NATIONAL UNIVERSITY OF SINGAPORE
School of Business
Department of Analytics and Operations

DAO2703 Operations and Technology Management

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Session : Semester 2, 2021/2022

Module Description
Operations and Technology Management (OTM) is a classic functional area of management that deals with the problems of production in all kinds of enterprises. It focuses on the productive system of the enterprise, which we define as the means by which resource inputs are transformed into useful outputs of goods and services.

While Operations and Technology Management is a traditional functional field, and while this module will follow an outline built around the traditional foundational topics of OTM, we will nevertheless attempt to highlight some of the more current issues that are relevant within these topics. In view of this, the module will consider issues pertaining to both manufacturing and services-oriented systems, highlight the strategic aspects of operations, evaluate the significance and implications of advanced process technologies like robotics, AI and flexible manufacturing systems, and explain the strategic significance of practices such as those of Japanese manufacturing techniques and philosophies like Just-in-Time and Total Quality Management, and those relating to the Theory of Constraints.

The primary objectives of the module are to provide students with an introduction to, and an understanding of, the substantive knowledge which has developed over the years in the field of Operations and Technology Management, and to highlight the current relevance and strategic significance of the operations function in any given enterprise.

Basic Text
William J. Stevenson, Operations Management, 14th Edition, 2021, McGraw Hill.

Reference Text
F. Robert Jacobs and Richard B. Chase, Operations and Supply Chain Management, 16th Edition, 2021, McGraw Hill.

Assessment Components

Final Exam (Closed Book)	50%
Group Project Report	20%
Group Project Presentation	10%
Peer Evaluation	05%
Class Participation	15%

Group Project
The objective of the Project is to allow students to study and appreciate how technologies are currently being used by enterprises in their operations processes of producing and/or delivering their products or services.

Each student will form/join a group (the group size will be specified by the Tutor; this is likely to be between 5-8 students per group). The group will select a particular operations process or system and study the technologies used in that process/system in producing and/or delivering that product or service. *This includes describing the chosen production and/or*

delivery operations, and explaining the technologies used. The group can choose any company where there is adequate publicly available material on its operations processes and technologies. And the particular process or processes chosen need not be the complete production/delivery operations of the company.

The focus is on the use of technologies (both hardware and software), including the most current and innovative technologies such as CIM (Computer Integrated Manufacturing), FMS (Flexible Manufacturing Systems), Industrial Robots, AI, Chatbots, AMH (Automated Material Handling), AS/RS (Automated Storage and Retrieval Systems), AGVs (Automated Guided Vehicles), Cross-Docking Points, E-Commerce Platforms, Logistics Delivery Platforms, etc.

Group Project Report

The Group will prepare and submit a Project Report. The report should cover the following:

- Introduction - a brief explanation of why you choose the company and its operations and use of technologies.
- Description - the Company and its products/services.
- Description - the Operations process/es selected and the Technologies used.
- Discussion & Conclusion - what are the key learning points experienced by the group about the company's use of technologies.
- References - a listing of the Sources you used for this project.

The ***Group Project Report is due by the Wednesday of Session 10*** (see Module Schedule & Contents); it should not be more than 8 pages (single spacing on 11-point font and not counting the References section and any additional Appendix of Exhibits/Pictures).

Group Project Presentation

Each group will also prepare and deliver a PPT presentation to their Tutorial Class. The presentation will be for not more than 10 minutes, followed by Q&A.

The objective of the Group Presentation is for the Group to share its work with the class so that all can benefit from learning about the use of technologies in operations in different companies. The Group should seek to motivate the class about its company and use of technologies through a well-designed and well-delivered presentation. ***The Group Presentations will be scheduled for Tutorials 9 & 10***.

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:

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

Module Schedule & Contents

Session	Lecture Topic (with Chapter Readings from Basic Text or *Reference Text*)	Tutorial Topic
1	Introduction to Operations Management (Chapter 1)	No Tutorial
2	Operations Processes and Technologies (Chapter 6)	No Tutorial
3	Operations Process Flow Analytics (*Reference Text*: Chapter 11)	Tutorial 1: Intro to Operations Management
4	Aggregate Planning (Chapter 11)	Tutorial 2: Operations Processes & Technologies
5	Inventory Management I (Chapter 12)	Tutorial 3: Operations Process Flow Analytics
6	Inventory Management II	Tutorial 4: Aggregate Planning
7	Material Requirements Planning (Chapter 13)	Tutorial 5: Inventory Management I
8	Operations Scheduling (Chapter 16)	Tutorial 6: Inventory Management II
9	Operations Paradigm I: Lean/Just-In-Time (Chapter 14)	Tutorial 7: Material Requirements Planning
10	Operations Paradigm II: Theory of Constraints (TOC) (*Reference Text*: Chapter 22S) ***Group Project Report Due**: Wednesday of this Week*	Tutorial 8: Operations Scheduling
11	Strategic Operations (Chapter 2)	Tutorial 9: Group Project Presentation
12	Supply Chain Management (SCM) (Chapter 15)	Tutorial 10: Group Project Presentation
13	Slack	Tutorial 11: Lean/JIT, TOC, Strategic Operations & SCM

Note: Tutorial sheets containing questions for discussion and problems for practice will be made available for each tutorial (except for Tutorials 9 & 10). Students are expected to come to lectures and tutorials prepared for the topic of the week by working on the Readings indicated above and the Tutorial sheet for the week.