



UK

SYLLABUS 2026-2027

Sustainable Operations Management Simulation

MODULE SPECIFICATION

Module Code	2627_SCM_1_EN_014
Campus	Oxford
Department(s)	Supply Chain Management and Digital Management
Level / Semester	Undergraduate Year 2 (U2); Equivalent to FHEQ level 6 Semester 03
Language of Instruction	English
Teaching Method	☒ In-person (face-to-face) ☐ Distance learning (live online) ☐ e-Learning (asynchronous) ☐ Hybrid: _____
Pre-requisite(s)?	Sufficient knowledge of global business management
ECTS <i>Reminder: 1 ECTS = between 20 and 30hr- student workload</i>	4
Equivalent FHEQ credits	8
Study Hours	100 hours which comprise of 28 directed learning and 72 independent learning/assessment hours

MODULE DESCRIPTION

Module Aims	This module develops students' understanding of sustainable operations and supply chain management in the context of sustainable development. Students analyse sustainability across the product life cycle, from design and manufacturing through to distribution and end-of-life recovery. Students apply the Triple Bottom
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	Line and Life Cycle Assessment to evaluate sustainable processes and use relevant KPIs to inform operational and supply chain decisions.
Teaching Arrangement	The module will be composed of lectures, class discussions, and continuous assessments.
Learning Outcomes	By the end of this module, students should be able to: 1. Analyse the impact of contemporary sustainability megatrends on operations and supply chain systems, evaluating their implications for organisational competitiveness and resilience 2. Evaluate sustainable operations and supply chain challenges by integrating environmental, social, and economic perspectives into managerial decision-making 3. Apply appropriate operational and sustainability performance indicators (KPIs) to assess organisational performance and support evidence-based decision-making 4. Evaluate the relationships between Life Cycle Assessment, Circular Economy, and the Triple Bottom Line, and recommend sustainable operational improvements for products and supply chains
Competency Goals <i>(Knowledge, expertise and interpersonal skills)</i>	PGE_U_CG02 - Students will have the ability to develop innovative and sustainable strategies
Alignment with Programme Learning Goals	PGE_U_CGO2_LO02 - To design innovative and disruptive strategies to promote sustainable business development

SESSION TOPICS / MODULE SCHEDULE

(Please note, a session/sequence may be more than one scheduled class)

<u>Session 1: Introduction to Operations and Supply Chain Management</u> <i>Content:</i> ● Introduction to operations and supply chain management: ○ Definition and key concept ○ Transformation process ○ Value creation in supply chain ○ Traditional vs. sustainable operations ● Key elements of supply chain: ○ Procurement (sourcing strategies – global vs. local procurement, make or buy decisions, supplier selection) ○ Production/operations (strategies, capacity planning, production planning, sustainability integration) ○ Transportation and logistics (modes of transport, distribution networks, trade-offs with carbon emissions) ● Challenges of global supply chain and operations management: ○ Global disruptions
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Last reviewed: 23/09/2026

- Resources scarcity
- Fast fashion and overproduction troubles
- Scope 3 emission challenges
- Mega-trends in sustainability and supply chain management:
 - Climate change
 - Resource scarcity
 - Circular economy
 - Consumer activism and ESG investing
 - Digital traceability (blockchain, RFID)
- Sustainable development and corporate social responsibility:
 - UN's SDGs
 - Triple Bottom Line Goals and operational relevance
 - Paris Agreement EU Green Deal implications
- Class discussion:
 - Netflix is a Joke (2019) *The ugly truth of fast fashion | Patriot Act with Hasan Minhag*. [Online video]. Available at: <https://www.youtube.com/watch?v=xGF3ObOBbac>.

References:

- Belvedere, V. and Grando, A. (2017) *Sustainable operations and supply chain management*. Chichester, United Kingdom: John Wiley & Sons Ltd. (Chapter 1)
- Oren, L. (2025) 'Sustainable supply chains: Strategies for greener future', *Jigsaw Business Group*, 19 March. Available at: <https://jigsawbusinessgroup.com/sustainable-supply-chains-strategies-for-greener-future/>.

