ACADEMIC YEAR: 2025/2026	OPERATIONS AND MANAGEMENT SYSTEMS		
	SUBJECT CODE: 16637	SEMESTER: ANNUAL	TYPE: SPECIALISMS
CREDITS	4 ECTS		
STUDENT WORKLOAD	Contact Hours	Personal and/or Teamwork	Evaluation
	40	68	2
TEACHING LANGUAGE	English		
CO/PREREQUISITE	None		
SPECIALISM	INTERNATIONAL MANAGEMENT		
MODE OF DELIVERY	In-person		
FACULTY	KNOPPEN, Desirée LUZZINI, Davide PEÑA, Marco		

COURSE DESCRIPTION

This module examines the critical roles of operations and supply chain functions in delivering value and shaping customer experiences. It emphasizes the strategic and tactical dimensions of process execution, incorporates sustainability metrics, and demonstrates how AI-driven tools enhance managerial analysis and decision-making.

1. Operations Management

This section explores how operations processes—and the personnel who execute them—drive cost efficiency, product and service quality, and organizational flexibility.

- Process and People Integration
  • Analyze how frontline staff influence service quality and brand image.
  • Assess human-resource allocation across manufacturing and service delivery.

- Cost–Quality–Flexibility Trade-Offs
  • Identify the key factors shaping operational performance from day-to-day execution to long-term strategy.
  • Apply AI-powered process-mining and predictive maintenance to optimize throughput and minimize downtime.

- Sustainability in Operations
  • Integrate environmental and social performance indicators (e.g., energy use, waste reduction) into process design.
  • Leverage AI analytics to monitor resource consumption in real time and drive continuous improvement.

2. Supply Chain Management

This section develops a critical understanding of supply chain drivers, their integration with corporate strategy, and the implications of global networks for sustainable development.

- Performance Drivers and Functional Alignment
  • Examine how purchasing, manufacturing footprint, and distribution choices relate to marketing and product-development objectives.
  • Evaluate trade-offs among cost, service levels, and environmental impact.

- Flow Design and Evaluation Frameworks
  • Apply upstream (supplier), intrafirm, and downstream (distribution) frameworks to optimize material and information flows.
  • Use AI-enabled digital twins and advanced forecasting models to simulate network scenarios and enhance resilience.

- Global Context and Sustainability
  • Assess the effects of international regulations, geopolitical risk, and circular-economy principles on supply-chain design.
  • Incorporate lifecycle assessments and carbon-tracking tools to ensure responsible sourcing and logistics.

Upon completion, participants will be equipped to design and manage efficient, sustainable operations and supply chains, supported by AI-driven insights for superior strategic and operational decision-making.

LEARNING OUTCOMES	KNOWLEDGE	RAK1	Identify the latest management theories and their applicability to a global business environment, taking into account culture, technology, and the environmental setting.
		RAK5	Understand fundamental accounting and financial management concepts and techniques and their relationship to the financial viability and sustainability of the organization.
		RAK 7	Explain business decisions and practices and their economic, social, and environmental impacts, along with their ethical dimensions.
	SKILLS	RAS2	Apply data-driven analysis to improve performance metrics, taking into account organizational and sustainability objectives.
		RAS5	Implement team engagement strategies, taking into account gender differences and diversity criteria.
		RAS7	Incorporate cutting-edge technological solutions in their relevant areas of practice, taking into account relevant ethical considerations.
	COMPETENCES	RAC3	Develop advanced leadership skills to manage teams inclusively and effectively in a technological environment, focusing on innovation.
		RAC6	Promote responsible practices that foster regenerative growth and an ethical culture to generate a lasting positive impact.

SDGS ADDRESSED	☒ SDG 1 – No Poverty ☒ SDG 2 – Zero Hunger ☐ SDG 3 – Good Health and Well Being ☐ SDG 4 – Quality education ☒ SDG 5 – Gender equality ☐ SDG 6 – Clean water and sanitation ☐ SDG 7 – Affordable and clean energy ☒ SDG 8 – Decent work and economic growth ☒ SDG 9 – Industry, Innovation, Technology and Infrastructure	☐ SDG 10 – Reduced inequality ☐ SDG 11 – Sustainable cities and communities ☒ SDG 12 – Responsible consumption and production ☒ SDG 13 – Climate action ☐ SDG 14 – Life below water ☐ SDG 15 – Life on land ☒ SDG 16 – Peace, justice and strong institutions ☐ SDG 17 – Partnerships for the goals

