

University of California, Berkeley
Walter A. Haas School of Business

UGBA 141: Production and Operations Management

Fall 2022 Course Syllabus
(Last updated: 10/19/2022)

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Office Hours: Mondays/Wednesdays 12:30-1pm (N370), or by appointment

Lectures: Mondays/Wednesdays 11-12:30pm Lectures @ **Chou N370**
Discussions: Fridays 1-2pm @ **Chou N270**
Discord: Contact GSI for the link

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GSI Office Hours: Tuesdays 11am-12pm, Thursdays 4-5pm at <https://bit.ly/ugba141f22>

Course Description and Overview

Operations is the design and management of the processes that transform inputs into finished goods or services. Operations is one of the primary functions of a firm. While marketing induces the demand for products and finance provides the capital, operations *produces and delivers* the product (goods and services). It is responsible for matching supply with demand. This course introduces the concepts and analytic methods that are useful in understanding the management of a firm's operations.

We will cover topics in Operations that are relevant both for products and services. Our aim is to (1) familiarize you with the problems and issues confronting operations managers, and (2) provide you with language, concepts, insights, and tools to deal with these issues in order to gain competitive advantage through operations. We will cover six modules: process analysis, queueing, quality control, inventory management, supply chain management, queueing, and operations strategy, including emerging topics such as product management, people operations, and sustainability. Examples will be drawn from a diverse set of industries, from food to fashion, from hotels to healthcare, from e-commerce to ride-sharing.

Class sessions will have a mix of a lecture and discussion that will provide the foundational material on a topic, and a case discussion. The Friday discussion sections will take several different formats, including reviews of materials, problem-solving sessions, and informal sessions to help you in preparing the cases. Throughout the course, you will also gain hands-on exposure to the concepts from experiential simulation games and a final project.

Assignments and Grading

Your course grade will be determined by your performance on:

Class preparation + contribution	10%	
Problem sets (x 4)	12%	(individual; online; unlimited attempts; collaboration allowed)
Case reports (x 3)	10%	(individual or group; NCC + choose 2 out of 4 cases)
Midterm exam (Monday 10/3)	18%	
Littlefield Simulation (10/31-11/3)	8%	(group)
Final project (p 11/28, r 12/4)	14%	(group)
Final exam (Monday 12/12)	28%	

Class contribution grades will be determined based on the extent to which you demonstrate that you are prepared, the relevance and depth of your comments (quality, not quantity), and the degree to which you listen carefully and respond to your peers. Although participating in lecture sessions is also of value, a primary means by which students will distinguish themselves in their “class contribution” is by thoroughly preparing cases and participating in case discussions in a way that brings insight to the rest of the class. Failure to attend class or use of an electronic device for anything unrelated to the course during class time will materially and adversely affect the “class contribution” portion of your final grade.

There will be **4 problem sets** (3% each) designed to ensure that you understand basic analysis tools and are keeping up with the fundamental concepts. To keep your workload manageable and to allow you to focus on building the basic intuition, these problem sets are intended not to be overly difficult but may challenge you to adapt the concepts in complex settings. You are allowed to collaborate with other students registered this semester in the course. However, each student must submit their own assignment on bCourses. You have unlimited attempts until the deadline; the latest score (not the highest) will be kept.

Problem Set	Topic(s)	Available	Deadlines
PS1	Process	Wed 8/24 12:30PM	Fri 9/16 11:59PM
PS2	Queue + Quality	Mon 9/12 12:30PM	Fri 9/30 1PM
PS3	Inventory	Wed 10/5 12:30PM	Fri 10/28 11:59PM
PS4	SCM + RM	Wed 10/19 12:30PM	Mon 11/14 11:59PM

We will use cases/mini cases to connect concepts to real-world applications. Many cases will require you to thoughtfully apply the analysis tools that you have learned, while some will prepare you for new materials to be discussed. To help guide your preparation, discussion questions are posted on bCourses. A purchase of Study.Net Course Reader is required.

- There will be **3 graded case reports** that you are expected to submit a short case write-up. You can work individually or as a group of up to FIVE people. You do not have to stick with the same group for all reports.

- The first case report is *National Cranberry Cooperative (NCC)*, which counts for 2% of the course grade. For the other two reports (4% each), choose from *Ritz-Carlton*, *Zara*, *Crocs*, and *Uber*. You can submit more than two; lowest score(s) will be dropped.
- The reports will be graded for completion, quality, and justification. The instructions and discussion questions are provided on bCourses (under *Files* and *Assignments*). The report should not exceed four pages, excluding supportive figures, tables, references, and/or code for data analysis. Since the cases will be discussed during lecture, the reports are due at 6PM one day before the in-class discussion.

