Annexe A: New/Revised Course Content in OBTL+ Format

Course Overview

The sections shown on this interface are based on the templates UG OBTL+ or PG OBTL+
If you are revising/duplicating an existing course and do not see the pre-filled contents you expect in the subsequent sections e.g. Course Aims, Intended Learning Outcomes etc. please refer to Data Transformation Status for more information.

Expected Implementation in Academic Year	AY2024-2025
Semester/Trimester/Others (specify approx. Start/End date)	Semester 1
Course Author * Faculty proposing/revising the course	Chen Shaoxiang
Course Author Email	ASCHEN@ntu.edu.sg
Course Title	Service Operations Management
Course Code	BT2404
Academic Units	3
Contact Hours	39
Research Experience Components	Not Applicable

Course Requisites (if applicable)

Pre-requisites	
Co-requisites	
Pre-requisite to	
Mutually exclusive to	
Replacement course to	
Remarks (if any)	

Course Aims

Services make up over 75% of the Singapore economy both in GDP and in employment, with similar trends across the industrialized and developing/emerging nations within the global economy. However, Distinctive characteristics of services such as their intangibility, perishability, simultaneity, and heterogeneity, present unique challenges for managers in service organizations. The main aim of this course is twofold: to introduce you to the most important aspects and general principles of service management across different industries and economies, following a service-dominant logic on business; to provide you with an understanding and essential knowledge of the analysis, modelling, decision making and implementation for managing the operational issues of a service. Emphasis will be on developing your modelling skills with the use of mathematical tools and techniques to manage service operations. Topics include the service concept and operations strategy, the design of effective service delivery networks, service quality management, managing service inventory, waiting line analysis, capacity planning, and yield management.

Course's Intended Learning Outcomes (ILOs)

Upon the successful completion of this course, you (student) would be able to:

ILO 1	The Service Economy a. Describe the central role of services in an economy. b. Identify and differentiate the five stages of economic activity. c. Describe the features of preindustrial, industrial, and postindustrial societies. d. Describe the features of the experience economy contrasting the consumer (B2C) with the business (B2B). e. Explain the essential features of the service-dominant logic. f. Identify and critique the six distinctive characteristics of a service operation and explain the implications for managers. g. Describe a service using the service package dimensions. h. Use the service process matrix to classify a service.
ILO 2	Service Strategy a. Formulate a strategic service vision. b. Describe how a service competes using the three generic service strategies. c. Perform a SWOT and Five Forces Analysis d. Explain service qualifiers, service winners, and service losers. e. Discuss the competitive role of information in services. f. Explain the concept of the virtual value chain and its role in service innovation. g. Discuss service firm sustainability & triple bottom-line impact h. Identify service features leading to economics of scalability. i. Categorize a service firm according to its stage of competitiveness.
ILO 3	Service Quality a. Describe and illustrate the five dimensions of service quality. b. Use the service quality gap model to diagnose quality problems. c. Apply poka-yoke methods to a service. d. Construct a “house of quality” as part of a quality function deployment project. e. Construct a statistical process control chart for a service operation. f. Describe the features of an unconditional service guarantee and its managerial benefits. g. Perform a walk-through audit (WtA). h. Explain what service recovery is and why it’s important.
ILO 4	Service Facility Location a. Explain differences between competitive clustering and saturation marketing. b. Explain impact of the Internet on location decisions. c. Describe how a geographic information system is used in service location decisions. d. Differentiate between a Euclidian and metropolitan metric approach to measuring travel distance. e. Locate a single facility using the cross-median approach. f. Use the Huff retail location model to estimate revenue and market share for a potential site. g. Locate multiple facilities using the set covering model.