Session 2: Sustainable Operations and Supply Chain Management

Content:

- Supply chain management in manufacturing and services industries:
 - Product tangibility
 - Transformation process and value creation
 - Product/service system
- Operational strategy, competitive advantage, and decision-making:
 - Cost, quality, speed, flexibility, sustainability
 - Trade-offs vs. dynamic capabilities
 - Strategic alignment (corporate vs. operations strategy)
- Operations and supply chain performance, trade-offs, and control:
 - Operational KPIs (cost, lead time, operational excellence)
 - Sustainability KPIs (carbon intensity, water usage, waste ratio)
 - SWOT, PESTLE, Balanced Scorecard
 - Trade-offs: lean vs. resilience vs. Sustainability
- Sustainable operations – a reference framework:
 - Input-process-output sustainability mapping
 - Internal vs. external drivers
 - Integration across procurement-production-distribution
 - Risk and opportunity identification
- Quick simulation exercise:
 - SWOT analysis for sustainability transformation of Zara

References:

- Belvedere, V. and Grando, A. (2017) *Sustainable operations and supply chain management*. Chichester, United Kingdom: John Wiley & Sons Ltd. (Chapter 2)

Session 3: Sustainable Product Design and Life Cycle Management

Content:

- The environmental orientation path:
 - Reactive, preventative, and proactive approach
 - Innovation-driven environmental strategy
- New product design and development:
 - Eco-design principles
 - Modularity and durability
 - Sustainable material sourcing
- Life cycle and cradle-to-cradle approaches:
 - Life Cycle Assessment (LCA) stages
 - Cradle-to-grave vs. Cradle-to-cradle
 - Scope 1, 2, 3 emissions
 - Product carbon footprints
- Eco-efficiency and eco-effectiveness:
 - Doing less harm vs. creating positive impact
 - Decoupling growth from emissions
 - Regenerative design concepts
- EU policies on design and packaging:
 - Ecodesign directive
 - Packaging and packaging waste directive
 - Extended Producer Responsibility (EPR)

References:

- Belvedere, V. and Grando, A. (2017) *Sustainable operations and supply chain management*. Chichester, United Kingdom: John Wiley & Sons Ltd. (Chapter 3)
- Saro (2026) 'Life cycle assessment (LCA) - The ultimate guide for beginners', *Hedgehog*, 12 March. Available at: <https://www.hhc.earth/knowledge-base/guides/lca-life-cycle-assessment>.

Session 4: Sustainable Procurement and Supplier Management

Content:

- Role of procurement in delivering sustainable solutions:
 - Procurement as value creation
 - Sustainability risks in supplier selection
 - Supplier codes of conduct
- Implementing a sustainable procurement strategy:
 - Cost analysis
 - Risk mapping (social, environmental, geopolitical)
 - Supplier engagement programmes
 - Local vs. global sourcing trade-offs
- Identifying needs and defining specifications:
 - Functional vs. performance specifications
 - Sustainability criteria integration
- Sustainable supplier selection:

- Multi-criteria decision-making models
- ESG scorecards
- Audits and certifications
- Supplier development programme
- Continuous Assessment 1 (CC1) – Simulation:
 - Prompt: “The Olympics needs to decide on one beverage partner for its Olympic Games 2030. It is evaluating 3 potential suppliers using their sustainability and ESG performance. The final choice is made between PepsiCo, Coca-Cola, and Heineken. If you are a sustainability director, which company would you choose and why?”

References:

- Belvedere, V. and Grando, A. (2017) *Sustainable operations and supply chain management*. Chichester, United Kingdom: John Wiley & Sons Ltd. (Chapter 4)
- Bernoussi, K. (n.d.) ‘Outsourcing success in the post-pandemic era’, *World Finance*. Available at: <https://www.worldfinance.com/strategy/outsourcing-success-in-the-post-pandemic-era>.

Session 5: Lean and Sustainable Production Systems

Content:

- Lean management for sustainable production:
 - Lean philosophy and waste management
 - Lean-green integration
- Environmental and social “wastes”
 - Energy waste
 - Overproduction and landfill
 - Unsafe labour conditions as social waste
- Toyota production system:
 - Just in time
 - Jidoka
 - Kaizen
- Leveraging six-sigma and statistical process control for a sustainable production
 - DMAIC cycle
 - Process variation and resource efficiency
 - Data-driven sustainability improvement
- Class activity: role playing sustainable decision making
 - Conflict between CFO (cost focus) vs. Sustainability Manager (long-term decarbonisation investment)

References:

- Belvedere, V. and Grando, A. (2017) *Sustainable operations and supply chain management*. Chichester, United Kingdom: John Wiley & Sons Ltd. (Chapter 5)
- EU Green Deal

Session 6: Sustainable Logistics and Circular Supply Chains

Content:

- Sustainable transportation:
 - Modal shift strategies
 - Route optimisation
 - Electrification of fleets
 - Carbon emissions

- Warehousing and packaging
 - Energy-efficient warehouse
 - Smart packing
 - Biodegradable vs. recyclable trade-offs
 - EU packing regulations
- Reverse logistics and closed loop supply chain
 - Collection systems
 - Remanufacturing vs. recycling
 - Return forecasting
 - Cost implications
 - Circular economy models
 - Fast fashion transparency and challenges
- Class discussion:
 - McGregor, K. (2025) 'What's in store for fashion's supply chain in 2025?', *Vogue Business*, 6 January. Available at: <https://www.vogue.com/article/whats-in-store-for-fashions-supply-chain-in-2025>.