Case	Topics	Report Due	Discussion
NCC ¹	process/bottleneck analysis	Tue 9/6 6PM	Wed 9/7
Ritz-Carlton ^{2*}	quality management	Sun 9/25 6PM	Mon 9/26
Zara ²	inventory/omnichannel management	Tue 10/18 6PM	Wed 10/19
Crocs ^{2*}	production/supply chain planning	Tue 10/25 6PM	Wed 10/26
Uber ^{2*}	platform ops, innovation, experiment	Tue 11/8 6PM	Wed 11/9

¹ National Cranberry Cooperative (NCC) is mandatory and counts for 2% of the course grade

² You can choose to submit at least 2 of these cases for the total of 8% of the course grade (4% each).

* Denotes cases with data analysis

Littlefield Simulation is an internet-accessed simulation that runs continuously for 3 days and 3 hours (75 hours total). In this simulation, you will work as a group of FIVE to manage a fictional company's operations. Each group will submit four-slide PowerPoint deck on their strategy and be ready to discuss them in class (instructions available on bCourses). The simulation is time intensive, so you should plan to devote additional time to the course during the simulation. Note that you do not need to monitor the simulation 24/7 to perform well. Strategy can be planned before the simulation begins; groups should plan to allocate time for this pre-work analysis accordingly. The grade will be determined by (4%) performance and (4%) strategy slides and discussion at the debrief.

Simulation Events/Assignments	Deadlines/Dates
Register your team of 5 on bCourses	Fri 10/21 at 11:59PM
Access to simulation available	Mon 10/24 at 12:30PM
Simulation starts (no class on Wed 11/2)	Mon 10/31 at 2PM
Simulation ends	Thu 11/3 at 5PM
Submit 4-slide Strategy Deck	Sat 11/5 at 11:59PM
In-class debrief	Mon 11/7

Final Project is a group assignment that will equip you with experience in identifying operational problems, collect appropriate data for analysis, apply some of the analysis tools learned in class to develop recommendations. You will work as a group of FIVE (not necessary the same as your Littlefield team). Further details, including potential industry clients and instructions for the deliverables, will be provided later on in the course.

- Your project must contain (i) data analysis (proprietary/public/simulated), (ii) application of tools and concepts from at least THREE modules of the class (*process, queue, quality, inventory, SCM, and strategy*), and (iii) actionable recommendations.
- The key deliverables are (i) a 1-page proposal describing the problem(s)/challenge(s) faced by the client and your draft plan of analysis (tools, methods, task delegation) (1%, due on **Friday November 11**), (ii) presentation slides (5%, project presentation on **Monday, November 28**, and (iii) a final report (5% due on **Sunday, December 4**). In addition, the industry client will evaluate your work and provide grade (3%). Each team member is required to submit a self and team assessment, independently from the final report, which could affect the grade.

Project Assignments/Events	Deadlines/Dates
Register your team of 5 on bCourses	Sun 11/6 11:59PM
Submit 1-page proposal	Fri 11/11 11:59PM
Submit presentation slides	Sun 11/27 11:59PM
Final project presentation (virtual)	Mon 11/28 11AM-12:30PM
Submit final report + team assessment	Sun 12/4 11:59PM

Late assignments are not accepted, even for partial credit. You must submit your assignments electronically via bCourses. Submitting group work requires that the students contributed roughly equally (a 60:40 split is acceptable; more unequal splits are not) to the assignment. Please make sure to include team members' names in the comment section.

Midterm exam will be in-class on **Monday, October 3, 2022**. The exam covers materials discussed through Lecture 9 (including case discussions and guest lectures). **Final exam** will be in-person on **Monday, December 12, 11:30AM-2:30PM** with emphasis on materials from Lecture 10 onward, but also including earlier materials in a more integrative nature.

- You will be responsible for details in the cases that point to and illustrate the course concepts (the purpose here is to have the exams reflect the class discussions.)
- You are allowed one two-sided letter-sized reference sheet and a basic calculator. No other materials or devices are allowed. Essential formulas and tables will be provided during the exam and also posted to bCourses at least one week prior to the exam.
- Sources of practice problems: (1) problem sets, (2) lecture discussions/slides, (3) discussion sessions on Fridays, (4) practice midterm and final exams (available at least 1.5 weeks before each exam), (5) questions from the optional textbook, and (6) *Flash Review*: in-class Jeopardy-style review sessions (extra credits available)
- Students having difficulty taking the exam at the designated time should contact the instructor 10+ days in advance. Honorlock will be used for the alternative exams.

