

Module specification

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Module Code	ENG776
Module Title	Group Design Project
Level	7
Credit value	40
Faculty	FAST
HECoS Code	100184
Cost Code	GAME

Programmes in which module to be offered

Programme title	Is the module core or option for this programme
MEng Aeronautical Engineering	Core
MEng Mechanical Engineering	Core
MEng Automotive Engineering	Core
MEng Electrical and Electronic Engineering	Core
MEng Renewable & Sustainable Engineering	Core

Pre-requisites

None

Breakdown of module hours

Learning and teaching hours	30 hrs
Placement tutor support	0 hrs
Supervised learning e.g. practical classes, workshops	0 hrs
Project supervision (level 6 projects and dissertation modules only)	0 hrs
Total active learning and teaching hours	30 hrs
Placement / work based learning	0 hrs
Guided independent study	370 hrs
Module duration (total hours)	400 hrs

For office use only	
Initial approval date	22 nd Aug 2022
With effect from date	Sept 2022
Date and details of revision	
Version number	1

Module aims

- To systematically develop student's engineering design, management skills, and judgment.
- To develop a capability and confidence to problem solving, to solve a major multidisciplinary project in a team environment and to appreciate the limitations of academic theory.
- To further develop enterprise skills.

Module Learning Outcomes - at the end of this module, students will be able to:

1	Systematically review concepts from a range of areas including some outside engineering, and to apply them effectively in engineering projects.
2	Evaluate critically design processes and methodologies, specialist tools and techniques used to design, analyse, implement and verify systems in the area of engineering.
3	Acquire new knowledge and understanding through critical study of research material and address challenges and find solutions to new and unfamiliar problems
4	Assess in-depth the limitations of particular cases when solving problems in engineering.
5	Generate innovative designs for products, systems, or processes to fulfil new needs and reactively apply engineering techniques taking account of a range of commercial, environmental, and industrial constraints.

In addition to the module learning outcomes, students will also cover the following accreditation of higher education programme (AHEP) fourth edition learning outcomes: M4, M5, M7, M15, M16 & M17.

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.

The learning outcomes will be assessed by in-course assessment. Typically, there are three assessment points in the module. These, together with their contribution to the overall module mark, are as follows:

- Project Proposal (individual interim report (2000 words) and log), 30%.

- Group Final Report (4000 words), Executive Summary, and Logbook, 50%.
- Design Review and Poster, 20%.

The actual assessments for any year will be detailed in the current module guide.

Derogations from academic regulations are in place for this module for some programmes. Please see the programme specification for further details and to check applicability.

Assessment number	Learning Outcomes to be met	Type of assessment	Weighting (%)
1	1 to 5	Group Project	100%

Derogations

A derogation from regulations has been approved for this programme which means that whilst the pass mark is 50% overall, each element of assessment (where there is more than one assessment) requires a minimum mark of 40%.

Learning and Teaching Strategies

The learning outcomes will be achieved through a combination of formal design meetings, design reviews, and independent study. A maximum of 30 hours formal contact time will be available which will typically be split as follows:

Formal room timetabled design meetings: 22 hours with *Group Project Supervisor.

Design reviews: 8 hours

Students are expected to spend a further 370 hours on independent study. They are formed into design groups which are presented with initial problem descriptions by staff *Group Project Supervisors.

Each group plans and organises its own work schedule. This schedule includes regular formal design meetings at which Minutes are taken and at which each student serves as Chair and Secretary on a rota basis.

The Group Project Supervisor monitors the design meetings and general progress of the group, but all members of staff are available to all design groups in the capacity of technical advisors.

During the year, visits may be made by industrial or visiting professionals. At these times, the groups present their work to such persons who may provide a critical appraisal of their design decisions and may suggest solutions to particular technical problems.

An active and inclusive approach is used to engage learners in the topics and will involve individual, group work and flipped learning experiences aligned to the university's Active Learning Framework (ALF). The approach offers students a flexible and adaptive learning experience that can accommodate a range of options that includes both on campus learning and remote learning where appropriate.

The Moodle VLE and other on-line materials and resources will be available to support learning. ALF offers a balance between the classroom elements and digitally enabled activity

incorporating flexible and accessible resources and flexible and accessible feedback to support learning.

Indicative Syllabus Outline

Given the broad, multidisciplinary nature of the module and the student-centred self-learning that is required, no indicative syllabus can be given. However, all the expected stages - contained in the learning outcomes list - should be observed and assessed. A structured approach using stage, or part, development/testing/evaluation will be expected. The on-going records should be maintained by the group in the form of a log and the final product, together with a formal report, presented in an oral presentation at the end of the exercise where all members of the group are expected to contribute in equal measure.

The following tasks will need to be covered:

1. Critically assess the requirements/market for a given design project product.
2. Produce and assess possible sustainable and environmental-friendly solutions to a design specification.
3. Iterate selected solutions to a point where they fulfill the design specification.
4. Perform parametric/trade-off studies and use the results to inform design decisions.
5. Evaluate the development and production costs of the design.
6. If necessary, construct working hardware/software to specification.
7. Communicate and negotiate effectively with team members on project matters.
8. Produce project management schedules and documentation.
9. Participate effectively in group activity, work to a group-defined plan/timetable and progress the project by consensus.
10. Produce and use an agenda and minutes of a meeting, act as an effective Chair and an efficient and accurate Secretary.
11. Identify and locate appropriate sources of data related to a project and extract and analyse relevant information.
12. Perform the tasks necessary to complete a design project in an effective manner.
13. Present a project and its findings both in writing and orally.
14. Use a project logbook to record the progress of a project

Indicative Bibliography:

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

Essential Reads

M. Northey and J. Jewinski, *Making Sense in Engineering and the Technical Sciences: A Student's Guide to Research and Writing*, 5th Ed. OUP Canada, 2015.

Other indicative reading

J. M. Nicholas, *Project Management for Engineering, Business and Technology*, 6th ed. Routledge, 2020.

C. Neville, *The Complete Guide to Referencing and Avoiding Plagiarism*, 2nd ed. Open University Press, 2010.

Employability skills – the Glyndŵr Graduate

Each module and programme is designed to cover core Glyndŵr Graduate Attributes with the aim that each Graduate will leave Glyndŵr having achieved key employability skills as part of their study. The following attributes will be covered within this module either through the content or as part of the assessment. The programme is designed to cover all attributes and each module may cover different areas.

Core Attributes

Engaged
Enterprising
Creative
Ethical

Key Attitudes

Commitment
Curiosity
Resilience
Confidence
Adaptability

Practical Skillsets

Digital Fluency
Organisation
Leadership and Team working
Critical Thinking
Emotional Intelligence
Communication