

The Hong Kong University of Science and Technology

ISOM2700 Operations Management

3 Units

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Course Description

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.

Intended Learning Outcomes (ILOs)

By the end of this course, students should 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]

Assessment and Grading

This course will be assessed using criterion-referencing and grades will not be assigned using a curve. Detailed rubrics for each assignment are provided below, outlining the criteria used for evaluation.

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

Assessments:

[List specific assessed tasks, exams, quizzes, their weightage, and due dates; perhaps, add a summary table as below, to precede the details for each assessment.]

Assessment Task	Contribution to Overall Course grade (%)	Due date
In Class and Canvas Quizzes	20%	Dates on Canvas
Midterm Exam	40%	Week of Oct 28 th
Final Exam	40%	Finals week (TBD)

Grading Rubrics

[Detailed rubrics for each assignment will be provided. These rubrics clearly outline the criteria used for evaluation. Students can refer to these rubrics to understand how their work will be assessed.]

Final Grade Descriptors:

Grades	Short Description	Elaboration on subject grading description
A	Excellent Performance	[Demonstrates a comprehensive grasp of subject matter, expertise in problem-solving, and significant creativity in thinking. Exhibits a high capacity for scholarship and collaboration, going beyond core requirements to achieve learning goals.]
B	Good Performance	[Shows good knowledge and understanding of the main subject matter, competence in problem-solving, and the ability to analyze and evaluate issues. Displays high motivation to learn and the ability to work effectively with others.]
C	Satisfactory Performance	[Possesses adequate knowledge of core subject matter, competence in dealing with familiar problems, and some capacity for analysis and critical thinking. Shows persistence and effort to achieve broadly defined learning goals.]
D	Marginal Pass	[Has threshold knowledge of core subject matter, potential to achieve key professional skills, and the ability to make basic judgments. Benefits from the course and has the potential to develop in the discipline.]
F	Fail	[Demonstrates insufficient understanding of the subject matter and lacks the necessary problem-solving skills. Shows limited ability to think critically or analytically and exhibits minimal effort towards achieving learning goals. Does not meet the threshold requirements for professional practice or development in the discipline.]

Course AI Policy

You are allowed to use AI to learn about select Operations Management issues and topics and solution methods. However, you may not use AI to complete the in-class quizzes or on-canvas quizzes. Also the use of AI is strictly prohibited during exams.

Communication and Feedback

Assessment marks for individual assessed tasks will be communicated via Canvas within two weeks of submission. Feedback on assignments will include [specific details, e.g., strengths, areas for improvement]. Students who have further questions about the feedback including marks should consult the instructor within five working days after the feedback is received.

Resubmission Policy

No late work will be accepted 1 week after the due date, unless there is a medical exemption. There will be a penalty of 1/7th of the assessment grade for every day that it is late.

Required Texts and Materials

All required materials are already posted to Canvas. Students are expected to read the slides before class and also optionally read through the Canvas modules related to each set of lecture slides if they seek further examples on the materials presented in the slides.

Academic Integrity

Students are expected to adhere to the university's academic integrity policy. Students are expected to uphold HKUST's Academic Honor Code and to maintain the highest standards of academic integrity. The University has zero tolerance of academic misconduct. Please refer to [Academic Integrity | HKUST – Academic Registry](#)Links to an external site. for the University's definition of plagiarism and ways to avoid cheating and plagiarism.

Part A: Managing Business Process Flow (Modules 1–8)

Module 1 — Operations Strategy

Meetings: Tue **Sept 2**, Thu **Sept 4**

- What is Operations Management?
- Elements of Operations Strategy
- Objectives for Operations Management
- Operational Performance Measures
- Order-Winning vs Order-Qualifying
- **Module 1 Quiz due Sept 11**

Module 2 — Process Selection & Product Design

Meetings: Tue **Sept 9**, Thu **Sept 11**, and perhaps Tue **Sept 16**

- Different process types & uses
- Product design activities
- New product development strategy
- Process modularity & design
- Service operations & strategy
- Service Profit Chain
- **Module 2 Quiz due Sept 21**

Module 3 — Quality Management (Conceptual)

Meetings: Thu **Sept 18**, Tue **Sept 23**,

- Foundations of quality management
- Garvin's dimensions of product quality
- Gap Model of service quality
- Basic tools of quality management

Module 4 — Statistical Process Control (SPC)

Meetings: Thu **Sept 25**, Tue **Sept 30**

- Acceptance sampling plans
- Statistical process control
- Process capability & Six Sigma quality
- **Module 4 Spreadsheet (SPC)— Due Oct 5**

Module 5 — Capacity & Related Optimization Decisions

Meetings: Thu **Oct 2**, Thu **Oct 9 (Oct 7th Holiday)**

- Capacity dimensions & bottlenecks
- Capacity breakeven analysis
- Decision trees & value of perfect information
- Linear programming technique
- Product mix optimization problems
- **Module 5 Quiz — Due Oct 12**

Module 6 — Process Flow Measures

Meetings: Tue **Oct 14**, Thu **Oct 16**

- Defining capacity in terms of flow
- Batch vs unit processing examples
- Economies of scale in processes
- Cycle time of a process
- **Module 6 Spreadsheet Exercise— Due Oct 19**
- **Module 6 Quiz - Due Oct 19**

Module 7 — Process Flow & Bottleneck Analysis

Meetings: Tue Oct 21, Thu Oct 23rd

- Little's Law
- Bottleneck management
- Impact of product mix on capacity
- Project lead times
- Psychology of waiting
- Waiting line models & simulation
- Queue configuration problems
- **Module 7 Spreadsheet —Due Oct 19**

Midterm Exam (Part A only)

Week of Oct 28th — In-person; 50 questions; 2 hours

No make-up midterm exam offered

Part B: Matching Supply and Demand (Modules 8–11)

Module 8 — Demand Management & Forecasting

Meetings: Tue Nov 4, Thu Nov 6

- Qualitative & quantitative approaches
- Basic time series forecasting models
- Forecasting errors
- **Module 8 Spreadsheet Exercise— Due Nov 9**

Module 9 — Inventory Management

Meetings: Tue Nov 11, Thu Nov 13

- Inventory classification & management needs

- Basic inventory models: order quantity & reorder point
- Safety stock & service levels
- **Module 9 Spreadsheet— Due Nov 16**

Module 10 — Short Life Cycle Products & Revenue Management

Meetings: Tue **Nov 18**, Thu **Nov 20**

- Newsvendor problem
- Revenue management with capacity controls
- Capacity reservation & protection levels
- **Module 10 Revenue Management Spreadsheet — Due Nov 23**

Module 11 — Supply Chain Management & Lean Operations

Meetings: Tue **Nov 25**, Thu **Nov 27**

- Supply chain structure & behavior
- Supply chain coordination
- Revenue management in supply chains
- Just-in-time (JIT) & Kanban
- Sustainability case examples
- **Module 11 Supply Chain Revenue Management Spreadsheet— Due Nov 29**