Prifysgol Wrecsam
Wrexham University

Module specification

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Module Code	ENG6AP
Module Title	Individual Engineering Project
Level	6
Credit value	40
Faculty	FACE
HECoS Code	100184
Cost Code	GAME
Pre-requisite module	None

Programmes in which module to be offered

Programme title	Core/Optional/Standalone
BEng (Hons) Mechatronics Engineering	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	**0** hrs
Placement hours	0 hrs
Guided independent study hours	370 hrs
Module duration (Total hours)	400 hrs

Module aims

To provide students with the opportunity to practice the task management and problem-solving activities of a professional engineer and to explore original ideas.

To exercise the student in applying and extending the methods, skills, information, knowledge and understanding obtained during the various parts of the programme to developing and evaluating an original design of an engineering product or system.

Module Learning Outcomes

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

1	Integrate appropriate theoretical and practical methods to the analysis of an engineering problem and the development of an original solution to that problem, including the managing of the task.
2	Integrate research and project management methodologies in investigating the subject matter relevant to the dissertation.
3	Implement the appropriate stages of a project (including: specification, task analysis, search of current information sources, consider options and plan and cost solutions, select and design a solution, construct/implement solution, test and evaluate the solution.
4	Communicate the results in the form of a formal written report and an oral presentation, with due consideration given to commercial implications.

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 dissertation has the value of 40 credits. A detailed grid showing assessment criteria is used but in summary the three main areas of assessment are:

Poster: The poster should be designed using suitable software to produce a professional quality poster that may submitted electronically.

Logbook: An evidence portfolio built up by the student, including planning and development notes, a diary recording progress and reflective comments.

Presentation: A final formal presentation.

Report: Interim and Final Formal written reports.

Marking will be carried out by the Personal Supervisor and by one other member of the programme team using blind double marking. A Programme(s) of students will be co-ordinated by a Co-ordinator assigned to be responsible for the Programme. The relevant Co-ordinator will oversee the module and make appropriate arrangements for the stages of assessment. In general, the Supervisor will be responsible for assessing the technical aspects of the dissertation and the Co-ordinator for ensuring consistency of standards. For the presentation, comments will be invited from guests and from other Programme Team staff. However, final responsibility for the awarding of the marks remains with the supervisor and second marker. Where a decision concerning grading cannot be reached, another member of the Programme Team will be called upon to provide a third opinion.

The four components of assessment, together with criteria and weightings are shown below:

Assessment Point	Component	Criteria	Weighting (%)
1	Poster	A poster should also be produced setting out key areas of interest which form part of the project.	5%
2	Logbook	A Logbook should be maintained throughout the module to show how the dissertation has been developed. A key element of the logbook is the inclusion of records of supervisor meetings.	10%
3	Presentation	Content, organisation, audio visual aids, delivery, question handling.	20%
4	Report	A written report presented according to guidelines issued.	65%

Assessment number	Learning Outcomes to be met	Type of assessment	Duration/Word Count	Weighting (%)	Alternative assessment, if applicable
1	1, 2, 3, 4	Dissertation/Project	12000 words	100%	

Derogations

None

Learning and Teaching Strategies

All the expected stages - contained in the assessment section - 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 student 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.

A series of seminars and small-group tutorials will be conducted to develop research and methodology. The student is typically expected to see his/her personal supervisor regularly and by mutual agreement as required. During this time a log detailing the main points of discussion should be recorded so as to give a record of the meeting having taken place. This should be included in the logbook.

REPORT: Each student is responsible for the preparation and submission of an individual report for their dissertation. Guidance is provided to the student concerning common features of the report, although it is expected that each student will develop an individual format.

PRESENTATION: The student will be expected to make an oral presentation of his/her dissertation in front of a panel of staff including the supervisor, second marker and their peers, possibly including invited guests such as local industrialists or academic assessors. The external examiner may also wish to see some of the presentations.