References:

- Belvedere, V. and Grando, A. (2017) *Sustainable operations and supply chain management*. Chichester, United Kingdom: John Wiley & Sons Ltd. (Chapters 6 & 7)
- Additional resources:
 - Netflix is a Joke (2020) *Ronny Chieng thinks Amazon Prime is too slow*. [Online video]. Available at: <https://www.youtube.com/watch?v=BGEAiUeiaKs>.
 - Fraser, E. and van der Ven, H. (2022) 'Increasing transparency in global supply chains: The case of the fast fashion industry', *Sustainability*, 14(18), pp. 1-24. doi:10.3390/su141811520.
 - EU Green Deal
 - EU Enlargement Plan

Session 7: Sustainable Change Management and Transformation

Content:

- Sustainable change management:
 - Drivers of resistance
 - Stakeholder mapping
 - Leadership for sustainability
 - Culture change
- From organisational to institutional change:
 - Isomorphic pressures
 - Industry-wide sustainability shifts
 - Regulatory compliance
- Future of sustainable change (digitalisation, AI tools):
 - Blockchain for traceability
 - AI demand forecasting to reduce waste
 - Digital twins for carbon simulation
- Sustainability matrices, frameworks, and standards:
 - ESG metrics
 - GRI, SASB, TCFD frameworks

- Quantifying intangible benefits
- Class discussion:
 - Whelan, T., Zappa, B., Zeidan, R. and Fishbein, G. (2017) 'How to quantify sustainability's impact on your bottom line', *Harvard Business Review*, 13 October. Available at: <https://hbr.org/2017/09/how-to-quantify-sustainabilitys-impact-on-your-bottom-line>.

References:

- Belvedere, V. and Grando, A. (2017) *Sustainable operations and supply chain management*. Chichester, United Kingdom: John Wiley & Sons Ltd. (Chapter 8)

Session 8: Continuous Assessment 2 (CC2) – Group Presentation

Content:

- Assessment brief:
 - Present an analysis and discussion on a company's sustainability report
 - Analyse the following:
 - Business model overview
 - Scope 1, 2, 3 emissions
 - Supplier sustainability practices
 - Circular economy initiatives
 - ESG KPIs
 - Alignment with UN SDGs
 - Gaps and greenwashing risks
 - Recommendations

Assignments:

- Revision of all reading materials since the first session

KEY TEXTS

1. Belvedere, V. and Grando, A. (2017) *Sustainable operations and supply chain management*. Chichester, United Kingdom: John Wiley & Sons Ltd.

SUPPLEMENTARY TEXTS

1. Oren, L. (2025) 'Sustainable supply chains: Strategies for greener future', *Jigsaw Business Group*, 19 March. Available at: <https://jigsawbusinessgroup.com/sustainable-supply-chains-strategies-for-greener-future/>.
2. Saro (2026) 'Life cycle assessment (LCA) - The ultimate guide for beginners', *Hedgehog*, 12 March. Available at: <https://www.hhc.earth/knowledge-base/guides/lca-life-cycle-assessment>.
3. Bernoussi, K. (n.d.) 'Outsourcing success in the post-pandemic era', *World Finance*. Available at: <https://www.worldfinance.com/strategy/outsourcing-success-in-the-post-pandemic-era>.
4. McGregor, K. (2025) 'What's in store for fashion's supply chain in 2025?', *Vogue Business*, 6 January. Available at: <https://www.vogue.com/article/whats-in-store-for-fashions-supply-chain-in-2025>.
5. Fraser, E. and van der Ven, H. (2022) 'Increasing transparency in global supply chains: The case

- of the fast fashion industry', *Sustainability*, 14(18), pp. 1-24. doi:10.3390/su141811520.
6. Whelan, T., Zappa, B., Zeidan, R. and Fishbein, G. (2017) 'How to quantify sustainability's impact on your bottom line', *Harvard Business Review*, 13 October. Available at: <https://hbr.org/2017/09/how-to-quantify-sustainabilitys-impact-on-your-bottom-line>.

MODES OF ASSESSMENT

Continuous Assessment (40%)	Individual assessment	20%
	Group presentation	20%
Final Exam (60%)	Closed-book written exam	

MODULE DESIGN TEAM

- Author: *Tahira Abdullah*
- Reviewer: *Constant Iannaci*
- External Reviewer: *Timothy O'Connor*