The Wharton School, University of Pennsylvania
OIDD 2200 Introduction to Operations Management
Business Analytics and Operations Strategy

Syllabus for Fall 2023
Status: August 17, 2023
Some features and/or dates may change. Check for updates.

Class Meetings:	Tuesday and Thursday 1:45-3:15 p.m. JMHH F70
Instructor:	**Professor Maria T. Rieders** Operations, Information and Decisions Department The Wharton School University of Pennsylvania 517 Jon M. Huntsman Hall (215) 898-0535 rieders@wharton.upenn.edu
Office hours:	Tuesdays 3:30-4:30 pm, 517 JMHH Mondays via zoom, 5-6 pm and always by email
Website:	Canvas: https://canvas.upenn.edu/courses/1703044
Teaching Assistant:	Fei Peng feip@seas.upenn.edu Stefano Sanchez stefano.sanchez.wh24@wharton.upenn.edu Office hours: TBD

1. Course Description

Operations management is responsible for a firm's planning and execution of delivering products and services to customers. This course focuses on designing, managing, and improving recurring business processes so as to achieve competitive advantage for the firm with respect to quality, responsiveness, price, and variety of products and services.

We will study and apply business analytics tools for forecasting, capacity assessments and service metrics, inventory and supply chain management, statistical quality control, revenue management and risk mitigation in the face of uncertainty. These methods will

be explored in the context of various industries such as high tech, healthcare, fashion, automobile, sports, and others. Quantitative analyses of case studies will be complemented by addressing the underlying strategic questions, identifying operational levers to improving a firm's competitive success in the market place.

This course is highly recommended for students

- interested in a management position in operations;
- planning to work in business analytics;
- interested in consulting jobs in various industries;
- in engineering or science disciplines with an interest in understanding the operational issues involved in designing or producing new products and services;
- in non-technical fields who want to explore perspectives of operations management in areas such as marketing, accounting, health care, sports industries or financial services;
- interested in entrepreneurship and start-ups.

This course counts towards a general concentration in OIDD, serves as a foundation course for the Operations Management/Management Science Track, and counts towards the joint concentration in Marketing and Operations Management as well as in Business Analytics.

OIDD 2200 constitutes an introduction to operations management. This course may be followed by operations courses such as Service Operations Management, Retail Supply Chain Management, Management Science, Scaling Operations in Technology Ventures, Computer Simulation Models, or other elective courses in OIDD.

2. Course Logistics

Prerequisites

There are no official prerequisites for this course. Basic knowledge in probability and statistics is highly desirable; some necessary background will be introduced in class. Students are encouraged to communicate with the instructor if they perceive significant gaps.

Course Website

We will be using a Canvas based website xxxx. If you have difficulty accessing the course website, please let me know as soon as possible. Canvas is the portal for all class communications. In particular, I will post lecture notes, slides, and assignments on Canvas. Please, check the site frequently for course materials and updates. In particular, you should always refer to the web site for up to date information about our syllabus, any changes to the schedule, and for additional handouts or reading materials. Make

sure you have set up your Canvas account so that you receive notifications about any new postings.

Course Text and Materials

All materials will be available on Canvas through the tabs for Study.Net and Course Materials @ Penn Libraries.
- A **Study.Net** reading pack contains all cases covered in this course
- A second **Study.Net** pack will contain access to the Littlefield simulation gam
- **Course Materials @ Penn Libraries** provides relevant chapters from two textbooks:
  - *Production and Operations Analysis* by Nahmias and Olsen
  - *Matching Supply with Demand*: *An Introduction to Operations Management* by Cachon and Terwiesch
- Additional reading material (articles, lecture notes, etc.) will be posted on Canvas.

Learning Environment

The structure of this class is based on the premise that students learn in a variety of ways, and that topics should be explored through different approaches. Thus, during each class period, we may use elements of lectures, interactive games and simulations, hands-on workshops, group work, case discussions, or guided problem solving. In between classes, you may be asked to prepare for class by focused reading, watching a brief video, participating in an online discussion, or performing some data analytic prep work for class. I expect that students will come prepared for class – for their own learning benefit as well as for the benefit of the class community so that we can all work with the same assumptions. The diverse and interactive nature of our classroom activities demands each student to be engaged and willing to participate. While attendance is not a strict requirement, your lack of attendance will not allow you to fully participate and may hurt your participation grade. If you experience any extended absence, please communicate as early as possible with your instructor. Last, but not least, I want to remind everybody to accept different viewpoints and to treat all participants with respect. For my part, I will try to create an open minded and friendly classroom atmosphere.

Your success in the course will depend on your level of engagement and attention to upcoming assignments and activities. You are responsible to follow the timeline of readings, assignments, and activities as posted on Canvas. To facilitate things, you will find an outline on our home page with due dates. In addition, every weekend I will post a detailed preview of your responsibilities for the upcoming week.

I welcome your questions during class and outside the classroom and encourage you to take advantage of the regular office hours listed above. E-mail is another good way to have your questions answered or to set up a one-on-one meeting. It is vital that you

communicate with me early on about any difficulties or concerns. In addition, I may also offer some review sessions if there is sufficient student interest. Logistics for these will be discussed in class.

3. Grading Policy

Your grade in this course will be based on individual and group evaluations according to the following rubric:

Class Participation and Prep Work	individual	14%
Individual Assignments	individual	20%
Group Write-Ups	group	20%
Midterm: Thursday, October 19, in class	individual	23%
Final Exam: date TBA	individual	23%

A student's grade is based on the ranking of the student's overall numerical score in the course.