ILO 5	Service Supply Relationships a. Contrast supply chain for physical goods with service supplier relationships. b. Identify sources of value in a service supply relationship. c. Discuss managerial implications of bidirectional relationships. d. Identify factors that drive profitability for a professional service firm. e. Classify business services based on the focus of the service and its importance to the outsourcing organization. f. Discuss managerial considerations to be addressed in outsourcing services.
ILO 6	Managing Capacity and Demand a. Describe strategies for matching capacity and demand for services. b. Recommend an overbooking strategy. c. Use Linear Programming to prepare a weekly work shift schedule. d. Prepare a work schedule for part-time employees. e. Explain yield management and how it is applied.
ILO 7	Managing Waiting Lines a. Describe the economies of waiting lines. b. Describe how queues form. c. Apply Maister's "laws of service." d. Address attributes of waiting. e. Describe essential features of a queuing system. f. Describe relationship between a negative. exponential distribution of time between arrivals and a Poisson distribution of arrival rates.
ILO 8	Capacity Planning and Queueing Models a. Discuss the strategic role of capacity planning. b. Describe a queuing model using A/B/C notation. c. Use queuing models to calculate system performance measures. d. Describe the relationships between queuing system characteristics. e. Use queuing models and various decision criteria for capacity planning.
ILO 9	Computer Simulation a. Describe the nature of computer simulation. b. Describe the process of system simulation. c. Apply Monte Carlo simulation. d. Generate discrete random variable. e. Generate continuous random variable.

ILO 10	Managing Service Inventory a. Discuss role of information technology in managing inventories. b. Describe functions and costs of an inventory system. c. Determine order quantity for various inventory models. d. Determine reorder point and safety stock for inventory systems with uncertain demand. e. Design a continuous or periodic review inventory-control system. f. Conduct an ABC analysis of inventory items. g. Determine order quantity for single-period inventory. h. Describe rationale behind retail discounting model.
ILO 11	Optimization a. Describe five key elements of optimization. b. Differentiate between different optimization models. c. Formulate real-world problems into linear programming problems. d. Solve linear programming problems using graphic solution. e. Solve linear programming problems using Excel solver. f. Carry out sensitivity analysis of linear programming problems.

Course Content

In the first 4 weeks of the course, students will learn the fundamental concepts and techniques necessary for designing, managing, analyzing, and improving service operations. Students will also learn to use analytical models and decision support tools for improving the operational effectiveness and efficiency in service organizations. Topics covered include Introduction to Service Operations, Service Strategy, Service Quality Management, Workforce Management, and Service Facility Location. In the next 4 weeks, the course will focus on Managing Waiting Lines, Capacity Planning and Queueing Models, and Service Simulation. Lastly, the final 5 weeks will discuss Service Supply Relationships, Service Inventory Management, News Vendor Problem, and Yield Management.

Reading and References (if applicable)

Recommended Textbook:

BFF – BORDOLOI, FITZSIMMONS and FITZSIMMONS, Service Management: Operations, Strategy & Information Technology, 9th Edition, 2019, McGraw-Hill, ISBN 1259784630.

The e-text book is available by purchase at McGraw-Hill Connect with LearnSmart tool

Other course materials will be made available on the course website (NTULearn).

Planned Schedule

Week or Session	Topics or Themes	ILO	Readings	Delivery Mode	Activities
1	Introduction to Service Operations Optimization 1 – Introduction	1, 11	Lecture Note BFF – Chapter		
2	Service Strategy Optimization 2 – Graphic Solution	2, 11	Lecture Note BFF – Chapter 2		
3	Service Quality Optimization 3 – Excel Solver	3, 11	Lecture Note BFF – Chapter 6		
4	Service Facility Location Optimization 4 – Location Theory	4, 11	Lecture Note BFF – Chapter 8		
5	Optimization 5 – Workforce Management ; Managing Waiting Lines ; Little's Law	6, 7, 11	Lecture Note BFF – Chapter 11, 12		
6	Capacity Planning and Queueing Models	8	Lecture Note BFF – Chapter 13		
7	Case Study – Renaissance Clinic Simulation	8, 9	Lecture Note BFF – Chapter 13 Supp		
8	Quiz 1 (Weeks 1-5) in Class				
9	Service Supply Relationships ; Managing Service Inventory	5, 10	Lecture Note BFF – Chapter 9, 15		

Week or Session	Topics or Themes	ILO	Readings	Delivery Mode	Activities
10	Managing Capacity and Demand ; News Vendor	6	Lecture Note BFF – Chapter 11		
11	Yield Management (Yield Mgt. Game)	6	Lecture Note BFF – Chapter 11		
12	Group Presentations				
13	Quiz 2 (Weeks 6-11) in Class				

