

The University of Pennsylvania
The Wharton School
Operations, Information and Decisions Department

OIDD 101: Introduction to OIDD

Spring 2021 Course Syllabus

IMPORTANT!

As of December 2020, this course will be offered entirely online, but this is subject to change according to University policies. The online content will be delivered both synchronously and asynchronously. The synchronous content will be delivered at the regular scheduled course time.

All times in this syllabus are in Eastern Time (i.e., Philadelphia time).

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Canvas <https://canvas.upenn.edu/courses/1556033>

Lectures	Sec 001, Tuesdays, 10:30am-11:50am	Zoom
	Sec 002, Tuesdays, 1:30pm-2:50pm	Zoom

Recitations	Sec 201, Thursdays, 9:00am-10:20am	Zoom
	Sec 202, Thursdays, 10:30am-11:50am	Zoom
	Sec 203, Thursdays, 1:30pm-2:50pm	Zoom
	Sec 204, Thursdays, 3:00pm-4:20pm	Zoom
	Sec 205, Fridays, 9:00am-10:20am	Zoom
	Sec 206, Fridays, 10:30am-11:50am	Zoom
	Sec 207, Fridays, 1:30pm-2:50pm	Zoom
	Sec 208, Fridays, 3:00pm-4:20pm	Zoom

Exam 1	Tuesday, March 9, 6:00pm – 8:00pm
Exam 2	TBD

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Undergraduate Recitation Assistants, Mentors, and Teaching Assistants

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Recitation Sessions (Find Zoom location on Canvas)

TBD

Mentoring Sessions (Find Zoom location on Canvas)

TBD

TA Sessions (Find Zoom location on Canvas)

TBD

Course Description

In this course, we explore a variety of common quantitative modeling problems that frequently arise in business settings and discuss how they can be formally modeled and solved with a combination of business insight and computer-based tools. The key topics we cover include capacity management, service operations, inventory control, structured decision making, constrained optimization, and simulation. Through this course, you will learn to model complex business situations, and you will master tools to improve business performance. The goal is to provide you a set of foundational skills useful for future coursework at Wharton, as well as providing an overview of problems and techniques that characterize disciplines covered in the Operations, Information and Decisions Department.

The course assumes no specific background beyond basic mathematics skills. Familiarity with the basic operations of Excel is helpful, but not required—we will provide tutorials for the needed Excel skills. Furthermore, no prior experience with programming or statistics is expected.

Incidentally, in case you are wondering, the preferred pronunciation for the OID Department's name is to say each letter rather than to try to say something that might rhyme with "android" or "avoid" or "hemorrhoid". Think the communications giant AT&T, as in "A," "T," "and," "T".

Course Format

The course meets twice per week. The first session is a lecture designed to introduce concepts. The second session, which we will refer to as the "recitation," reinforces the concepts introduced in the week's lecture. Recitation sessions are divided roughly into two halves: in the first half, we will work through calculations first introduced in the lecture, and in the second half, you will have the opportunity to complete a "recitation exercise" that is graded. To promote learning, you are free to ask questions regarding the exercise while you are working on it.

Mentoring:

There are weekly mentoring sessions. During the mentoring session, the mentor (an experienced undergraduate student) will work through several practice problems related to the week's lecture materials. Mentoring sessions are intended to supplement rather than replace attending course sessions. Mentoring is optional. The mentoring problems/slides will be posted on Canvas after all mentoring sessions are completed so that they are available to all students in the course.

Course Materials

Textbook:

There is a Custom Coursebook for this course available at the Penn Bookstore. The book covers the material in the class. As the lectures/slides also cover the course material, the book is not strictly required. However, it is a useful resource to provide additional support, reference reading, and practice problems. The Spring 2021 book is similar to the Spring 2020 and 2019 books, but different than books from earlier years.

Online:

Canvas is a web-based application that houses online materials for enrolled students across Wharton. You can access our course by logging into our Canvas page listed at the front of this syllabus. The course Canvas site will be the definitive source for all assignments and deadlines. You will not have access to Canvas until you officially register for the course.

Lecture Slides:

Lecture slides will be posted on Canvas.

Software:

In this course we use Excel, and in particular two Excel add-ins: Solver and Crystal Ball. All software required for the course is available through the Wharton computing labs in Huntsman Hall. If you are a non-Wharton student and want to use the software in the computing labs then you will need to create (if you haven't already done so) a "Wharton Class Account" that links to your PennKey account. It takes about 15 minutes for a Wharton Class account to sync with a user's PennKey account. Go to this link for details:

<https://app.wharton.upenn.edu/accounts/class.cfm>

Academic Integrity

Students are expected to adhere to the principles of the University's Code of Academic Integrity.

