

Module specification

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Module Code	ENG430
Module Title	Engineering Design
Level	4
Credit value	10
Faculty	FAST
HECoS Code	100182
Cost Code	GAME
Pre-requisite module	L3 Engineering Design (or similar)

Programmes in which module to be offered

Programme title	Core/Optional/Standalone
HNC Electrical & Electronic Technology	Core
HNC Mechanical Technology	Core

Breakdown of module hours

Learning and teaching hours	30 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	30 hrs
Placement hours	0 hrs
Guided independent study hours	70 hrs
Module duration (Total hours)	100 hrs

Module aims

To equip students with the design skills and knowledge required to undertake an industrial project.

Module Learning Outcomes

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

1	Interpret a design brief and produce a design specification through researching and synthesising alternatives.
2	Analyse the range of solutions identified in outcome 1 and decide a suitable solution.

Assessment

Indicative Assessment Tasks:

Assessment is 100% in-course. 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: Working in groups, students will work on a 'real' industrial problem producing individual reports on their findings.

Assessment number	Learning Outcomes to be met	Type of assessment	Duration/Word Count	Weighting (%)	Alternative assessment, if applicable
1	1,2	Group Project	2000 words	100%	

Derogations

None

Learning and Teaching Strategies

Students will be guided through the design specification by means of keynote lectures and case studies. Brainstorming will be used in teams to develop design skills and reportage. Students will also become familiar with the current software packages that they can apply in the design process.

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.

Indicative Syllabus Outline

Meaning of Design: Phases of design, Evaluation, Design considerations, Codes and standards. Ethical considerations.

Customer Requirements: Define the task to be carried out, develop a specification.

Cost Effective Design: Reliability. Economics of the design. Apply static and dynamic analysis.

Design Solutions: Team work: From a specific design brief (a 'real' industrial problem) work as part of a small team, analyse problem and using 1 and 2 propose various designs. Choose one cost effective design and produce a design study with full documentation.

Computer Simulation in Design: Understand how computers can aid the designer in the design process. Introduction to various simulation packages such as linkage simulations, optimisation design process etc.

Stages in the development of a project: relate the design process to the requirements and stages of a student's individual project - in preparation for level 3 main project.

Indicative Bibliography

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

Essential Reads:

Tool, M., Dingle, L. (2009) Higher National Engineering. Butterworth-Heinemann.

Bstrom, M. (2017) Practical Engineering Design. London, CRC Press.

Michael, F. (2012) Materials & Design. Oxford UK, Butterworth Heinemann.

Other indicative reading:

Swift, KG. (2003) Process Selection from Design to Manufacture. Oxford UK. Butterworth Heinemann.

Administrative Information

For office use only	
Initial approval date	August 2016
With effect from date	September 2021
Date and details of revision	6 July 2021, revalidated. 27/05/2026 Updated to new template during re-validation.
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