The Wharton School, University of Pennsylvania
OIDD 220-001 Introduction to Operations Management
Business Analytics and Operations Strategy

Updated Syllabus for 2021
Status: January 15, 2021

Class Meetings:	**Tuesday and Thursday 3:00-4:20 p.m.** synchronous via zoom; all sessions will be recorded and made available on Canvas.
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:	weekly chat on Zoom: **Tuesdays 7:30-9:00 pm**; always by email
Website:	Canvas https://canvas.upenn.edu/courses/1571485
Teaching Assistants:	Babitz, Keith F kbabitz@wharton.upenn.edu Farhaanah Mohideen mofa@seas.upenn.edu

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;
- majoring in other fields and being curious about 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 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, and the Business Analytics concentration.

OIDD 220 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 but not required; any 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 https://canvas.upenn.edu/courses/1571485. 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 all 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 (students will be charged)
- A second **Study.Net** pack will contain access to two simulation games (at no cost to students)
- **Course Materials @ Penn Libraries** provides relevant chapters from two textbooks (at no cost to students):
    - *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, assignments, and lecture notes) will be posted on Canvas.

Learning Environment

The course will be taught in a mostly synchronous fashion with some asynchronous components. Some of the material will be offered as a brief video or an assigned reading prior to class; students are expected to study this material on their own time. This will free up class time for problem solving, discussions, interactive learning, and questions and answers. Depending on the amount of asynchronous prep time before class and on the topic at hand, we may finish some synchronous class sessions in less than 80 minutes. While attendance of class sessions via zoom is highly desired, I am aware that different time zones may make this more difficult for some students. For that reason, all sessions will be recorded and posted on Canvas. For a few sessions, I may add a second opportunity at a different time for participants who live in a different time.

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, I have posted an outline with due dates. In addition, every weekend I will post a detailed preview of your responsibilities for the upcoming week.

Since we will be mostly interacting via zoom, I'd like to state some expectations around best online practices. Classes will start and end on time – prepare your setup accordingly. If at all feasible, turn on your camera, especially during interactive sessions or during group work. We all become better communicators when we see our colleagues! Microphones should be muted unless you want to speak. Technical problems do happen at times; you may then have to turn off your video to save bandwidth or you may have to reconnect if your connection got dropped. Last, but not least, I want to remind everybody to be fully present during our meetings, to accept different viewpoints, and to treat all participants with respect.

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	individual	15%
Individual Assignments	individual	15%
Group Write-Ups	group	20%
Midterm: Tuesday, March 9th, 3:00-4:20 pm	individual	25%
Final Exam: date TBA	individual	25%

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

Class Participation (15%)
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, and some submissions to Canvas prior to class. It may also include taking a brief quiz before class 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
- 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)
- and quantitative assessments via points given for
  ➢ your level of active preparation for class (as demonstrated by completing assigned prep work);
  ➢ your understanding of basic concepts from a prior class or from an assigned reading (e.g., your score in brief quizzes);
  ➢ your engagement with the experiential learning opportunities (simulations and

in-class activities);

The point-based evaluation will use a benchmark that allows you to miss 2 to 3 opportunities during the semester without penalty.

On my part, I shall enable a friendly classroom atmosphere that permeates and promotes good discussions. I will include interactive activities in class as well as opportunities to add to class discussions online. Occasionally, I will post articles from magazines and journals on Canvas and discuss them in class (after due notification through email). Students are encouraged to send interesting articles that relate to course content to me; I may post them on Canvas and discuss them in class. This will help us keep abreast of current innovative ideas in operations management.

Individual Assignments (15%)

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 the canvas website 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. I will post practice problems as well as solutions to all assignments. Late submissions will not be accepted unless you have prior permission from the instructor. There will 4 assignments; note that the length and points for each assignment may vary.

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

Group Write-Ups (20%)

There are four assignments that will require you to work in teams and to submit one write-up for the whole group. 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 write-up, please do not include him/her on the cover. Guiding questions and guidelines for format, length, and content will be posted for each assignment.

1. Paediatric Hospital
2. Littlefield Capacity
3. Sports Obermeyer
4. Littlefield Inventory

Exams (50%)

There will be two exams: One midterm exam (worth 25%) on Tuesday, March 9th, during class and a final exam (worth 25%) on date TBA. Please, mark the dates in your calendars.

Exams will be a mix of multiple choice, short essay, and quantitative questions. 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 220 - Spring 2021 - Tentative Outline
Check on Canvas for up-to-date information

Session #	Date 2021	Topic	Assignment/ Group Write-ups Due	Preparation See Canvas
Introduction				
1	Thu 1/21	Introduction		
Forecasting				
2	Tue 1/26	Forecasting – Stationary Series		
3	Thu 1/28	Forecasting – Trend and Seasonality		
4	Tue 2/2	Data Analysis / Analytics		Prepare excel files
Managing Queues				
5	Thu 2/4	Process Flows; Little's Law; Arrival Processes	Assignment 1 Forecasting	
6	Tue 2/9	Basic Queueing Models		
7	Thu 2/11	Variability and Queueing Guidance Littlefield Simulation		Explore Littlefield software
8	Tue 2/16	Case Paediatric Hospital The Psychology of Waiting	Group Write-up 1: Paediatric Hospital	
	Wed 2/17	**Littlefield Capacity Simulation - Start**		
9	Thu 2/18	Analyzing Real World Queues Case: REI (part 1)		Read case REI
Lean Operations				
10	Tue 2/23	JIT Manufacturing Case: Toyota		Prepare case Toyota
	Wed 2/24	**Littlefield Capacity Simulation - End**		
11	Thu 2/25	Lean Systems	Assignment 2 Queueing	

Managing Quality				
12	Tue 3/2	Statistical Quality Control	Group Write-up 2: Littlefield Capacity	
13	Thu 3/4	Quality Management		
14	Tue 3/9	**Midterm Exam**		
	Thu 3/11	**Break**		
Inventory Control – Deterministic Demand				
15	Tue 3/16	Inventory Control – EOQ Model		
16	Thu 3/18	Inventory Control – Variations of the EOQ Model		
Newsvendor Models				
17	Tue 3/23	Newsvendor Model REI (part 2)	Assignment 3 EOQ	
18	Thu 3/25	Quick Response with Reactive Capacity		
	Tue 3/30	**Break**		
19	Thu 4/1	Case: Sport Obermeyer	Group Write-up 3: Sport Obermeyer	Prepare case Sport Obermeyer
20	Tue 4/6	Lead Times: The Order Up-to Model		
21	Thu 4/8	Postponement Case: Hewlett Packard		Prepare case HP in Excel
22	Tu 4/13	Littlefield Simulation Preparation	Assignment 4 Newsvendor	
	Wed 4/14	**Littlefield Inventory Simulation - Start**		
Revenue Management				
23	Thu 4/15	Revenue Management		
Supply Chain Management				
24	Tue 4/20	Supply Chain Risk Pooling		
	Wed 4/22	**Littlefield Inventory Simulation – End**		
25	Thu 4/22	**eBeer Game Simulation**	Group Write-up 4: Littlefield Inventory	
26	Tue 4/27	Supply Chain Coordination		
27	Thu 4/29	Supply Chain Risk Management		
	TBA	**Final Exam**		