

•MLO1. Apply knowledge and understanding of scientific principles and methodology related to solving well-defi

Northumbria University Programme Framework for Northumbria Awards - Module Specification

Faculty	Engineering and Environment	Department	BEng (Hons) Mechanical Engineering (Manufacturing Systems and Design)		Subject		Module Tutor	Jipyo Kim		
Module Title	Operations Management						Module Code	MSDE 431		
Module Type* (see key below)	Choose an item.									
Module size credits	Level 3:		Level 4:		Level 5:		Level 6:	10	Level 7:	
Home programme/s for which the module is designed			BEng (Hons) Mechanical Engineering (Manufacturing Systems and Design)				Code/s			
Additional Programme/s other than that/those for which the module for specifically designed							Code/s			
Delivery Pattern (Please tick)		Semester based (please specify)	Sem 1 <input checked="" type="checkbox"/> Sem 2 <input type="checkbox"/>		Year Long	<input type="checkbox"/>	Full-time Part-time Distance Learning		<input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	
Location(s) of delivery: If delivered at EPWO partners please give partner name and location										

***KEY:**

APL	Accreditation for prior learning	P/F	Pass/fail module	PLIN	Placement - Industrial
CORE	PNVQ core skills module	P/F_DS	Pass/fail dissertation module	PRAC	Practical
DISS	Dissertation	P/F_PJ	Pass/fail project module	PROJ	Project
FLDW	Fieldwork	P/F_PL	Pass/fail placement module	STAN	Standard module
INDS	Independent study	PLAY	Placement – academic study abroad FT	WKBS	Work base study
MAFOUN	MA foundation modules - ASS	PLCL	Placement – Clinical	WORK	Workshop

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Module Overview (Max 250 words per section) (This section is aimed at providing a prospective or current student with a brief overview of the module in answer to the specific questions and will form an element of the module handbook)

What will I learn on this module? (SRS 0001) Please give a brief indication of the content of the module including the main topic / subject areas studied	
This module addresses various production management concepts, skills, and their applications, aiming to provide students with a broad introduction to the field of operations in a realistic, practical manner. The module will cover the following subjects: an overview of operations management, the global environment and operations strategy, managing the supply chain and supply chain modelling, managing projects, forecasting demand, product design, managing inventory, aggregate scheduling, MRP, and short-term scheduling	
How will I learn on this module? (SRS 0002) Please provide a brief overview the learning and teaching approaches the student can expect to experience.	
This module will be delivered through regular lectures, and during these lectures, students will learn a blend of topics from industrial engineering, management, management science, and statistics. Active learning sessions will be used to present you with new material and assist you in exploring fundamental concepts and topics within the module. Sessions will involve a combination of content delivery and active discussions to enable you to apply your learning to well-defined, authentic management problems. Learning activities will enable students to work collaboratively through the development of teamwork and communication skills, and the encouragement of creative thinking to solve problems issued from management processes.	
How will I be supported academically on this module? (SRS 0003) Please provide a brief overview of the academic support available to students, including any support that may be accessed outside formal scheduled teaching.	
During your active learning sessions, academic support will be available to facilitate your exploration of the problem-solving activities. Formative feedback will be provided by the module team, including answering student queries and providing guidance concerning the module such as assessments and your academic progress. The electronic learning platform (e-class) provides a comprehensive resource for integrated learning incorporating learning materials and reading lists that will facilitate directed and self-directed learning. Contact with academic tutors and your peers outside formal teaching hours is encouraged through dedicated 'office hours', discussion boards, and messaging systems within the e-class.	
What will I be expected to read on this module? (SRS 0004) All modules at Seoul Tech include a range of reading materials that students are expected to engage with. The reading list for this module can be found from MSDE Module Descriptor – https://msde.seoultech.ac.kr/curriculum /syllabus /	
Northumbria University Library Reading List Service (please confirm the following)	Please give date added
A draft reading list has been created and on the university Library Reading List Service	Click here to enter a date.
Reading material has been acquired and digitised (following approval)	Click here to enter a date.
Reading list has been published to students (for module delivery)	Click here to enter a date.

NB – for PFNA alignment process only, module authors should complete either the University Library e-Reading List, or Appendix 1.