Course Materials

bCourses will be the source for all class materials, assignments, and announcements. Lecture slides, Course Reader (Study.Net), as well as discussion materials and additional materials, will be posted on bCourses. **Each student is required to purchase their own Study.Net Course Reader.** The Course Reader includes the main cases for our in-class discussion and assignments as well as access to the online Littlefield Simulation.

There is no required textbook. If you would like supplementary reading addressing the tools and concepts in the course, one optional book is recommended (on reserve at Haas' Long Library and available electronically via Berkeley Library):

- Matching Supply with Demand ("MSD") by Gerard Cachon and Christian Terwiesch. McGraw-Hill, 4th Edition, 2019
 - o https://ucbears.lib.berkeley.edu/991054941729706532_C122449635/view

We will post a "before" version of lecture slides on bCourses at least one day prior to the lecture and an "after" version no later than one day after the lecture. A few printed copies will be available every class. For each Friday Discussion session, an outline of the topics and problems that will be covered will be posted to bCourses by Thursday night; material presented in the session will be posted to bCourses by Friday night.

Solutions to the problem sets and exams will only be distributed in hard copies in class. All other readings will be handed out in class and/or posted to bCourses. Course materials (e.g., lecture slides, assignments) are not to be shared with anyone outside the class. In particular, you should not upload any materials to any note sharing website.

Modes of Communication

Email is generally an efficient means of communication to inform the teaching team of material you think may be of interest to the class (e.g., your work experience, or a link to a video or recent article), or to ask an administrative question that is personal and not addressed in the syllabus (most administrative issues are addressed in the syllabus, so please check first). Make sure you put [UGBA141] in your email subject.

We set up a Discord server for our class as our *preferred* communication channel to foster collaboration and centralize all questions and answers regarding the materials, logistics, and assignments. We find that, as a mode of communication, email tends to be an inefficient way to resolve subtle questions about concepts or problems. The teaching team is happy (and, in fact, eager) to address any questions you may have of this type, but encourages you to ask Discord, as this is much more efficient than the route of typing out lengthy emails and going back and forth. You can also ask us in person (before/after class; see our office hours).

Expectations for Case Preparation

You are encouraged to form study groups for the purpose of discussing case studies and preparing assignments related to them. This group does not have to be the same as your Littlefield/Final Project group. This type of interaction increases learning, develops a sense of teamwork, and encourages good preparation for class discussion.

In a typical class session, one or more students will be asked to begin discussion of a selected topic. If you have thoroughly prepared the case you should have no difficulty in handling such a leadoff request. Questions for each case discussion will be provided in advance to guide your thinking about the case. During class, we will build a complete analysis of the case situation and address the problems and issues it presents. You will be asked to make recommendations, and we will discuss their implementation and impact.

Some of the criteria that we will use to judge effective class participation for grading purposes include:

- Is the participant a good listener?
- Are the comments relevant to the discussion? Are they linked to others' comments?
- Do the comments show evidence of appropriate and insightful analysis of the case?
- Is there a willingness to participate?
- Is there a willingness to test new ideas, or are all comments "safe"?
- Do comments clarify and highlight the important aspects of earlier comments and lead to a clearer statement of the concepts being covered?

Classroom Norms

We will follow the following classroom norms established by Haas:

- *Tech-free.* Keep phones in bags and on silent. Refrain from using laptops, unless for approved purposes. Tablets or other electronic note-taking devices are allowed, but should lie flat, be kept in airplane mode, and only used for note-taking in a manner that is not distracting or disruptive. In some lectures, we will have "work with your neighbor" exercises. The use of electronics is allowed only for the purpose of calculations during these exercises, which will be announced by the instructor.
- *Prompt.* Arrive on time at the beginning of class.
- *Present.* It will be difficult to receive a good grade in the course without regular attendance. Do not miss/leave class unless a personal emergency arises.
- *Inclusive.* Step up / step back in class discussions to ensure that a wide variety of voices, perspectives, and experiences are heard. Be respectful and constructive. Encourage your classmates to do the same.

Academic Integrity

Haas has a zero tolerance policy for academic dishonesty. The Undergraduate Program has a Code of Ethics (<https://haas.berkeley.edu/undergrad/academics/curriculum/degree-requirements/>) that all undergraduate students are expected to adhere to. In completing assignments and exams, you may not benefit from notes, discussions with course participants, or any other material from any previous offering of this, or a similar, course. You should not benefit from anyone who has already participated in a faculty-led discussion of the case at Haas or any other school, or from other materials, even if they are publicly available. It will be a violation of academic integrity if you base your work on solutions you have found on the Internet. Much of the value of preparing cases and completing assignments is in the process itself, even if your group ultimately selects a less-preferred alternative or approach. Plagiarism and other forms of cheating will not be tolerated.

