6.9 Module 9: Inventory and Operations Management

6.9.1 Headline information about the module

Module title	Inventory and Operations Management
Module NFQ level (only if an NFQ level can be demonstrated)	9
Module number/reference	MPSCM-IOM
Parent programme(s) the plural arises if there are embedded programmes to be validated.	MSc in Procurement and Supply Chain Management
Stage of parent programme	1
Semester (semester1/semester2 if applicable)	2 (elective)
Module credit units (FET/HET/ECTS)	ECTS
Module credit number of units	5
List the teaching and learning modes	Full time, part time
Entry requirements (statement of knowledge, skill and competence)	Learners must hold an honours degree of at least a H22 standard in business, management or related field or equivalent qualification from an approved tertiary or professional institution.
Pre-requisite module titles	Not applicable
Co-requisite module titles	Not applicable
Is this a capstone module? (Yes or No)	No
Specification of the qualifications (academic, pedagogical and professional/occupational) and experience required of staff (staff includes workplace personnel who are responsible for learners such as apprentices, trainees and learners in clinical placements)	Lecturing staff should hold a masters Level (Level 9) qualification, preferably with a third level teaching qualification (e.g. Certificate in Training and Education).
Maximum number of learners per centre (or instance of the module)	60
Duration of the module	12 weeks
Average (over the duration of the module) of the contact hours per week (see * below)	3
Module-specific physical resources and support required per centre (or instance of the module)	Normal lecture room with internet access and good-quality audio-visual equipment.

Analysis of required learning effort		
***Effort while in contact with staff**	**Minimum ratio teacher / learner**	**Hours**
Classroom and demonstrations	1:60	24
Monitoring and small-group teaching		12
Other		
Independent Learning		
Directed e-learning (hours)		
Independent Learning (hours)		89
Other hours (group project)		
Work-based learning hours of learning effort		
Total Effort (hours)		125

Allocation of marks (within the module)					
	Continuous assessment	**Supervised project**	**Proctored practical examination**	**Proctored written examination**	**Total**
Percentage contribution	50			50	100%

6.9.2 Module aims and objectives

The module develops learners' strategic and critical thinking and practical understanding of how operational structures, demand management and inventory management contribute to broader organisational efficiency and competitiveness. It connects in with learning in other modules, specifically in supply chain management, sustainable procurement and category management. The module is designed to build the competencies needed to work in a professional environment, together with developing soft skills (namely teamwork, oral and written communication and IT skills).

6.9.3 Minimum intended module learning outcomes

On successful completion of this module, learners are able to:

(i) appraise the business role of inventory management and the impact of inventory management on overall supply chain management
(ii) advise on inventory management best practices, alternative inventory arrangement including technological solutions and warehousing/storage management
(iii) formulate operational strategies for matching demand and supply
(iv) advise on alternative inventory arrangements, including outsourcing, and understand the impact of e-commerce on inventory management and customer expectations.

6.9.4 Rationale for inclusion of the module in the programme and its contribution to the overall MIPLOs

In a dynamic and competitive business environment, the competitiveness of a company and its ability to respond to its own production needs and its customer demands depends on robust and intelligent inventory management and efficient operational systems. This module provides practical and technical knowledge on how businesses should organise, store and distribute stock; how there are opportunities to seek a competitive and commercial advantage through effective inventory management; and how companies need to better understand operational risk. The module integrates knowledge and skills from across the programme to provide learners with opportunities to develop their professional skills including: oral communication skills; presentation skills; team-working skills; commercial awareness; and awareness of global and cultural issues in business.

6.9.5 Information provided to learners about the module

The Programme Handbook contains the module descriptor and assessment details. Extensive use of the VLE, Moodle, provides detailed notes and additional resources. In class, learners are provided with a PowerPoint pack and extensive reading list, incorporating professional and academic sources.

6.9.6 Module content, organisation and structure

The module covers key theories inventory and operations management, business strategy, supply and demand analysis, risk management and effective use of technology. Throughout the delivery, case studies of best international practices and group discussions will supplement a series of lectures and reading material to provide a comprehensive learning experience and ensuring strong alignment with other modules in the course.

Overview of current Inventory and Operations Management

- Inventory categories
- An analysis of key concepts
    - enterprise resource planning
    - just-in-time
    - supply chain
    - stock flow and management
    - planning and scheduling

Business Models and Growth Strategies

- Best practices in inventory management
- Inventory supporting company structure, production values and growth
- Lean manufacturing
- Outsourcing and joint ventures

Supply and Demand Analysis and Forecasting

- Understanding supply side economics and supply dynamics
- Supply chain value and risks
- Demand forecasting

Analytical Frameworks

- Selective inventory control – ABC analysis
- 6 SIGMA
- Lean SIGMA

Inventory Control Strategies

- Economic order quantity
- Minimum order quantity
- FIFO & LIFO
- Drop shipping

Systems and Technology

- Real time tracking and ordering
- Barcode data collection and cycle counting
- Lot tracking and traceability
- Cloud-based systems

Inventory control and audit

- Control and management reporting
- Audit and compliance

6.9.7 Module teaching and learning (including formative assessment) strategy

A range of delivery methods are adopted, including lectures, tutorials, case studies and in-class exercises using a range of professional and academic sources. These are designed to engage learners in the module content, and associated competencies that the programme team wishes learners to develop over the course of the module. Learners' guided independent reading and research is supported by use of Moodle to prepare learners for their classes in addition to developing autonomous self-directed learners.

6.9.8 Work-based learning and practice-placement

There is no work-based learning on practice-placement within this module.

6.9.9 E-learning

E-learning supports are provided via the college's online learning environment, Moodle, including extensive library resources.

6.9.10 Module physical resource requirements

Normal lecture room with internet access and good-quality audio-visual equipment. All learners have access to an extensive range of "actual" and "remote access" library resources. The library monitors and updates its resources on an ongoing basis, in line with the college's Library Acquisition Policy. Lecturers update reading lists for this programme on an annual basis.

6.9.11 Reading lists and other information resources

Learners can draw on reading lists from their other modules in addition to the resources below.

Primary Reading

Muller, Max (2019) Essentials of Inventory Management. New York: Harper Collins Leadership.

Secondary Reading

Frazelle, E. (2015) Inventory Strategy: Maximizing Financial, Service and Operations Performance with Inventory Strategy. New York: McGraw-Hill Education

Kok, T. de. (2018) Inventory Management: Modeling Real-Life Supply Chains and Empirical Validity. Boston: Now Publishers Inc

Muller, M. (2019) Essentials of Inventory Management. 3 edition. New York: HarperCollins Leadership

Richards, G. (2017) Warehouse Management: A Complete Guide to Improving Efficiency and Minimizing Costs in the Modern Warehouse. 3 edition. New York: Kogan Page.

6.9.12 Specifications for module staffing requirements

Lecturing staff should hold a masters level (Level 9) qualification, preferably with a third level teaching qualification (e.g. Certificate in Training and Education).

6.9.13 Module summative assessment strategy

This module is delivered through a series of formal and participative lectures, class discussions and case study research and assessment. Participants will debate and critique key management theories and international best practices. There will also be a particular focus on businesses in transition and responding to market and technological innovation.

There will be a group research project, which will be presented in class as a group band written up as a formal research paper on an individual basis. Final summative assessment consists of an end of semester, closed-book exam. The assessed work breakdown is presented in the table below:

No	Description	MIMLOs	Weighting
1	Case study research group and written assignment	(i), (iii)	50%
2	Exam	(ii), (iv)	50%

6.9.14 Sample assessment materials

Please see Sample Assessment Handbook.