

ISOM 2700 Sections L5-L7 Fall 2023 Syllabus

COURSE: ISOM2700 Operations Management (3-0-0:3)

Production and service operations viewed from the strategic, tactical and operational levels: capacity planning, process selection, impact of technology, location and layout, material and resource requirements, scheduling and quality control. Exclusion: ISOM2720 and IELM4100

Tue and Thur (G012)

L5: 9-10:20AM

L6: 10:30-11:50AM

L7: 1:30-2:50PM

INSTRUCTOR: Prof. Suri Gurumurthi (imsuri@ust.hk)

Office: LSK 4082A; Phone: 34692554

Office hours: T-Th 12PM-1:30PM

TEACHING ASSISTANT: Ms. Christine Ho (imhyho@ust.hk) Office: LSK-4065; Phone: 2358-8746; Office hours: By Appointment.

TEXTS: Learning materials (slides and associated discussion) are available on Canvas

GRADING POLICY: Final course grade will be determined by the following criteria and maximum point distribution:

Participation and Quizzes	20
Midterm exam	35
Final exam	<u>45</u>
Total	100

PARTICIPATION:

- You can earn an average of 1- 2 points per week for a variety of learning activities, including in-class discussion and in-class quizzes. Attendance and in class surveys or other activities will be recorded only on Tuesday classes, and not on Thursday classes. But I encourage attendance when class is in session always.

EXAM: The midterm covers only part A of the course while the final exam covers only part B. No makeup will be given for the midterm exam as such; if you miss the midterm exam for a valid reason that is pre-approved by the instructor, you will have to take a 3-hour, 80-question comprehensive final exam instead. All exams are closed book, closed notes but a table of formulae will be provided with the exam. The exam will be conducted in-person.

COURSE GRADE: In determining the final course grade, your instructor will consider the **DISTRIBUTION:** following grade distribution measured in points achieved overall.

- A 90-100
- B 80-90
- C 70-80
- D 60-70
- F 60 and below

LEARNING OUTCOMES: This course is designed in such a way that, after completing it, you will be able to:

1. Describe the design and delivery of product/service in different organizations, and evaluate the systems for measurement and improvement of operations. [1,4]
2. Identify and select crucial variables and measurements in decision modeling. [1]
3. Identify and describe operations management as one of the core business functions. [3]
4. Integrate operations management with other business functions to support a coherent corporate strategy. [3]

5. Determine how operation management decisions impact other business functions. [3]
6. Identify a wide range of contemporary and pervasive global business issues, as well as cultural and technology advancement that impact the management of operations. [4, 6]
7. Apply a range of appropriate quantitative and qualitative methods and tools to solve business problems in which the management of operations is a critical issue. [4,7]
8. Discuss the role of operations management in sustainability and social responsibility. [8]

The numbers at the end of each learning goal correspond to those learning goals and objectives for the BBA-OM Program. For details, please visit the BBA-OM web site at <http://bbaom.ust.hk/inquiry> .

PEDAGOGY: Most lectures and solved problems are posted on canvas for your advance reading. Additional reading materials and other learning resources such as external videos are also posted on Canvas. Students are expected to complete all reading activities online for each week before attending class. Students are encouraged to ask questions during the instructor-led, face-to-face class meetings.

ACADEMIC INTEGRITY: Students at HKUST are expected to observe the Academic Honor Code at all times: <http://ugadmin.ust.hk/integrity/>

Zero tolerance is shown to those who are caught cheating on any form of assessment and a zero mark will be given. Any act of cheating on exam will automatically result in a XF grade for this course. This XF grade will stay with your record until graduation. If you receive another XF or X grade, you will be dismissed from the University. All written assignments will be screened by Turnitin for plagiarism and points will be deducted when the similarity index is considered high (e.g., more than 25%).

Part A: Managing Business Process Flow

Operations Strategy

- Module 1**
September 5, 7
- What is Operations Management?
 - Elements of Operations Strategy
 - Objectives for Operations Management
 - Operational Performance Measures
 - Order Winning vs Order Qualifying Measures
 - **Module 1 Quiz due Sept 8th**

Process Selection and Product Design

- Module 2**
September 12, 14
- Different Process Types and Uses
 - Product Design Activities
 - New Product Development Strategy
 - Process Modularity and Design
 - Service Operations and Service Strategy
 - Service Profit Chain
 - **Module 2 Quiz Due Sept 15th**

Setting up Capacity and Related Optimization decisions

- Module 3**
September 19, 21
- Capacity dimensions and Bottlenecks
 - Capacity Breakeven Analysis
 - Decision tree method and value of perfect information
 - Linear programming technique
 - Product mix optimization problems
 - **Module 3 quiz due Sept 22nd**

Process Flow Measures

Module 4,5

September 26, 28

- Defining capacity in terms of flow
- Batch versus unit processing examples
- Economies of scale in processes
- Cycle Time of a process
- **Module 5 Spreadsheet Exercise Due Sept 29th**

Process Flow and Bottleneck Analysis

Module 5 and 6

Oct 3, 5

- Little's Law
- Bottleneck management
- Impact of product mix on capacity
- Project Lead Times
- **Module 5B Quiz Due Oct 6th**

Managing waiting lines and Process Delays

Module 6

Oct 10, 12

- Psychology of waiting
- Waiting line models and simulation
- Queue configuration problems
- **Module 6 Spreadsheet Exercise Due Oct 13th**

Oct 17th (Location and Time TBA): Mid-term exam (for part A only, 40-45 questions, 1 hour and 45 minutes). Best 35 will be taken for the midterm score

Exam will be administered in person.

Part B: Matching Supply and Demand

Demand management and forecasting

Module 7

Oct 24, 26

- Qualitative and quantitative approaches
- Basic time series forecasting models
- Forecasting errors
- **Module 7 Spreadsheet Exercise due Oct 27th**

Inventory management

Module 8

Oct 31, Nov 2

- Inventory classification and management needs
- Basic inventory models: Order quantity and reorder point
- Safety stock and service levels
- **Module 8A Spreadsheet Due Nov 3rd**

Managing supply for short life cycle products with uncertain demand

Module 8 (contd.)

Nov 7, 9

- The newsvendor problem
- Revenue management with capacity controls
- Capacity Reservation, protection levels
- **Module 8B Spreadsheet Due Nov 10th**

Managing Quality

Module 9 and 10

Nov 14, 16

- Quality management
- Garvin's Dimensions of Product Quality
- The Gap Model of Service Quality
- Acceptance sampling plan
- Statistical process control
- Process capability and six sigma quality
- **Module 10 Spreadsheet Exercise Due Nov 17th**

Supply chain management and Lean Operations

Module 11

Nov 21, 23

- Supply Chain Structure and Behavior
- Supply Chain Coordination
- Revenue management in supply chains
- Major elements of just-in-time and Kanban systems
- Sustainability Case Examples
- **Module 11 Supply Chain Revenue Management Spreadsheet Due Nov 24th**

Review and Buffer Time

Nov 28 and Nov 30

- Any pending materials from previous weeks
- **Final Exam Review** (Pre-recorded Discussion) during last week of classes

Final exam (for Modules 6-11 only), 50 questions, 2 hours, except for those who need to take the 80-question comprehensive exam for 3 hours)