UC Berkeley Academic Accommodations Policy:

<https://evcp.berkeley.edu/programs-resources/academic-accommodations-hub>

UC Berkeley is committed to creating a learning environment that meets the needs of its diverse student body including students with disabilities. If you anticipate or experience any barriers to learning in this course, please feel welcome to discuss your concerns with me.

If you have a disability, or think you may have a disability, you can work with the Disabled Students' Program (DSP) to request an official accommodation. The Disabled Students' Program (DSP) is the campus office responsible for authorizing disability-related academic accommodations, in cooperation with the students themselves and their instructors. You can find more information about DSP, including contact information and the application process here: dsp.berkeley.edu. If you have already been approved for accommodations through DSP, please meet with me so we can develop an implementation plan together."

Students who need academic accommodations or have questions about their accommodations should contact DSP, located at 260 César Chávez Student Center. Students may call 642-0518 (voice), 642-6376 (TTY), or e-mail dsp@berkeley.edu

Class Attendance

You should make every effort not to schedule conflicts (e.g., job interviews) during the time when the class meets. If it is impossible for you to do this, you should email the GSI in advance that you are missing class. This should be a rare event. Your email should describe in one sentence the emergency / unavoidable conflict you face. Make sure you submit any assignment by the deadline. To catch up on the material, get handouts from bCourses, get notes from your classmates, and discuss the material with them. If after doing this you would like additional help, please reach out to your GSI and then the instructor.

UGBA 141: Production and Operations Management
Course Outline (subject to changes)

#	Date	Topic/Case <i>(Optional Textbook Readings)</i>	Preparation/Assignment
Part I: Process Analysis			
L1	W 8/24	Process I: Introduction Mortgage Exercise <i>(MSD 2.2)</i>	Submit <u>pre-course survey</u> Read <i>Mortgage Processing</i> PS1 out
D1	F 8/26	Review basic statistics + process	
L2	M 8/29	Process II: Process Analysis Mini Case: <i>Pick-Up Pizza</i> <i>(MSD 2.6, 3.1-3.5)</i>	Read <i>Pick-Up Pizza</i>
L3	W 8/31	Process III: Process Choice Case: <i>Beleza Natural</i> <i>(MSD 2.6, 3.6)</i>	Read <i>Beleza Natural</i>
D2	F 9/2	Review process analysis + choice	
X	M 9/5	Labor Day (No Class)	
L4	W 9/7	Process IV: Process Flow Case: <i>National Cranberry Cooperative</i> <i>(MSD 2.3, 3.6, 4.2-4.3)</i>	Read <i>National Cranberry Cooperative (NCC)</i> Submit NCC report (Tue 6PM)
D3	F 9/9	Review inventory buildup + Little's Law	
Part II: Variability in Processes			
L5	M 9/12	Queue I: Variability + Queueing Theory Mini Case: <i>Rent the Runway</i> <i>(MSD 2.3, 9.1-9.6)</i>	Read <i>Rent the Runway</i> PS2 out
L6	W 9/14	Queue II: Waiting + Throughput Loss <i>(MSD 10.2-10.4)</i>	
D4	F 9/16	Review queueing theory	PS1 due 11:59PM
L7	M 9/19	Queue III: Pooling + Psychology Guest Speaker: Mitchell Williams (Manufacturing Engineer at Tesla)	
L8	W 9/21	Quality I: Quality Control <i>(MSD 7.1, 7.3-7.6)</i>	Practice Midterm available
D5	F 9/23	Review quality control tools	

