professor can see your password
 - d. The **Course Code** is *usc*
 - e. For **Section ID** enter your Section number
 - f. The **Student Registration Code** is the individual code you purchased
 - g. Provide your First and Last Name
 - h. When you see "You are not yet part of a team" you are ready for class (remember your login ID and password)

Write-ups

There will be two write-ups for the course, one for each of the two cases. Each contributes 1% to the course grade. Write-ups are short essays in response to posted discussion questions, and are graded PASS or FAIL based on completion and accuracy. **Write-ups are to be submitted on Blackboard.** Students are responsible for familiarizing themselves with the Blackboard assignment submission interface and uploading assignments ahead of time; instructors or TAs are not responsible for individual technical difficulties related to Blackboard assignment submission.

Quizzes

There are four quizzes, of which the best three will count towards the course grade for 6% each. Quizzes are not cumulative. Quizzes are meant to help keep you "on track" with the course material. To help you prepare, approximately a week before each quiz a short set of quiz questions will be distributed. You are free to work in groups on these questions (and encouraged to do so), but **you cannot ask the TA, peer tutors or instructors for help with them.** On the day of the quiz in class, one of the questions will be randomly selected from the quiz preparation materials, with slightly different numbers and small modifications. If you have done the quiz preparation questions diligently, the quiz will be very easy for

you. Solutions to the quizzes will be distributed only after all sections have taken the quiz, at which point you are free to meet with the TA, peer tutors or instructor for help with the questions. Unless stated otherwise, all quizzes are closed books and there are no crib-sheets permitted for quizzes. Each student should bring a stand-alone calculator capable of power and square root operations. Collaboration of any sort on quizzes is strictly prohibited and will result in an “F” in the course grade. Any suspicion of cheating will be reported and investigated by USC. Please see the “Academic Integrity and Conduct” section below for further details.

Midterm and Final Exam

There is a midterm exam and a final exam; the final exam is ***non-cumulative***. All exams are closed books. Each student may bring two letter-sized (8.5”x11”) double-sided crib sheets for each exam. Each student should also bring a stand-alone calculator capable of power and square root operations. Students may not share the same crib sheet or calculator during a test. Collaboration of any sort on exams is strictly prohibited and will result in an “F” in the course grade. Any suspicion of cheating will be reported and investigated by USC. Please see the “Academic Integrity and Conduct” section below for further details.

The final examination will take place on Thursday, May 6, 11:00 AM - 1:00 PM PDT. 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.”*

Students must attend all quizzes and exams at the indicated times and dates, in their enrolled sections. If you foresee a conflict, you must contact the instructor within the first three weeks of the semester to explore alternative options, to be determined by the entire 311 teaching team. No rescheduling of exams will be allowed after the first three weeks of class. The only exception is a “documented medical emergency,” for which the student must provide all of the following documentation by the time of the exam: (1) A signed doctor’s note, with the name and phone number of the medical professional verifying the medical emergency; (2) An email from the student’s Marshall advisor; (3) An email from a USC Support and Advocacy advisor (see “Support Systems” below). For all other reasons of missing a quiz or an exam, including travels for non-emergencies, interviews, adverse traffic conditions, or forgetfulness about exam time, the student will not be allowed to reschedule, and missing a quiz or an exam will result in a zero for the quiz or the exam.

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. Per the [USC Schedule of Classes](#) as of January 12, 2021, the last day to drop this course without a mark of “W” and receive a refund is February 5, 2021. The last day to change between letter grade and pass/no pass for this course, as well as to drop this course with a mark of “W”, is April 30, 2021.

Students with Disabilities

USC is committed to making reasonable accommodations to assist individuals with disabilities in reaching their academic potential. If you have a disability which may impact your performance, attendance, or grades in this course and require accommodations, you must first register with the Office of Disability Services and DSP provides certification for students with disabilities and helps arrange the relevant accommodations. A letter of accommodation for approved accommodations can be obtained from DSP.