The following actions is a subsample of some of the ethical violations specific to this course:

- Completing any portion of a recitation exercise that is not your own.
- Broadcasting or disseminating or discussing in any manner or form solutions to graded content without actual collaboration. Put more simply, if you are sharing solutions with other students who may merely be copying your solutions, then that is an ethical violation. As discussed later, you are allowed to collaborate with other students as long as you are all making a good faith effort to do the work individually. You cannot and should not violate the spirit of this privilege.
- Falsely or inaccurately claiming activity on assignments or recitation exercises or other graded content. You should be aware that Canvas tracks ALL of your on-line activity, including each time you have logged on, each click you have made, each assignment/quiz you have opened, etc. Therefore, do not claim that you logged into an assignment and submitted it before the due date when in fact you did not because it is clear in Canvas that you did not.

Deliverables and Grades

Partial credit is not given on recitation exercises, assignments, or exams. The following weights apply to determine your final score % in the course:

Six (6) graded assignments	.25
Top 11 recitation exercises	.25
Exam 1	.25
Exam 2	.25

We will determine two grades for each student and the student's final grade for the course equals the better of the two. The first grade is based on a curve with the following proportions: 25% A, 20% A-, 15% B+, 15% B, 10% B-, 10% C+, 5% C or lower. After normalizing your final score to 100 points (i.e., 100 is the highest achievable score), your second grade is based on the following thresholds: [0,60) C or lower, [60,65) C+, [65,70) B-, [70-75) B, [75,80) B+, [80,85) A-, [85-95] A, [95-100] A+. We do not round final scores to determine your second grade. (Grades lower than C are based on instructor judgment.)

To illustrate how your final course grade is determined, suppose your final score is 84.7 and your class percentile is 77.5% (i.e., your final score is greater than or equal to the score of 77.5% of the students). In that case your first score would be an A (because the top 25% of students receive an A) and your second grade is an A-, because your final score falls in the range [80,85). Your final course grade is the better of the two, which is an A.

Consider a second example in which your final score is also 84.7 but your class percentile is 56%. Your first grade, based on the curve, is a B+, but your second grade remains A-. Your final grade for the course is then A-.

In sum, your final grade is never worse than what is given by the second grade's thresholds, but it might be better, depending on the outcome of the curve.

Assignments:

You are required to complete six graded assignments during this course. The questions on these assignments are similar in nature to the questions on the exams. To promote learning, you may collaborate and/or consult with other students registered this semester in OIDD 101 on these assignments. In other words, you are not cheating if you discuss your solutions to these assignments with other students in this course. However, each student must submit his or her own assignment.

All assignments are due by 11:30 p.m. of the assigned due date (see the course summary at the end of the syllabus). Please use the course summary as a reference and mark your calendars accordingly, as we will not send you reminders for the different deadlines. Late assignments are not accepted for credit (even partial credit). You must submit your assignments electronically via Canvas.

For each assignment, you will be able to access the questions in PDF form one (1) week before it is due. You should use this PDF of the assignment in preparation of completing (and submitting) the assignment via Canvas. You can only submit the assignment once. Be sure to leave sufficient time advance of when an assignment is due in case you experience

technical difficulties (e.g., the power on your laptop dies, Wifi is down, etc.). *In other words, technical difficulties do not excuse you from submitting on time.*

Recitation Exercises:

There are 13 graded recitations (#0 to #12). Your recitation grade is the average of your top 11 recitation exercises (out of 13). This means you get to drop your 2 lowest recitation grades. To be clear, we do not grant more than 2 “free passes,” including if you add the class late (missing recitations because you are not in the class is a reason to use some of your free passes). The only time we make exceptions to the 2 “free passes” rule is when a student experiences a very serious and sustained medical situation that prevents the student from participating in the class for more than two weeks. In such cases, students should have their academic advisor contact us.

To promote learning, you may collaborate and/or consult with other students registered this semester in OIDD 101 on these exercises. In other words, you are not cheating if you discuss your solutions to these recitation exercises with other students in this course. However, each student must submit his or her own exercises.

Each week when there is a recitation exercise, it will be available on Canvas by Thursday morning. You will be able to access the recitation exercises only through Canvas. All recitation exercises are due by 11:30 p.m. of the Sunday following that recitation session. You must submit your recitation exercise electronically via Canvas.

