

Course Outline

Course Code : DOS4716
Course Title : Managing Manufacturing Operations and Beyond
Class Date : From 11/8/2025 To 14/11/2025
Semester : Semester 1, Academic Year 2025/2026
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Overview

This advanced course equips students with the skills to excel in managing manufacturing-centric operations. Focusing on the entire product lifecycle, students will learn to optimize quality, control costs, and foster cross-functional collaboration. Through strategic tools like value stream mapping, Lean Manufacturing, and Six Sigma, participants will explore both traditional and innovative operational strategies. Case studies from leading companies such as Tesla, TSMC, and Amazon provide real-world context. Hands-on sessions with advanced analytical tools prepare students to assess and enhance efficiency across production stages, making them ready to tackle the complexities of modern manufacturing industries.

Course Objectives

By the end of this course, students will have acquired the essential knowledge and abilities to:

Understand Modern Operations Management for Manufacturing Centric Companies

- Gain a comprehensive grasp of operations management's core components, including the entire product development cycle for companies relying on manufacturing as their competitive advantage.
- Understand the influence of these components on quality, cost, organizational behavior, and interdepartmental collaboration in diverse industries.

Apply Strategic Deployment in Business

- Learn to construct and map an end-to-end value stream, from product design to customer quality management.
- Comprehend the connections between each segment of the value stream and their distinct challenges and opportunities

Explore and Exploit Operational Value Streams

- Distinguish between traditional and progressive value streams, understanding their respective challenges and benefits.
- Develop innovative strategies for analyzing and suggesting improvements to operational value streams.

Leverage on Analytical Tools

- Acquire skills in employing a range of analytical tools at various stages of the value stream and across different sectors, like product development and customer engagement.

Consolidate and Apply Learning

- Integrate knowledge and skills in operations management and analytics to drive performance, quality improvement, and cost reduction.
- Learn to implement analytics effectively in real-world business contexts, optimizing outcomes in various operational areas.

Assessment

Assessment Components	Weightage
Class Participation	10%
2 Individual Homework	30%
Group Project	30%
In-Class Individual Project	30%

Schedule and Outline

Lesson/ Week	Date	Session (lesson summary or outline / learning objectives / preparation / cases & assignments / follow-up readings & resources)
1	15 Aug	Introduction To Modern Operations Management In Manufacturing Centric Companies
2	22 Aug	Building Blocks: Product Development Strategy
3	29 Aug	Building Blocks: Process Design Strategy Trade-off and Applications
4	5 Sep	Building Block: Product Cost and Cost Reduction Strategy
5	12 Sep	Building Block: Quality Management
6	19 Sep	Building Block: Supply Chain Strategy and Management
R		Recess Week
7	3 Oct	A crash course in Analytics part 1
8	10 Oct	A crash course in Analytics part 2
9	17 Oct	Building Block: Digital Transformation
10	24 Oct	Building Block: Capacity Planning and Management
11	31 Oct	Building Block: Demand Forecasting
12	7 Nov	Building Block: Improvement Strategy
13	14 Nov	In-Class Project

General Guide & Reading (e.g. Case preparation guide, project report guide, main textbook & supplementary materials, etc)

Lecture notes

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>