Approved accommodations apply to the class once the student provides the instructor the letter of accommodation. Approved accommodations may not be used retroactively by a student on a test, assignment or other coursework that has already been completed. **Students must notify the instructor of their intention to use their accommodation as soon as possible during the semester and at least 2 weeks in advance of each quiz/exam date.**

DSP is located in GFS (Grace Ford Salvatori Hall) 120 and is open 8:30 a.m.–5:00 p.m., Monday through Friday. The phone number for DSP is (213) 740-0776. Email: ability@usc.edu.

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.

Class Conduct/Netiquette

Professionalism will be expected at all times. Because the university classroom is a place designed for the free exchange of ideas, we must show respect for one another in all circumstances. We will show respect for one another by exhibiting patience, courtesy, and professionalism in our exchanges. Appropriate language and restraint from verbal attacks upon those whose perspectives differ from your own is a requirement. Courtesy and kindness are the norm for those who participate in my class.

Synchronous Sessions

Students are expected to attend all class sessions in their enrolled section. For students whose class time falls between 7am-10pm their local time, they must actively participate in all synchronous (live) sessions via computer or laptop, with a webcam and headset/speakers. You are expected to be in a location with a reliable internet connection and without distractions. Your participation score is based on your contributions to the lectures including, but not limited to thoughtfully responding to the instructor’s prompts, engaging in class discussions, and offering relevant comments.

If you cannot attend the synchronous sessions because the class does not fall between 7am to 10pm in your time zone, you need to contact your instructor as early as possible for alternative asynchronous assignments to obtain your participation score.

As outlined in the student handbook, there are specific expectations of a student attending class online. When attending, present and act appropriate as if you were in a physical classroom.

Please do:

- Attend class from a quiet area, free of distractions.
- Dress respectfully. Video conference business meetings are and will be the norm, so practice your professional telepresence.
- If you use a virtual background, please keep it respectfully professional
- Display both your first and last name during video conferencing and Synchronous class meetings.
- Respectfully minimize distractions by muting and or turning video off when moving around
- Engage in appropriate tone and language with instructors or classmates
- Disagree respectfully
- Respectfully pay attention to classmates

Please do not:

- Engage in a simultaneous activity (e.g., using a telephone, reading a book, knitting)
- Interact with persons who are not part of the class
- Leave frequently or not be on camera for extended periods of time
- Have other persons or pets in view of the camera
- Behave in an overtly inattentive manner (looking distracted, not participating)

Asynchronous Activities – Slack and emails

Some Netiquette Rules:

- Engage in appropriate tone and language with instructors or classmates
- Disagree respectfully
- Do not use more than one punctuation mark, this is also considered aggressive!!!!
- Begin communications with a professional salutation (Examples: Dr. Name; Ms. Name; Hello Professor Name; Good afternoon Mr. Name). Starting without a salutation or a simple "Hey" is not appropriate.
- When sending an email, please include a detailed subject line. Additionally, make sure you reference the course number and section (Ex. BUAD311-14914) in the message and sign the mail with your name.
- Use proper grammar, spelling, punctuation, and capitalization. Text messaging language is not acceptable. You are practicing for your role as a business leader.

- Re-Read, think, and edit your message before you click "Send/Submit/Post.". As a check, consider whether you would be comfortable with your email or post or text being widely distributed on the Internet.

USC Statement on Academic Conduct and Support Systems

Academic Conduct:

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. Please familiarize yourself with the discussion of plagiarism in SCampus in Part B, Section 11, “Behavior Violating University Standards” policy.usc.edu/scampus-part-b. Other forms of academic dishonesty are equally unacceptable. See additional information in SCampus and university policies on scientific misconduct, policy.usc.edu/scientific-misconduct.

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: <https://sjacs.usc.edu/>. 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* or to the *Department of Public Safety*. 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)* provides 24/7 confidential support.

Support Systems:

Technical Support

Blackboard, Zoom, Slack, Google Drive, Office 365, Respondus, etc.