Class Participation (14%)

Attentive participation and informed discussions are critical to the learning process; they make classes more interesting and enjoyable for all the students. Students are expected to come prepared to class, to participate, to ask questions, and to volunteer substantive comments freely. Preparation for class includes assigned readings, some problem solving or special preparation work, taking a brief quiz or participating in online discussions. Please, refer to the Canvas site for up to date information and expectations for each session. Your participation grade will be based on equal parts of
- my qualitative evaluation of your consistent engagement and the quality of your contributions, questions and answers in our discussions in and out of the classroom (i.e., during sessions and online);
- a quantitative assessment via points given for assigned activities; this point-based evaluation will use a benchmark that allows you to miss 2 to 3 opportunities during the semester without penalty.

Individual Assignments (20%)

The problem sets will ensure that you have ample opportunity to apply the concepts learned in class and will increase your understanding of the material. Assignments will be posted on Canvas about one week prior to the due date; for a schedule of due dates, please see the course outline below. While group discussions of course material, including

assignments, are encouraged, the work you submit must be your own. Please, make sure assignments are either typed or clearly written. Late submissions will not be accepted unless you have prior permission from the instructor. There will 4 assignments; note that the length and number of points for each assignment may vary.

1. Forecasting
2. Queueing
3. EOQ
4. Newsvendor

Group Work (20%)

There are four assignments that will require you to work in teams:

1. ED Saintemarie– Case Write-up (analyzing and improving patient wait time at an Emergency Room)
2. Littlefield Capacity – One Week Team Simulation plus Report (managing instrument capacity at a laboratory in the face of uncertain demand)
3. Littlefield Inventory – One Week Team Simulation plus Report (managing a laboratory with response time sensitive contracts)
4. Sustainability Strategy – Group Mini-Project plus Presentation (exploring operational sustainability processes in a firm of your choice)

Please form *groups of 4 students* by signing up on Canvas. For any group assignment, indicate the group members by PENN ID on the cover of the report. If a particular group member has not been able to participate in the work, please do not include him/her on the cover. Guiding questions and guidelines for format, length, and content will be posted for each assignment.

Exams (46%)

There will be two exams: One midterm exam (worth 23%) on Thursday, October 19, during class and a final exam (worth 23%) on date TBA. Please, mark the dates in your calendars. Exams will be a mix of multiple choice, short essay, and quantitative questions; they will be closed book exams but will include a comprehensive formulae sheet. Exam guidelines and sample questions will be posted on Canvas.

Academic Integrity

Students are expected to follow Wharton's guidelines on academic integrity. In particular, you are to submit your own work for assignments and cases. Consulting case discussions from other semesters/classes or using assignment solutions from other sources is considered academic dishonesty and is prohibited.

OIDD 2200 - Fall 2023 - Tentative Outline

Check on Canvas for up-to-date information

Session #	Date 2023	Topic	Assignment/ Group Write-ups Due	Preparation More TBA on Canvas
Introduction				
1	Tu 8/29	Introduction – What is OM? Course Logistics		
Forecasting				
2	Th 8/31	Forecasting – Stationary Series		
3	Tu 9/5	Forecasting – Trend and Seasonality		
4	Th 9/7	Forecasting Data Analytics Workshop		
Managing Process Flows				
5	Tu 9/12	Processes: Flow Charts, Metrics; Little's Law	Assignment 1 Forecasting	
6	Th 9/14	Modelling Variability		
7	Tu 9/19	Queueing Workshop		
8	Th 9/21	Guidance Littlefield Simulation **2:15 pm Start Littlefield Capacity Simulation - Start**		Explore Littlefield software
9	Tu 9/26	Case ED Saintemarie	Group Write-up 1: ED Saintemarie	
10	Th 9/28	**2:15 pm Littlefield Capacity Simulation – End** Psychology of Waiting	Assignment 2 Queueing	
Lean Operations				
11	Tu 10/3	Electronic Assembly	Group Report 2: Littlefield Capacity	
12	Th 10/5	JIT Manufacturing Case Toyota; Operations at Tesla		Prepare Case Toyota
Managing Quality				
13	Tu 10/10	Statistical Quality Control Workshop		
	Th 10/12	Fall Break		
14	Tu 10/17	Six Sigma, Quality Management		
15	Th 10/19	**Midterm Exam**		

Inventory Control – Deterministic Demand				
16	Tu 10/24	Inventory Control – EOQ Model		
17	Th 10/26	Inventory Control/Production Planning Workshop		
Newsvendor Models				
18	Tu 10/31	Newsvendor Model	Assignment 3 EOQ	
19	Th 11/2	Quick Response with Reactive Capacity		
20	Tu 11/7	Lead Times: The Order Up-to Model	Due: Proposal Sustainability	
21	Th 11/9	Inventory Management Workshop; Case Hewlett Packard		Read case *HP*; do prep work in Excel
22	Tu 11/14	Online In-store Integration Case: Zara **2:45 pm Littlefield Inventory Simulation – Start**		Prepare case Zara
Supply Chain Management				
23	Th 11/16	Case Sustainability Strategies at Patagonia		Prepare case Patagonia
24	Tu 11/21	Supply Chain Risk Management **2:45 pm Littlefield Inventory Simulation – End**	Assignment 4 Newsvendor	
	Th 11/23	Thanksgiving		
25	Tu 11/28	Revenue Management		
26	Th 11/30	Debrief Littlefield Inventory Simulation; Industry Speaker	Group Report 3: Littlefield Inventory	
27	Tu 12/5	Global Supply Chain Management Case Apple		Prepare case Apple
Sustainability				
28	Th 12/7	Student Presentations	Group Work 4: Sustainability Presentation	
	TBA	**Final Exam**		