

ISOM 2700 Operations Management Spring 2021

CLASS SCHEDULE

Section L5: Tuesday and Thursday, 3:00pm – 4:20pm

Section L6: Tuesday and Thursday, 4:30pm – 5:50pm

INSTRUCTOR

Prof. Lijian Lu

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Office hours: Wed. 5 p.m. – 6 p.m. and by appointment

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TEACHING ASSISTANT

Ms. Jing Jia

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COURSE OVERVIEW & OBJECTIVE

Operations is one of the primary functions of a firm, concerned with the transformation of inputs (e.g., raw material, labor, capital, and information) into outputs (goods or services). Whereas marketing focuses on the demand for the product, finance provides the capital for the product, and operations produces and delivers the product, including procurement, production, distribution, warehousing, and retailing, with the objective of creating competitive advantage for the enterprise.

This course provides a foundation for understanding the operations of a firm. We concentrate on a small number of powerful themes that have emerged recently as the central building blocks of world-class operations. We also present a sample of operations management tools and techniques that have been proved extremely useful over the years. Our objective by the end of the course is to provide you with the analytical skills and managerial insights

necessary to critically analyze a firm's operations decisions and practices. Such knowledge is important for careers in a variety of areas, including general management, entrepreneurship, investment banking (e.g. business restructurings, mergers and acquisitions), venture capital (e.g. evaluating new business plans) and management consulting (business restructuring improvement).

Unlike many courses in the core, which tend to treat the firm as a "black box", we will be primarily concerned with "opening up" the black box and discovering what makes a firm "tick" - or, for that matter, "stop ticking". In contrast to your management courses, our focus is on the technological rather than human dimension of a firm's internal operations - though there are obvious connections between the two that we will explore. In contrast to the measurement focus of your accounting courses, our concern is to understand what elements of a firm's operations enable it to produce quality outputs at a competitive cost structure. That is, we will focus on how the "physics" of material, work and information flows and the design and management of a firm's processes interact to determine a firm's cost structure and its ability to compete effectively in terms of non-cost measures such as quality, variety and speed.

TEXTBOOKS (optional)

1. Cachon and Terwiesch, "Matching Supply with Demand", 4th Edition, International Edition, McGraw-Hill.
2. Jacobs and Chase, "Operations and Supply Chain Management: The Core", 4th Edition, International Edition, McGraw-Hill.

GRADING POLICY

Online quizzes (5+1)	20%
Midterm Exam	40%
Final Exam	40%
Total	100%

- 1) **5+1 Quizzes:** For week 3 to week 12 only.
 - Each online quiz consists of 10 questions.
 - Once you start the quiz, the timer will start automatically and you must complete it within the time limit.
 - The quiz for the week will be released on Monday. You

- must complete the quiz by the due time (**23:59 on Saturday**) each week.
- No makeup quiz will be given. The quiz for the week will be waived only if you have a valid reason, such as medical emergency.
 - The quiz with the lowest grade will be dropped, i.e., your quiz's grade will be based on 5 quizzes.
- 2) **Exam:** Midterm and final exam consists of 50 multiple choice questions and lasts 2 hours each. No makeup exam for the midterm exam will be given. If you miss the midterm exam for a valid and verifiable reason approved by the instructor in advance, you will have to take a 3-hour, 80-question cumulative final exam (covering entire course) and the weight of the mid-term will be added to the final exam. Otherwise, a zero mark will be assigned as your mid-term grade.
- You are allowed to use learning materials in both exams, more information will be available in due course.
- 3) Practice problems will be provided throughout the course to help students improve their understanding of course material. The practice problems are not counted toward the final grade, so there is no need to submit solutions to the practice problems, although it is highly encouraged to solve the problems individually.

ACADEMIC INTEGRITY

Students at HKUST are expected to observe the Academic Honor Code at all times (see <http://rpghandbook.ust.hk/student-conduct-and-academic-integrity#honor> for more information). Zero tolerance is shown to those who are caught cheating on exam. In addition to receiving a zero mark on the exam involved, the final course grade will appear on your record with an X, to show that the grade resulted from cheating. This X grade will stay with your record until graduation. If you receive another X grade, you will be dismissed from HKUST.