<https://keep-teaching.usc.edu/students/student-toolkit/>

USC IT: 213-740-5555

Marshall IT: 213-740-3000 or helpdesk@marshall.usc.edu

Counseling and Mental Health - (213) 740-9355– 24/7 on call

<https://studenthealth.usc.edu/counseling/>

Free and confidential mental health treatment for students, including short-term psychotherapy, group counseling, stress fitness workshops, and crisis intervention.

National Suicide Prevention Lifeline - 1 (800) 273-8255 – 24/7 on call

suicidepreventionlifeline.org

Free and confidential emotional support to people in suicidal crisis or emotional distress 24 hours a day, 7 days a week.

Relationship and Sexual Violence Prevention Services (RSVP) - (213) 740-9355(WELL), press "0" after hours – 24/7 on call

<https://studenthealth.usc.edu/sexual-assault/>

Free and confidential therapy services, workshops, and training for situations related to gender-based harm.

Office of Equity and Diversity (OED)- (213) 740-5086 | Title IX – (213) 821-8298

equity.usc.edu, titleix.usc.edu

Information about how to get help or help someone affected by harassment or discrimination, rights of protected classes, reporting options, and additional resources for students, faculty, staff, visitors, and applicants. The university prohibits discrimination or harassment based on the following *protected characteristics*: race, color, national origin, ancestry, religion, sex, gender, gender identity, gender expression, sexual orientation, age, physical disability, medical condition, mental disability, marital status, pregnancy, veteran status, genetic information, and any other characteristic which may be specified in applicable laws and governmental regulations. The university also prohibits sexual assault, non-consensual sexual contact, sexual misconduct, intimate partner violence, stalking, malicious dissuasion, retaliation, and violation of interim measures.

Reporting Incidents of Bias or Harassment - (213) 740-5086 or (213) 821-8298

https://usc-advocate.symplicity.com/care_report/

Avenue to report incidents of bias, hate crimes, and microaggressions to the Office of Equity and Diversity | Title IX for appropriate investigation, supportive measures, and response.

The Office of Disability Services and Programs - (213) 740-0776

dsp.usc.edu

Support and accommodations for students with disabilities. Services include assistance in providing readers/notetakers/interpreters, special accommodations for test taking needs, assistance with architectural barriers, assistive technology, and support for individual needs.

USC Campus Support and Intervention - (213) 821-4710

<https://uscса.usc.edu/>

Assists students and families in resolving complex personal, financial, and academic issues adversely affecting their success as a student.

Diversity at USC - (213) 740-2101

diversity.usc.edu

Information on events, programs and training, the Provost's Diversity and Inclusion Council, Diversity Liaisons for each academic school, chronology, participation, and various resources for students.

USC Emergency - UPC: (213) 740-4321, HSC: (323) 442-1000 – 24/7 on call

dps.usc.edu, emergency.usc.edu

Emergency assistance and avenue to report a crime. Latest updates regarding safety, including ways in which instruction will be continued if an officially declared emergency makes travel to campus infeasible.

USC Department of Public Safety - UPC: (213) 740-6000, HSC: (323) 442-120 – 24/7 on call

dps.usc.edu

Non-emergency assistance or information.