L9	M 9/26	Quality II: Service Quality Case: <i>Ritz-Carlton</i> (MSD 7.2, 7.7)	Read <i>Ritz-Carlton</i> Submit <i>Ritz-Carlton</i> report (Sun 6PM)
L10	W 9/28	Quality III: Lean Operations Mini Case: <i>Toyota</i> Midterm Flash Review (MSD 8.1-8.5, 8.7-8.8)	Read <i>Toyota</i>
D6	F 9/30	Review for Midterm Exam	PS2 due 1PM
	M 10/3	Midterm Exam In-class: 11:10AM-12:25PM (75 minutes) Materials up to L9 (Quality II)	
Part III: Inventory and Supply Chain Management			
L11	W 10/5	Inventory I: Newsvendor (MSD 14.1-14.7)	Read <i>Statistics Review</i> PS3 out
D7	F 10/7	Review Midterm solution + newsvendor	
L12	M 10/10	Experiential Supply Chain Exercise Speiker Forum, Chou Hall 6 th Floor Bring laptop, attendance mandatory, seats will be assigned Guest Speaker: Shaan Parasnis (Owner of Hotel Shattuck, VP of Product at Rad AI, ex-Microsoft)	
L13	W 10/12	Inventory II: Economic Order Quantity Experiential SC Exercise Debrief (MSD 2.5, 5.6-5.7, 19.1-19.2)	
L14	F 10/14	Inventory III: Advanced Models (MSD 16.6-16.7)	Lecture instead of Discussion
D8	M 10/17	Review inventory models	Discussion instead of Lecture
L15	W 10/19	SCM I: Risk-Pooling Case: <i>Zara</i> (MSD 17.1-17.3)	Read <i>Zara</i> Submit <i>Zara</i> report (Tue 6PM) PS4 out
D9	F 10/21	Review inventory + risk-pooling	Register Littlefield team
L16	M 10/24	SCM II: E-Commerce Mini Case: <i>Amazon</i> Guest Speaker: Georgios Patsakis (PhD'20, Senior Applied Scientist at Amazon)	Read <i>Amazon</i> Read <i>Littlefield Technologies</i> Access to Littlefield Simulation available

L17	W 10/26	SCM III: Quick Response Case: <i>Crocs</i> (MSD 15.1-15.4)	Read <i>Crocs</i> Submit <i>Crocs</i> report (Tue 6PM)
D10	F 10/28	Review SCM concepts	PS3 due 11:59PM
L18	M 10/31	SCM IV: Revenue Management (MSD 18.1-18.3, 19.3-19.5)	Littlefield starts at 2PM
X	W 11/2	Littlefield Simulation (No Class)	Littlefield ends Thursday 5PM
X	F 11/4	Watch <i>Contracts</i> Video (No Discussion)	Littlefield Slides (Sat 11:59PM)
Part IV: Operations Strategy			
L19	M 11/7	Strategy I: Platform Operations Littlefield Simulation Debrief	Register Final Project team on bCourses by Sun 11:59PM
L20	W 11/9	Strategy II: Products + Experiments Case: <i>Uber</i>	Read <i>Uber</i> Submit <i>Uber</i> report (Tue 6PM)
D11	F 11/11	Review RM + Platforms (asynchronous)	Proposal due 11:59PM
L21	M 11/14	Strategy III: People Operations Mini Case: <i>Tessei</i> Guest Speaker: Emily Nishi (Former Chief People Officer at Lyft)	Read <i>Tessei</i> PS4 due 11:59PM
L22	W 11/16	Strategy IV: Sustainability Mini Case: <i>Starbucks</i> Guest Speaker: Berklee Welch (BS'20, Sustainability Analyst at Simple Mills)	Read <i>Starbucks</i> Practice final exam and solution distributed in class
D12	F 11/18	Review for Final Exam Part I (in-person)	
X	M 11/21 W 11/23	Final Project + Thanksgiving (No Class)	
L23	M 11/28	Project Presentation (Virtual)	Submit Slides (Sun 11:59PM)
L24	W 11/30	Course Wrap-Up + Final Flash Review	Bring laptop to class
D13	F 12/2	Review for Final Exam Part II (in-person)	Submit Project Report + Assessment (Sun 11:59PM)
	M 12/12	Final Exam: 11:30AM-2:30PM	

Mark Your Calendar + Guest Speakers

Monday 9/19	Mitchell Williams (Manufacturing Engineer at Tesla)
Monday 10/3	In-class Midterm Exam
Monday 10/10	In-class Experiential Supply Chain Exercise (Spieker Forum, Chou 6F) Shaan Parasnis (Owner of Hotel Shattuck, VP of Product at Rad AI, ex-Microsoft)
Monday 10/24	Georgios Patsakis (PhD'20, Senior Applied Scientist at Amazon)
Monday 10/31 – Thursday 11/3	Littlefield Simulation (75 hours, online, strategy slides due Saturday 11/5)
Monday 11/14	Emily Nishi (formerly Chief People Officer at Lyft)
Wednesday 11/16	Berklee Welch (BS'20, Sustainability Analyst at Simple Mills)
Monday 11/28	Final Project Presentations (Virtual)
Sunday 12/4	Final Project Report + Team Assessment due
Monday 12/12	Final Exam 11:30AM – 2:30PM