You will have a 120-minute window to complete and submit each recitation exercise on Canvas. You can only submit the exercise once. Be sure to leave sufficient time advance of when an assignment is due in case you experience technical difficulties (e.g., the power on your laptop dies, Wifi is down, etc.). *In other words, technical difficulties do not excuse you from submitting on time.*

Exams:

There are two, non-cumulative examinations. You may use a calculator (which includes graphing or programmable calculators) during the exam, but you may not communicate with anyone during the exam.

Both exams are common exams—all sections take their exam at the same time.

If you have an exam or regularly scheduled course that conflicts with an OIDD 101 exam, then you should submit a request for an alternative time via a Canvas (non-graded) quiz. You should submit your request no later than two weeks before the exam. In general, you will take the OIDD 101 exam in the two hours after the scheduled time for the exam, and if that is not possible, you will take it during the two hours prior to the scheduled time.

If you cannot attend an exam for any other reason, then you must provide documentation as to why you will not be able to attend (or were not able to attend). In general, excused absences are given only for serious health issues. If you are granted an excused absence from Exam 1, then you will need to make up the exam (shortly after Spring Break), or, if that is not possible, when Exam 1 is offered in Fall semester. If you are granted an excused absence from Exam 2, then you will take a make-up exam during the university’s scheduled make-up exam, which usually occurs in early September.

Support Questions and Assistance

The mentoring sessions provide a regular meeting for the discussion of the weekly course content. In addition to mentoring sessions, there are regular Teaching Assistant (TA) office hours.

We will also be utilizing a Piazza channel on Canvas, which is highly catered to getting your questions answered fast and efficiently by both your classmates and the teaching team. Rather than emailing questions to the teaching team, we encourage you to post your questions on Piazza.

Concerns with Grading

If you have a question about your grade, please contact in writing (e.g., an email) the appropriate Professor (i.e., the professor who taught you the material in question) and cc the PhD TAs. Your entire document will be reviewed. You may submit a request to review your assignment, recitation exercise, or exam only within the two-week period after the assignment/recitation exercise was due or the exam was taken.

Waivers and Prior Experience

Many of you have significant experience with computer technologies. A potentially dangerous strategy is to assume that because you are technologically literate, you know everything you need to know about business modeling and quantitative analysis. While our goal is to make this class as accessible as possible to all students, it is very difficult to do well if you rely only on prior knowledge and/or doing the readings on your own.

As a rule, we do not grant waivers of OIDD 101 except for M&T students and dual degree students who are receiving a degree from Engineering in addition to Wharton.

Course Schedule Summary

2021 January

Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
28	29	30	31	01	02	03
04	05	06	07	08	09	10
11	12	13	14	15	16	17
18	19	20 First Day of Classes	21 Recitation 0	22 Recitation 0	23	24
25	26 Lecture 1: Process Performance	27	28 Recitation 1	29 Recitation 1	30	31
01	02	Notes:				

2021 February

Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
01	02 Lecture 2: Process Improvement	03	04 Recitation 2	05 Recitation 2	06	07
08 Assignment 1	09 Lecture 3: Multiple Flow Units	10	11 Recitation 3	12 No Class	13	14
15	16 Lecture 4: Process Set Up	17	18 Recitation 4	19 Recitation 4	20	21
22 Assignment 2	23 Lecture 5: Queue Dynamics	24	25 Recitation 5	26 Recitation 5	27	28
01	02	03	04	05	06	07
08	09	Notes:				

2021 March

Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
01	02 Lecture 6: Structured Decision Making	03	04 Recitation 6	05 Recitation 6	06	07
08 Assignment 3	09 Exam 1	10 Spring Break	11 Spring Break	12	13	14
15 Exam 1 - Make Up	16 Lecture 7: Modeling Business Decisions	17	18 Recitation 7	19 Recitation 7	20	21
22	23 Lecture 8: Linear Modeling	24	25 Recitation 8	26 Recitation 8	27	28
29 Assignment 4	30 No Class	31 Lecture 9: Sensitivity Analysis	01	02	03	04
05	06	Notes:				

2021 April

Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
29	30	31	01 Recitation 9	02 Recitation 9	03	04
05	06 Lecture 10: Integer Models	07	08 Recitation 10	09 Recitation 10	10	11
12 No Class	13 Lecture 11: Models Under Uncertainty	14 Assignment 5	15 Recitation 11	16 Recitation 11	17	18
19	20 Lecture 12: Simulation	21	22 Recitation 12	23 Recitation 12	24	25
26 Assignment 6	27 Lecture 13: Comparing Decisions using Simulation	28	29 Last Day of Classes	30	01	02
03	04	Notes:				

2021 May

Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
26	27	28	29	30	01	02
03	04	05	06	07	08	09
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30
31	01	Notes:				