COURSE CALENDAR

| Week | Session | Dates | Topic | Assignment |
|------------|---------|-------------------------------|--|---|
| 1 | | M 1/18 & T 1/19 | No Class (MLK Day Holiday) | |
| | 1 | W 1/20 & Th 1/21 | Introduction and Overview | |
| 2 | 2 | M 1/25 & T 1/26 | Process Measures | |
| | 3 | W 1/27 & Th 1/28 | Kristen's Cookie Company | Case write-up (Check Blackboard for the due date) |
| 3 | 4 | M 2/1 & T 2/2 | More on Process Analysis | |
| | 5 | W 2/3 & Th 2/4 | Little's Law | |
| 4 | 6 | M 2/8 & T 2/9 | Waiting Line Management | |
| | 7 | W 2/10 & Th 2/11 | Queueing Theory I | Quiz 1 (Quiz preparation questions will be distributed on Friday 2/5) |
| 5 | | M 2/15 & T 2/16 | No Class (President's Day Holiday) | |
| | 8 | W 2/17 & Th 2/18 | Queueing Theory II | |
| 6 | 9 | M 2/22 & T 2/23 | Intro to Linear Optimization | |
| | 10 | W 2/24 & Th 2/25 | Solving Linear Optimization – Excel Solver | Quiz 2 (Quiz preparation questions will be distributed on Friday 2/19) |
| 7 | 11 | M 3/1 & T 3/2 | Midterm Review | |
| | 12 | W 3/3 & Th 3/4 | MIDTERM EXAM | |
| 8 | 13 | M 3/8 & T 3/9 | Interpreting Linear Optimization | |
| | 14 | W 3/10 & Th 3/11 | Additional Optimization Applications | |
| 9 | 15 | M 3/15 & T 3/16 | Decision Trees | |
| | 16 | W 3/17 & Th 3/18 | Revenue Management: Intro & Pricing | |
| 10 | | M 3/22 & T 3/23 | No Class (Wellness Day) | |
| | 17 | W 3/24 & Th 3/25 | Revenue Management: Pricing & Capacity Control | |
| 11 | 18 | M 3/29 & T 3/30 | Inventory Management: EOQ | |
| | 19 | W 3/31 & Th 4/1 | Inventory Management: Uncertainty | Quiz 3 (Quiz preparation questions will be distributed on Friday 3/26) |
| 12 | 20 | M 4/5 & T 4/6 | Inventory Management: Continuous Review | |
| | | W 4/7 & Th 4/8 | No Class (Wellness Day) | |
| 13 | 21 | M 4/12 & T 4/13 | Intro to Forecasting 1 | |
| | 22 | W 4/14 & Th 4/15 | Intro to Forecasting 2/Intro to Supply Chains | |
| 14 | 23 | M 4/19 & T 4/20 | Zara | Quiz 4 (Quiz preparation questions will be distributed on Friday 4/9); Case write-up (Check Blackboard for the due date) |
| | | W 4/21 & Th 4/22 | No Class (Wellness Day) | |
| 15 | 24 | M 4/26 & T 4/27 | eBeer Game | |
| | 25 | W 4/28 & Th 4/29 | Final Review | |
| Final Exam | | Th 5/6 11:00 am – 1:00 pm PDT | | |

Module 1: Business Process Management

Session 1 – Introduction and Overview

Question: What is Operations Management (OM)? Why Operations Management?

Outline: You and your classmates will discover that OM defines business competitiveness and study of OM prepares you to become business leaders and entrepreneurs by qualitatively and quantitatively assessing trade-offs.

Learning Outcomes: By the end of this session, students should be able to

- Define and identify Operations Management problems in real-world situations
- Articulate the importance of OM to business competitiveness, leadership, and entrepreneurship
- Construct and interpret business processes using process flow diagrams
- Describe the potential trade-offs in make-to-stock and make-to-order processes

Session 2 – Process Measures

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

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

Learning Outcomes: By the end of this session, students should be able to

- Calculate key performance measures of a process, including capacity, flow rate, and utilization rate
- Define flow time and work-in-process
- Identify the bottleneck that governs the capacity of a process

Session 3 – Kristen’s Cookie Company

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

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

Learning Outcomes: Through this case, students should be able to

- Conduct business process analysis to assess business profitability
- Evaluate key performance measures under different sales mixes
- Quantify the impact of the bottleneck on price and profit

Session 4 – More on Process Analysis

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

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

Learning Outcomes: By the end of this session, students should be able to

- Describe strategies for meeting seasonal demand and the impact of variability/seasonality on capacity requirement
- Utilize flexible resources to increase system capacity and utilization rate at the same time
- Calculate performance measures in the presence of multiple products and yield losses

Session 5 – Little’s Law

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

Outline: There is an important 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.

Learning Outcomes: By the end of this session, students should be able to

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

Session 6 – Waiting Line Management

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

Outline: 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.