TEACHING APPROACH

The general teaching approach is lecturing, case discussions, as well as problem solving and demonstrations in the classroom. Lecture notes, additional reading articles, and learning resources are posted on Canvas. For many topics, we will start with an example (which can be a real business

problem or a simplified version) with concrete numbers and clearly defined questions that are often of managerial relevance. Then we provide rigorous Excel spreadsheet analysis to solve the problem and discuss managerial insights based on the analysis.

COURSE OUTLINE

This course has the following four modules, each of which consists of several topics that are connected to some extent and share the common theme of the module.

1) Managing Process and Resource

- Process analysis and its applications;
- Quality management;
- Resource management.

2) Managing Service System

- Coping with variability of service system;
- Separating vs. pooling servers;
- Queuing models;
- Simulating service system.

Online Midterm Exam:

Time: 7:00pm – 9:00pm, March 17 (Wed)

3) Matching Supply with Demand

- Economic order quantity (EOQ) model;
- Newsvendor model;
- Demand forecasting and revenue management.

4) Managing Supply Chain

- Value of flexibility and postponement;
- Information distortion: Bullwhip effect;
- Supply chain coordination via contract.

Online Final Exam:

Time: TBD

ISOM 2700 Operations Management

Prof. Lijian Lu, Spring 2021 Course at A Glance

#	Date	Module	Topics	Notes
1	Feb 2		- Introduction to Operation Management	
2	Feb 4	Process Analysis	- Fundamentals of Process Analysis <ul style="list-style-type: none"> o Process Analysis o Bottleneck Analysis o Little's Law 	
3	Feb 9		- Applications: The Goal	
4	Feb 11	Quality Management	- Statistical Process Control	
5	Feb 16		- Six Sigma	
6	Feb 18	Resource Management	- Decision Tree Method	
7	Feb 23		- Resource Allocation via Linear Programming	
8	Feb 25		- LP Excel Solver	Laptop in Class
9	Mar 2	Service Ops Management	- Coping with Variability of Service Systems	
10	Mar 4		- Queue Model (M/M/s)	
11	Mar 9		- Queue Models - Value of Pooling	
	Mar 11	Midterm Exam	Midterm Exam Review Session	
	Mar 16		No class (reschedule to Mar 17)	
	Mar 17		Midterm Exam	
12	Mar 18	Inventory Management	- Inventory Management: Economic Order Quantity (EOQ)	
13	Mar 23		- Inventory Management: Newsvendor Model	
14	Mar 25		- More on Inventory Management	
15	Mar 30	Revenue Management	- Demand Forecasting	
	Apr 1		- No class (Midterm break)	

	Apr 6		- No class	
16	Apr 8		- Revenue Management: Capacity-based Model	
17	Apr 13		- Revenue Management: Price-based Model	
18	Apr 15	Supply Chain Management	- Intro to Supply Chain Management	
19	Apr 20		- Flexibility and postponement	
20	Apr 22		- Bullwhip effects	
21	Apr 27		- Supply Chain Coordination via Contracts	Laptop in Class
22	Apr 29	Best OM Practice	- Best OM Practice: <ul style="list-style-type: none"> o Sales and Operations Planning o Flexible vs dedicated o Matching 	Laptop in class
23	May 4		Laptop in class	
	May 6		Final Exam Review Session	
	TBD		Final Exam	

#	Due Date
Quiz 1	Feb 20 (23:59pm)
Quiz 2	Feb 27 (23:59pm)
Quiz 3	Mar 06 (23:59pm)
Quiz 4	Mar 20 (23:59pm)
Quiz 5	Apr 17 (23:59pm)
Quiz 6	Apr 24 (23:59pm)

Note: The instructor reserves the right to modify the course outline during the term when needed.