Learning and Teaching Approach

Approach	How does this approach support you in achieving the learning outcomes?
Pre-Class Self-study	You would have to learn new things by yourself after university study. Thus, you need to build up the self-learning ability during your university time in the first place. Self-studying also allows you to control your own pace of learning and think about topics more deeply and make connections between what you are learning. In addition, pre-class preparation will make the in-class learning and teaching more effective.
Seminars	The interactive lecture sessions where ample opportunities for open discussion on the conceptual questions raised in the class allow you to think critically and share their ideas and concept with the class. This also allows me to get the concepts clearly through the entire class by involving you and ensure that the targeted learning outcomes are being achieved
Group assignments	The assignments require you to generate, analyze and deliver humorous materials in a guided manner.
In-Class activities	Some learning outcomes for this course are skills which are practical in nature and cannot be achieved by reading and writing. The achievement of such learning outcomes requires hands-on experience, in-class activities provide such opportunities.

Assessment Structure

Assessment Components (includes both continuous and summative assessment)

No.	Component	ILO	Related PLO or Accreditation	Weightage	Team/Individual	Rubrics	Level of Understanding
1	Continuous Assessment (CA): Assignment(Group Assignments)	9, 11	Problem Solving and Decision Making Teamwork and Interpersonal Skills	20	Team	Holistic	Multistructural
2	Continuous Assessment (CA): Project(Project - (written report and in-class presentation*))	1 -11	Acquisition of knowledge, Problem Solving & Decision Making Teamwork and Interpersonal Skills Oral Communication	20	Team	Holistic	Multistructural
3	Continuous Assessment (CA): Test/Quiz(Quiz 1)	1, 2, 3, 4, 6, 7, 11	Acquisition of knowledge	20	Individual	Holistic	Multistructural
4	Continuous Assessment (CA): Test/Quiz(Quiz 2)	5, 6, 8, 9, 10,	Acquisition of knowledge	20	Individual	Holistic	Multistructural
5	Continuous Assessment (CA): Assignment(Pre-class self- study & Assignments)	1 -11	Acquisition of knowledge	10	Individual	Holistic	Multistructural
6	Continuous Assessment (CA): Class Participation(Class Participation)	1 -11	Oral Communication	10	Individual	Holistic	Multistructural

Description of Assessment Components (if applicable)

* Every team member is required to present (i.e. effectively individual presentation).

For team assessments, individual score may vary due to feedback on his contribution.

Formative Feedback

You will receive feedback on your group assignments through written responses in emails. Quiz grades will be distributed no more than three days after the quiz. You will receive summative group feedback on the project following the conclusion of the in-class presentation.

NTU Graduate Attributes/Competency Mapping

This course intends to develop the following graduate attributes and competencies (maximum 5 most relevant)

Attributes/Competency	Level

Course Policy

Policy (Academic Integrity)

Good academic work depends on honesty and ethical behaviour. The quality of your work as a student relies on adhering to the principles of academic integrity and to the NTU Honour Code, a set of values shared by the whole university community. Truth, Trust and Justice are at the core of NTU's shared values. As a student, it is important that you recognize your responsibilities in understanding and applying the principles of academic integrity in all the work you do at NTU. Not knowing what is involved in maintaining academic integrity does not excuse academic dishonesty. You need to actively equip yourself with strategies to avoid all forms of academic dishonesty, including plagiarism, academic fraud, collusion and cheating. If you are uncertain of the definitions of any of these terms, you should go to the academic integrity website for more information. On the use of technological tools (such as Generative AI tools), different courses / assignments have different intended learning outcomes. Students should refer to the specific assignment instructions on their use and requirements and/or consult your instructors on how you can use these tools to help your learning. Consult your instructor(s) if you need any clarification about the requirements of academic integrity in the course.

Policy (General)

You are expected to complete all assigned readings, activities, assignments, attend all classes punctually and complete all scheduled assignments by due dates. You are expected to take responsibility to follow up with assignments and course related announcements. You are expected to participate in all project critiques, class discussions and activities.

Policy (Absenteeism)

In-class activities make up a significant portion of your course grade. Absence from class without a valid reason will affect your participation grade. Valid reasons include falling sick supported by a medical certificate and participation in NTU's approved activities supported by an excuse letter from the relevant bodies. There will be no make-up opportunities for in-class activities.

Policy (Others, if applicable)

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