Learning Outcomes: By the end of this session, students should be able to

- Define characteristics of a waiting line queueing system
- Explain the effects of variability, utilization rate, and risk pooling on waiting line performance
- Describe the psychology of waiting lines

Sessions 7 and 8 – Queuing Theory

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

Outline: You will be able to translate real life waiting into variables for use in formulae and mathematical calculations to determine waiting line performance.

Learning Outcomes: By the end of this session, students should be able to

- Formulate the quantitative impact of various factors on waiting time
- Apply the formulae to calculate the waiting time of real-life waiting systems
- Explain waiting lines principles using the formulae

Module 2: Optimization

Sessions 9 and 10 – Introduction to Linear Optimization and Solving Linear Optimization

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

Outline: 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.

Learning Outcomes: By the end of this session, students should be able to

- Identify the powerful impact of optimization on business problems
- Describe components of a linear optimization problem (LOP)
- Formulate a linear optimization problem and solve it using the Excel Solver

Session 11 – Midterm 1 Review

Session 12 – Midterm Exam

Session 13 – Interpreting Linear Optimization

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

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

Learning Outcomes: By the end of this session, students should be able to

- Solve an LOP using the Excel Solver
- Interpret sensitivity analysis based on Excel reports for business insights
- Distinguish scenario analysis from sensitivity analysis

Session 14 – Additional Optimization Applications

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

Outline: Optimization has become a backbone for many businesses. You will investigate some typical business problems where optimization is used and understand that Internet companies and traditional companies alike are embracing optimization to solve business problems.

Learning Outcomes: By the end of this session, students should be able to

- Describe some common optimization problems in the business world, for both Internet companies and traditional companies
- Incorporate scenario analysis into an optimization formulation

Session 15 – Decision Trees

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

Outline: The Decision Tree is a schematic model used to manage uncertainty by clearly identifying alternative choices. You will learn how to construct a decision tree—its nodes and branches—and solve for the optimal decision.

Learning Outcomes: By the end of this session, students should be able to

- Use decision trees to express alternative choices and to manage uncertainty
- Describe differences between the three types of nodes in a decision tree
- Solve decision tree problems

Session 16 – Revenue Management: Introduction and Pricing

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

Outline: You will understand the key concepts of revenue management. In this lesson, you will use an online platform to understand how to use consumer valuation information to set prices.

Learning Outcomes: By the end of this session, students should be able to

- Learn how to set prices based on customer valuation information
- Employ an analytical approach to make pricing decisions.

Session 17 – Revenue Management: More Pricing & Capacity Control

Question: How many seats should you reserve for your premium customers?

Outline: You will face an example of decision making under uncertainty by solving the capacity control problem on an online platform. You will learn the underlying marginal analysis idea that solves the capacity control problem.

Learning Outcomes: By the end of this session, students should be able to

- Identify the trade-offs associated with marginal analysis.
- Apply marginal analysis to the capacity control problem.

Module 3: Inventory and Supply Chain Management

Session 18 – Inventory Management: EOQ

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

Outline: 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.

Learning Outcomes: By the end of this session, students should be able to

- Describe the different purposes for keeping inventory
- Explain the trade-offs between economies of scale and inventory cost in a basic inventory problem
- Optimize the amount of inventory using the economic order quantity (EOQ) formula
- Define inventory turns, a key performance measure

Session 19 – Inventory Management: Uncertainty

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

Outline: 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.

Learning Outcomes: By the end of this session, students should be able to

- Identify the elements and trade-offs of a basic inventory problem
- Apply marginal analysis to optimize inventory decisions in the face of demand uncertainty
- Explain the risk pooling effect in inventory systems
- Derive the (ROP, Q) inventory policy when both economies of scale and demand uncertainty are present

Session 20 – Inventory Management: Continuous Review

Question: We establish and analyze an inventory policy when both economies of scale and demand uncertainty are present.

Learning Outcomes: By the end of this session, students should be able to

- Explain the risk pooling effect in inventory systems in a dynamic manner.
- Derive the (ROP, Q) inventory policy when both economies of scale and demand uncertainty are present
- Understand the tradeoffs between uncertainty, delay, and inventory decisions.