TEACHING METHODS	☑ AF01-Lectures ☐ AF02-Videos or videoconferences ☐ AF03-Discussion groups or forums ☐ AF04-Multimedia production ☑ AF05-Reading texts and preparing reports. ☐ AF06-Analysis of data or processes ☐ AF07-Search for bibliographic information ☐ AF08-External visits ☐ AF09-Internships at centers or companies ☑ AF10-Applied activities or exercises ☐ AF11-Elaboration of glossaries or wikis ☐ AF12-Roleplay and simulations ☐ AF13-Workshops or seminars	☐ AF14-Practical or laboratory activities ☑ AF15- Personal study of contents ☐ AF16- Development and synthesis ☐ AF17- Intervention, research or interviews ☑ AF18- Practical analysis of cases ☐ AF19- Online interactive activities ☑ AF20- Oral presentations ☑ AF21- Exams or tests ☐ AF22- Correction of exercises and follow-up ☐ AF23- Portfolios or reflective diaries ☐ AF24-Tutorials ☐ AF25-Others

STUDENT ASSESSMENT	SE01 - Class Participation SE02 - Continuous monitoring of work SE04 - Written Examination SE05 - Projects & activities	(10% min - 40% max) 0% (10% min - 60% max) (10% min –40% max)
GRADING SYSTEM	Please refer to the Academic Regulations for the grading system used in the Programme and further details and for information concerning absences, participation in class, plagiarism, etc.	

16637 SUBJECT RUBRIC

ACADEMIC YEAR: 2025/2026

ILO Code	ILO Description	Weight %	Exemplary (100%-85%)	Proficient (84%-65%)	Developing (65%-50%)	Beginning (<50%)
RAK1	Identify the latest management theories and their applicability to a global business environment	7%	Identifies ≥3 operations or SCM theories; compares across global contexts with tech and sustainability relevance	Explains 2 theories with basic global relevance	Mentions 1 theory; limited contextual insight	No clear theory or context
RAK5	Understand fundamental accounting and financial management concepts and techniques and their relationship to the financial viability and sustainability of the organization.	10%	Links operational and supply chain decisions (e.g., sourcing, throughput, inventory) to financial viability and sustainability using metrics	Describes basic financial implications with general sustainability mention	Mentions financial viability or sustainability without integration	No clear financial or sustainability connection
RAK7	Explain business decisions and practices and their economic	10%	Evaluates operations and SCM decisions with economic, social, environmental, and ethical lenses using real cases	Describes impacts and ethics with general examples	Mentions some impacts; lacks ethical depth	No meaningful impact or ethics analysis
RAS2	Apply data-driven analysis to improve performance metrics	20%	Uses AI tools (process mining, forecasting, digital twins) to optimize performance and guide sustainable operations	Applies standard analysis tools with some AI or sustainability integration	Performs basic analysis; limited AI or sustainability use	Incomplete or inaccurate analysis
RAS5	Implement team engagement strategies	5%	Designs inclusive collaboration strategies for operations and SCM teams with gender/diversity awareness	Applies basic engagement strategies with general diversity awareness	Lists tactics with minimal diversity consideration	No engagement or diversity strategy
RAS7	Incorporate cutting-edge technological solutions in their relevant areas of practice	10%	Integrates AI-enabled tools ethically in operations and SCM (e.g., predictive maintenance, carbon tracking) with clear rationale	Uses tech tools with basic ethical awareness	Mentions tech use; lacks ethical reflection	No tech or ethical consideration
RAC3	Develop advanced leadership skills to manage teams inclusively and effectively in a technological environment	13%	Leads operations or SCM teams using digital platforms and analytics; fosters innovation and inclusive culture	Demonstrates leadership with some tech and inclusion	Shows basic leadership; limited tech or innovation focus	No leadership or innovation evident
RAC6	Promote responsible practices that foster regenerative growth and an ethical culture to generate a lasting positive impact.	25%	Designs operational and supply chain frameworks that embed ethics, ecological performance, and long-term stakeholder value	Suggests responsible practices with general ethical framing	Identifies ethical concerns; lacks strategic depth	No responsible or ethical practice proposed