



Operational Excellence and Production Strategies 2026-2027

Credits: 3

Code: 62002A-00025

Language of Instruction: English

Faculty

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Learning Outcomes

LO1	<i>program specific</i>	The Master in GSCM develops and critically evaluates end-to-end supply chain strategies that align with organizational goals and respond to dynamic market conditions.
	<i>course specific</i>	Evaluate and align production strategies (e.g., Make-to-Order vs. Make-to-Stock, Lean manufacturing, and flexible manufacturing systems) with broader corporate goals and dynamic market demands.
LO2	<i>program specific</i>	The Master in GSCM uses quantitative methods, simulation tools, and optimization models to solve complex supply chain problems and support data-driven decision-making.
	<i>course specific</i>	Apply quantitative tools and operations research methods (e.g., Little's Law, capacity planning models, bottleneck analysis, ...) to optimize throughput and operational efficiency.
LO3	<i>program specific</i>	The Master in GSCM assesses regulatory frameworks, risk management practices, geopolitical challenges and governance structures, and formulates responsible and compliant supply chain policies.
	<i>course specific</i>	Design resilient, compliant, and sustainable production operations that mitigate operational risks, address regulatory standards, and minimize environmental impact.

LO4	<i>program specific</i>	The Master in GSCM assesses the impact of emerging technologies, data analytics, automation and AI-enabled tools on supply chain performance and leads digital transformation initiatives.
	<i>course specific</i>	Assess the integration of new technology, smart factory automation, advanced analytics, and AI-driven methods into operations and production decisions.
LO6	<i>program specific</i>	The Master in GSCM initiates and guides organizational change, innovation, and continuous improvement within supply chain functions and cross-functional teams.
	<i>course specific</i>	Apply continuous improvement frameworks to lead organizational change and process optimization across operations teams.

Course Content

This course provides a strategic overview of operational excellence and production strategies, highlighting their pivotal role in driving modern global supply chain performance. Students evaluate how core operational models align with overarching corporate goals and adapt to volatile market conditions.

The curriculum explores fundamental process design principles, bottleneck management, and throughput optimization to enhance efficiency across complex production networks. Emphasizing continuous improvement, the course examines key frameworks to streamline operations and foster organizational agility.

A central pillar of the course is the digital transformation of manufacturing, focusing on how technologies reshape operational execution. Students explore the integration of artificial intelligence, machine learning, and advanced analytics in driving data-driven decision-making and operational planning. The deployment of smart factory architectures, Industrial IoT, and AI-enabled tools is analyzed to demonstrate how real-time insights optimize production execution.

Furthermore, the course addresses the role of Digital Twins and simulation models in testing, predicting, and optimizing complex operational workflows prior to physical execution. Beyond digital tools, students evaluate flexible and scalable production architectures that support rapid market response and operational resilience.

Prerequisites

No formal prerequisites, but prior exposure to basic operations management and general comfort with Excel-based quantitative analysis are recommended to fully engage with the course material.

Method of Instruction

The course utilizes an interactive learning environment blending theoretical concepts with practical application:

- **Interactive Lectures & Discussions:** Foundations of operational frameworks and strategic decisions.
- **Case Study Method:** In-depth analysis of real-world manufacturing and service operational challenges.
- **Quantitative Problem-Solving & Simulations:** Hands-on exercises applying process control tools, capacity models, and optimization tools.
- **Group Work:** Applied project work focusing on real-world process analysis and operational redesign.

Assessment Method & Criteria

This course uses a continuous assessment model where all evaluation components are completed during class hours (or directly tied to in-class sessions).

Assessment Component	Weight	Type	Description
Individual Quizzes & Micro-Assignments	35%	Individual	Short, interactive quizzes and brief practical exercises completed during class sessions to test understanding of core concepts, quantitative frameworks, and case readings.
Group Case Studies & Project	45%	Group	A practical group project developed and presented during designated workshop sessions, focusing on analyzing a production/operational challenge.
Class Participation & Attendance	20%	Individual	Active engagement in case discussions, in-class simulations, group debates, and regular punctuality/attendance.

Study Materials

- Hopp, W. J., & Spearman, M. L. (2011). *Factory physics* (3rd ed.). Waveland Press.
- Goldratt, E. M., & Cox, J. (1984). *The Goal: A process of ongoing improvement*. North River Press.