Session 21 and 22 – Introduction to Forecasting/Introduction of Supply Chains

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

Outline: 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. You will also learn the basics of Supply chain management

Learning Outcomes: By the these sessions, students should be able to

- Describe the importance of forecasting for long-term and short-term decisions in finance, marketing, production and service
- Explain basic concepts and components of forecasting
- Measure the forecast error of a forecast method
- Apply the simple moving average model and the exponential smoothing method
- Assess the trade-offs between responsiveness and stability in parametric selection
- Understand the structure of supply chains

Session 23– Zara

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

Outline: 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.

Learning Outcomes: Through this case, students should be able to

- Describe the importance of inventory management in the fashion business, in light of significant markdowns for leftover inventory
- Analyze Zara’s supply chain structure and its inventory policy
- Explain how Zara’s operation strategy aligns with its business strategy

Session 24: Supply Chain Dynamics –EBeer Game

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

Session 25 – Final Review

Final exam: Thursday, May 6, 11:00 AM - 1:00 PM PDT

Contribution of BUAD311 Operations Management to Student Achievement of Marshall's Six Undergraduate Program Learning Goals

| # | Marshall Program Learning Goal Description | Degree of Emphasis | BUAD311 Course Learning Goals that Support This Marshall Undergraduate Goal |
|-----|---|--------------------|---|
| 1 | Our graduates will understand types of markets and key business areas and their interaction to effectively manage different types of enterprises. Specifically, students will: | High | BUAD311 Course Objectives 1-7 support Goal 1 |
| 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 |
| 2 | Our graduates will develop a global business perspective. They will understand how local, regional, and international markets, and economic, social and cultural issues impact business decisions so as to anticipate new opportunities in any marketplace | Low | BUAD311 Course Learning Goals 1, 2, 3, 5, and 6 support Marshall Goal 2 |
| 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 |
| 3 | Our graduates will demonstrate critical thinking skills so as to become future-oriented decision makers, problem solvers and innovators. Specifically, students will: | High | BUAD311 Course Learning Goals 1-7 support Marshall Goal 3 |
| 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. | | <ol style="list-style-type: none"> 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. | | <ol style="list-style-type: none"> 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 | | <ol style="list-style-type: none"> 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 | Our graduates will develop people and leadership skills to promote their effectiveness as <i>business managers and leaders</i>. Specifically, students will: | Mode rate | BUAD311 Course Learning Goals 1-6 support Marshall Goal 4 |
| 4.1 | Recognize, understand, and analyze the motivations and behaviors of stakeholders inside and outside organizations (e.g., teams, departments, consumers, investors, auditors). | | <ol style="list-style-type: none"> 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. | | <ol style="list-style-type: none"> 1. Understand interfaces with other functional areas 6. Apply operations management tools/techniques |
| 4.3 | Understand factors that contribute to effective teamwork. | | <ol style="list-style-type: none"> 5 Apply process analysis and capacity management skills to manage a factory in real-time 6. Apply operations management tools/techniques |
| 5 | Our graduates will demonstrate ethical reasoning skills, understand social, civic, and professional responsibilities and aspire to add value to society. Specifically, students will: | Low | BUAD311 Course Learning Goals 1 and 2 support Marshall Goal 5 |
| 5.1 | Understand professional codes of conduct. | | <ol style="list-style-type: none"> 1. Understand interfaces with other functional areas |
| 5.2 | Recognize ethical challenges in business situations and assess appropriate courses of action. | | <ol style="list-style-type: none"> 1. Understand interfaces with other functional areas 2. Analyze trade-offs in decision-making |
| 6 | Our graduates will be effective communicators to facilitate information flow in organizational, social, and intercultural contexts. Specifically, students will: | Mode rate | BUAD311 Course Learning Goals 1 and 6 support Marshall Goal 6 |
| 6.1 | Identify and assess diverse personal and organizational communication goals and audience information needs | | <ol style="list-style-type: none"> 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 | | |