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Module Learning Outcomes (MLOs) *(Max of five in total*, for standard 20-credit modules)*

**this can increase to a maximum of 10, for modules with more than 20 credits*

<p><u>What will I be expected to achieve?</u> (SRS 0005)</p> <ul style="list-style-type: none"> • C2: Analyse complex problems to reach substantiated conclusions using first principles of mathematics, statistics, natural science and engineering principles • C9: Use a risk management process to identify, evaluate and mitigate risks (the effects of uncertainty) associated with a particular project or activity • C14: Discuss the role of quality management systems and continuous improvement in the context of complex problems 	<p><u>How will I be assessed?</u> (SRS 0006) <i>Please give details of all formative and summative assessment process indicating which MLOs will be addressed and how feedback will be provided.</i></p> <p>Formative Assessment Academic staff on the module will assess you in a formative manner to help build your confidence and highlight any misunderstandings you may have of the theoretical and professional concepts presented in the module. Your formative feedback will be given to you verbally by academic staff on the module during formally scheduled teaching sessions. Your formative feedback aims to help you learn and prepare for the submission of your summative assessment.</p> <p>Summative Assessment Academic staff on the module will assess you in a summative manner by three pieces of assessment:</p> <p>Component 1. Three quizzes are to assess your knowledge and understanding of the materials covered in previous classes (C2).</p> <p>Component 2, Final exam is to assess your knowledge and understanding the management of manufacturing systems including discussions (C2, C9, C14).</p>	<p><u>Programme (Level) Learning Outcomes that this module contributes to:</u> <i>[Please insert PLO number as listed on the programme specification]</i></p> <p>Knowledge & Understanding:</p> <ul style="list-style-type: none"> • KU1: Evaluate and apply complex knowledge of the scientific and mathematical principles of engineering to solve Real-World problems. • KU3. Introduce and utilise complex methodologies to create solutions to a variety of Real-World engineering problems. • KU4. Define and investigate complex problems and constraints that occur in engineering design with the aid of advanced tools. <p>Intellectual / Professional skills & abilities:</p> <ul style="list-style-type: none"> • IPSA2. Professionally communicate a broad range of engineering concepts to expert and non-expert audiences using a variety of advanced formats and media. • IPSA3. Derive solutions to complex social and economic, sustainability and environmental issues in the operations management sector <p>Personal Values Attributes (Global / Cultural awareness, Ethics, Curiosity) (PVA):</p>
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		<ul style="list-style-type: none"> • PVA1. Describe, with justification, solutions to benefit society by applying structured management practise with a deep awareness of ethical considerations. • PVA2. Critically analyse advanced solutions to complex management problems. • PVA3. Reflect upon interpersonal and learning skills and explain their use in various situations.
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Pre-requisite(s) (SRS 0007) Any module which must already have been taken, or any stipulated level of prior knowledge required in order to study this module, (co-requisite core models need not be listed)	Statistics or equivalent engineering math course
Co-requisite(s) (SRS 0008) Modules at this level which must be taken with this module	N/A

Module abstract (SRS 0009)

Please provide a brief a brief abstract of the module (150 words max). This section acts as the 'shop window' for the module, therefore it needs to engage and inspire the student. This is the first thing that the student will read about this module, so it must immediately grab their attention. The main aim is to encourage the student to read on, however the summary should be written in such a way that if the student reads nothing else this section will convey all key messages and benefits that the module will offer. Start by explaining the module title where necessary. Then highlight any selling points relating to the four pillars: Research-Rich Learning; Technology Enhanced Learning; Assessment and Feedback; Employability and Entrepreneurship. Examples may include student satisfaction rates, learning environment, state-of-the-art facilities etc. Finally indicate benefits of the module such as the key skills that the students will gain for future employment and career paths that are open to them.

In this module, students will learn the effective management of an organization's processes, resources, and systems to ensure the efficient production and delivery of products and services. The goal is to equip students with the knowledge and skills to optimize business operations, solve complex problems, and excel in a wide range of industries. Its real-world applicability, strategic importance, and potential for career growth make it an excellent choice for students, especially the senior students, looking to build a strong foundation for their future careers.

