Course Outline

Course Code : DOS 3703
Course Title : Service Operations Management
Class Date : From 12/1/2026 To 17/4/2026
Semester : Semester 2, Academic Year 2025/2026
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Overview

In today's economy, service operations are at the heart of value creation and innovation. Services now dominate global employment and GDP, ranging from digital platforms and consulting firms to AI-powered ecosystems in health, education, and logistics. This course equips students with the analytical and entrepreneurial tools to design, manage, and scale service systems that are efficient, adaptive, and human-centred.

Students will explore how operational decisions shape customer experience and organizational success. The course introduces classical tools such as forecasting, pricing, capacity management, inventory, and queuing models, then extends these foundations to modern contexts like digital platforms, experimentation, and AI-enabled service operations. Through case studies, simulation projects, and service design challenges, students will learn to think with an analytical and entrepreneurial mindset.

Course Objectives

By the end of the course, students will be able to:

- Analyse service operations and understand how decision-making, implementation challenges, and customer experience differ from traditional manufacturing settings.
- Recognize the strategic importance of service operations and how successful firms align service design with their market positioning and value proposition.
- Apply quantitative tools and models to forecast demand, manage variability, allocate capacity, and improve operational efficiency.
- Evaluate how digital platforms and AI technologies are reshaping modern service systems and creating new business models.
- Develop an entrepreneurial mindset to design innovative service concepts, experiment with new ideas, and translate opportunities into operational solutions.

Assessment

Assessment Components	Weightage
Individual Class Participation	10%
Group Simulation Project	10%
Group Service Design Project	10%
Group Service Design Class Presentation	10%
Mini Individual Assignments	10%
Individual Midterm Exam	20%
Individual Final Exam	30%

Schedule and Outline

Lesson/ Week	Date	Session
1	January 12	Week 1 – Introduction to Service Operations Focus: Understanding the dominant role of service operations in today's economy and what makes services fundamentally different from manufacturing.
2	January 19	Week 2 – Pricing and Costing Tools Focus: Introducing foundational pricing and costing tools such as break-even analysis, activity-based costing, and the price waterfall. Case Study: Maple Tree Accessory shop
3	January 26	Week 3 – Managing Inventory Focus: Understanding the role of information delays, demand uncertainty, inventory management and decentralized decisions in supply chains. In-class Game: Beer Distribution Game
4	February 2	Week 4 – Project Management Focus: Understanding project timelines, identify critical paths, compute expected completion times, and quantify uncertainty. Using linear programming models for project management. Case Study: Project Management Analysis in the Internet Forecasting Industry
5	February 9	Week 5 – Capacity Planning Focus: Modelling and allocating constrained service capacity over time using optimization-based decision frameworks. Case Study: Radiation Treatment Machine Capacity Planning at Cancer Care Ontario
6	**February 16**	**Chinese New Year Holiday**
7	March 2	Midterm Exam Week 3 – Predicting Demand Focus: Foundational forecasting tools such as Guessiomation and moving averages to build intuition about how service firms predict demand under uncertainty.
8	March 9	Week 7 – Queuing Models Focus: Modelling queuing systems and developing intuition for how variability in arrivals and service times drives congestion, waiting, and utilization. Case Study: LHSC Multi-Organ Transplant Program: Pooling Ontario's Kidney Transplant Wait-lists
9	March 16	Week 8 – Simulation Focus: Decision making under uncertainty. Simulation modelling to quantify income, risk, and profitability under multiple uncertain parameters. In-class Hackathon
10	March 23	Week 9 – Service Platforms Focus: Core principles of digital platforms and key ideas from *Platform Revolution*. The session connects theory to practice through deep-dive discussions of three real platforms (Safe Space, Yindii, Speedoc).

11	March 30	Week 10 – Experimentation Focus: How companies design experiments—including A/B tests, switchback tests, and synthetic control methods—to improve their services. Experimental data analysis using Excel. Case Study: Innovation at Uber: The Launch of the Express Pool
12	April 6	Week 11 – Design a Service System Focus: Students apply entrepreneurial thinking to design a new service system from scratch. Working in teams, they deliver a 5-minute startup pitch (service platform, AI-enabled service, or SaaS), receiving peer and instructor feedback.
13	April 13	Week 12 – Service Operations in the AI Era Focus: How AI is transforming the design and management of service operations across industries—from contact centers and healthcare to field service, back-office workflows, and creative/content services. Case Study: Marriott International: Deploying AI Across Hotel Brands in Singapore

General Guide & Reading

Reference Textbook: Bordoloi, S. K., Fitzsimmons, J. A., & Fitzsimmons, M. J. (2019). Service Management: Operations, Strategy, Information Technology (9th ed.). McGraw-Hill Education.
Supplementary material and the case studies will be provided for each session in Canvas

Academic Honesty & Plagiarism

Academic integrity and honesty is essential for the pursuit and acquisition of knowledge. The University and School expect every student to uphold academic integrity & honesty at all times. Academic dishonesty is any misrepresentation with the intent to deceive, or failure to acknowledge the source, or falsification of information, or inaccuracy of statements, or cheating at examinations/tests, or inappropriate use of resources.

Plagiarism is 'the practice of taking someone else's work or ideas and passing them off as one's own' (The New Oxford Dictionary of English). The University and School will not condone plagiarism. Students should adopt this rule - You have the obligation to make clear to the assessor which is your own work, and which is the work of others. Otherwise, your assessor is entitled to assume that everything being presented for assessment is being presented as entirely your own work. This is a minimum standard. In case of any doubts, you should consult your instructor.

Additional guidance is available at:

- Administrative Policies
- http://www.nus.edu.sg/registrar/administrative-policies-procedures/acceptance-record#NUSCodeofStudentConduct
- http://nus.edu.sg/osa/resources/code-of-student-conduct