

Module specification

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Module Code	ENG5D9
Module Title	Engineering & Operations Management
Level	5
Credit value	20
Faculty	FACE
HECoS Code	100184
Cost Code	GAME
Pre-requisite module	N/A

Programmes in which module to be offered

Programme title	Core/Optional/Standalone
FdEng Industrial Engineering (Mechanical) FdEng Industrial Engineering (Electrical) BEng (Hons) Mechanical Engineering with Manufacture BEng (Hons) Electrical Engineering with Manufacture	Core

Breakdown of module hours

Learning and teaching hours	36 hrs
Placement tutor support hours	0 hrs
Supervised learning hours e.g. practical classes, workshops	0 hrs
Project supervision hours	0 hrs
Active learning and teaching hours total	36 hrs
Placement hours	0 hrs
Guided independent study hours	164 hrs
Module duration (Total hours)	200 hrs

Module aims

This module extends prior learning by exploring more complex principles and their interrelationships through structured teaching and guided analysis. Students develop independent judgement, critical thinking, and the ability to evaluate alternative approaches. Emphasis is placed on integrating knowledge across areas to support the design and implementation of practical solutions.

This module aims to situate engineering management techniques and processes within an industrial context, highlighting the essential roles of ethical practice, equality, diversity and inclusion (EDI), and quality management as integral components of effective engineering management.

Module Learning Outcomes

At the end of this module, students will be able to:

1	Implement ethical decision making within the content of engineering management (AHEP-4 F8, F11, F16)
2	Show a working understanding of engineering costing in areas such as CapEx, OpEx or inventory management techniques within the student's field of industry
3	Demonstrate a systematic understanding of quality management processes utilising statistical methods to measure quantitative data (AHEP-4 F14)

Assessment

Indicative Assessment Tasks:

This section outlines the type of assessment task the student will be expected to complete as part of the module. More details will be made available in the relevant academic year module handbook.

Assessment 1: Portfolio

The portfolio provides evidence of students' achievement of the module learning outcomes through a series of individual tasks aligned to a common theme relevant to the student's industry context.

Ethical considerations and Equality, Diversity and Inclusion (EDI) are investigated within the context of planning and scheduling in a group environment. Quality management is demonstrated through a case study related to the student's chosen industry sector.

Assessment number	Learning Outcomes to be met	Type of assessment	Duration/Word Count	Weighting (%)	Alternative assessment, if applicable
1	1-3	Portfolio	3000	100	N/A

Derogations

Credits shall be awarded by an Assessment Board for those modules in which a pass mark 40% has been achieved, with a minimum mark of 30% in each assessment element.

Learning and Teaching Strategies

Learning and teaching extends theoretical knowledge and analytical capability through structured sessions and guided enquiry. Students engage with case studies and problem-based tasks that connect concepts to professional contexts. Online resources within the Active Learning Framework support flexibility and independent study, while tutorials develop evaluative thinking and academic confidence.

Welsh Elements

This module will be delivered through the medium of English; however, students have the option to submit their assessments in the medium of Welsh. While this module is not currently offered fully through Welsh, Welsh language support and guidance are available, and some learning materials or tutorial discussions may incorporate Welsh elements where appropriate. To further promote bilingual learning, all students have the opportunity to take the 20-credit *Welsh for STEM* short course, designed to develop confidence and subject-specific language skills in both English and Welsh.

Indicative Syllabus Outline

Engineering Ethics and Equality, Diversity and Inclusion (EDI): Exploration of ethical principles and EDI considerations within engineering management, focusing on responsible decision-making, inclusive practice, and professional conduct in industrial and organisational contexts.

Organisational Structures and Management Context: Examination of organisational structures and management frameworks to understand how ethical responsibilities and decision-making are embedded within engineering organisations.

Engineering Costing: CapEx and OpEx: Introduction to capital and operational expenditure (CapEx and OpEx), including methods for estimating, analysing, and justifying engineering investments using appropriate costing and statistical analysis techniques.

Inventory Management Techniques: Application of inventory management approaches, including Just-In-Time (JIT) principles, to support efficient resource utilisation and cost control within industrial environments.

Quality Management Systems and Standards: Study of quality management approaches, including Total Quality Management (TQM), Failure Modes and Effects Analysis (FMEA), and relevant international quality standards.

Statistical Quality Control and Analysis: Use of statistical methods to measure, analyse, and interpret quantitative quality data, supporting evidence-based evaluation and continuous improvement in engineering management processes.

Indicative Bibliography

Please note the essential reads and other indicative reading are subject to annual review and update.

Essential Reads:

N.Slack and R. Johnston, *Operations Management*, 9th ed. Harlow, UK: Pearson, 2019

Other indicative reading:

Plus, various others to be signposted on Moodle.

Administrative Information

For office use only	
Initial approval date	June 2026
With effect from date	September 2026
Date and details of revision	
Version number	1