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Programme Framework for Northumbria Awards Research Rich Learning Design Pillar (SRS 0090)

Embedding Research Rich Learning into the curriculum: Indicate how students will be actively engaged in research rich learning in this module through: research/enquiry based learning, research tutored learning, research led learning and/or research oriented learning, providing a brief overview of how this / these will feature within the delivery of the module (250 words max)

Note:

- **Research/enquiry Based:** L&T_Based on student-centred enquiry and research activities (conducting research).
- **Research Tutored:** L&T Emphasises learning focused on students actively discussing research, and critically engaging with research outputs
- **Research Led:** T&L structured around subject content and that content is based on the research (learning about research)
- **Research Orientated:** T&L Emphasises understanding of the knowledge production process, and methods of enquiry in the subject (learning how to research)

You will be given the opportunity to build and practice critical enquiry and further to develop your understanding of key knowledge and methodologies. Greater scope for investigation is encouraged through more broadly defined problems that seek to increase your responsibility and enhance the independent investigation. This module will further introduce you to research methodologies and the application of knowledge in management of manufacturing systems. The module will emphasise theoretical, computational, and practical analyses and how they interact and differ to provide insight and solutions to key research questions. The underlying approach is focused on research tutored learning with the incorporation of some research-orientated learning.

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Notional Student Workload (NSW) for each mode of delivery

Complete for each delivery mode where the distribution of NSW Full Time Mode of Delivery				Part Time Mode of Delivery			
Activity type	Hours	KIS category	KIS category hours		Hours	KIS category	KIS category hours
Lecture	50	Scheduled	70	Lecture		Scheduled	
Seminar				Seminar			
Tutorial	20			Tutorial			
Project Supervision				Project Supervision			
Demonstration				Demonstration			
Practical classes and workshops				Practical classes and workshops			
Supervised time in studio/ workshop				Supervised time in studio/ workshop			
Fieldwork				Fieldwork			
External visits				External visits			
Tutor guided independent learning		Independent	30	Tutor guided independent learning		Independent	
Student independent learning	30			Student independent learning			
Placement		Placement		Placement		Placement	
Study abroad				Study abroad			
Work based learning				Work based learning			
Total workload 200 hours for 20 credit module	100		100	Total workload			

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Summative Assessment

Sequence 001, 002 etc.	Activity type <i>indicate ONE of the following types:</i>	Brief description of assessment (max.120 characters) <i>e.g. type/ length of exam, type/ word limit of coursework</i>	Weighting % or Pass/Fail (for grade only components) <i>Note: % weightings should add up to 100% for module overall</i>	Final assessment		Anonymous submission		ESAF submission	
				Yes	No	Yes	No	Yes	No
001	EXAM (Written examination)	Final Exam (120 min)	70%	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
002	EXAM (Written examination)	Quiz (20 min) x 3	30%	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
003	PRE (Presentation)			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
004	Choose an item.			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
005	Choose an item.			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
006	Choose an item.			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
007	Choose an item.			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
008	Choose an item.			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
009	Choose an item.			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
010	Choose an item.			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
011	Choose an item.			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
012	Choose an item.			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Reassessment (specify either synoptic or non-synoptic)

Synoptic reassessment <i>One form of reassessment that tests all module learning outcomes</i>	Yes	<input checked="" type="checkbox"/>	No	<input type="checkbox"/>
Non-synoptic reassessment <i>Where module referred overall, individual failed components of assessment are reassessed</i>	Yes	<input type="checkbox"/>	No	<input checked="" type="checkbox"/>

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Date of FPARSC Approval

[Click here to enter a date.](#)

Date of entry onto SITS

[Click here to enter a date.](#)

LOG OF CHANGES POST-APPROVAL

Please indicate any changes to the approved module descriptor from 2012/13 onwards

Section No.	Brief description of change	Date of Approval	Semester and year of first implementation
		Click here to enter a date.	
		Click here to enter a date.	
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Appendix 1

Indicative Reading for PFNA alignment approval only *(to be completed only if e-reading list unavailable at point of alignment approval)*

N.B. This outline indicative reading list will be utilised for approval purposes only, and **a full e-reading list must be produced and available by the June of the academic year prior to the first delivery date of the module** (at which point the section of p.2 referring to University Library Reading Lists should be completed).

Please list below essential key text underpinning the module content and ultimately the learning outcomes:

- 1) Shigley's Mechanical Engineering Design, Richard G. Budynas and J. Keith Nisbett, 11th Edition, 2021
- 2) Machine Design An Integrated Approach, Robert Norton, Prentice Hall, 2008