SUPERVISION: There will be an overall Co-ordinator for each programme or set of programmes, to supervise the general conduct and consistency of standards. Each student must have a supervisor to provide technical guidance. There will also be a second marker who will be involved in the assessment process to ensure fairness of marking.

Initial Presentation: Students should be given the opportunity to give an initial presentation 6 weeks or so after the student begins the module (in the conventional academic year this would be before the Christmas break). This is formative and has been found to aid student focus and also to provide formal feedback to guide the progress of the dissertation.

Interim Report: Supervisors may ask that an interim report to be returned by the student shortly after the initial presentation. (In the conventional academic year this would be just after the Christmas break.) This report enables the student to formally document the project work undertaken so far and provide a progress report. The aims, deliverables, analysis of tasks and timeline for the work should be addressed.

The EAB Checklist should be completed to include details of where the EAB criteria has been met and this checklist should be submitted as an integrated part of the final submission.

Welsh Elements

Programme is delivered in English and Chinese, however students can submit assessments in Welsh.

Indicative Syllabus Outline

Research and Methodology: Purpose of research; research groups; specification - aims and objectives; literature searches (including Internet and other sources); IEEE referencing; experimental methods (data collection, data manipulation, analysis of data; evaluation of data and implications). Report - presentation of findings, definition of further work. Dissemination and sharing of information.

Typically the dissertation can follow one of 2 routes – a project/applied study or a more extended piece of research but the stages of either are broadly the same.

Stages of the project:

1. Writing a proposal.
2. Registering the project with a supervisor.
3. Analyse the task to develop an appropriate engineering solution.
4. Evaluate the technological options for solving the problem and select one solution on the basis of function and feasibility given the constraints of time and budget.
5. Draw up a plan giving deadlines for key stages in the progress of the dissertation.
6. Utilise appropriate information and knowledge from various sources; including technical, scientific and economic data.
7. Design the solution including the selection of appropriate materials and components.
8. Implement the solution, interacting with others as necessary.
9. Test and evaluate the solution against the original specification and relating the final product to actual industrial applications and practice.
10. Communicate the results in the form of a formal written report and an oral presentation.

The student will carry out a research task or a design, development and evaluation exercise. The task area should be relevant to the rest of the course on an academic or an industrial basis. A list of preferred topics - contributing to existing work within the Faculty of Art, Science and Technology or to local industrial projects - should be offered. However, the final choice of

a title will result from an agreement between the supervisor, acting in the role of and the student and it should be presented as a formal proposal. The project should only proceed on acceptance of the proposal.

For an industry-based project the industrial 'client' would be in addition to the personal supervisor.

EXAMPLES OF TOPICS A list of possible topics will be presented to students. Wherever possible, they will either be industry-based or based on real problems faced in engineering.

Examples of typical project titles:

1. Speed Controller for AC Induction Motor
2. Modelling the effects of cold expansion using the Finite Element Method
3. Smart Card Access Unit
4. A novel flight control system for a light aircraft
5. Robot Work Station High Level Control Language
6. Computerised Weight and Dimension Measurement System for Continuous Process
7. Analysis of tyre wear in large transport aircraft
8. Vocoder Development
9. Digital Theremin
10. Formula student gear box design

Indicative Bibliography

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

Essential Reads:

Bary-Kahn, P. et al. (2010) A Practical Guide to Technical Reports and Presentations for Scientists, Engineers, and Students, Pearson Custom Publishing.

Other indicative reading:

Northey, M. & Jewinski, J. (2009) Making Sense in Engineering and the Technical Sciences: A Student's Guide to Research and Writing, 3rd Edn., OUP Canada.

Fitchett, P. & Haslam, J. (2002) Writing Engineering Specifications, 2nd Edn., London: E& FN Spon.

Neville, C. (2010) The Complete Guide to Referencing and Avoiding Plagiarism, 2nd Edn., Open University Press.

Key Website Resources:

IEEE Citation Reference: http://www.ieee.org/documents/ieeecitationref.pdf;

Citing and Referencing Guide: BMJ Vancouver Style: http://www.southampton.ac.uk/library/resources/documents/vancouverreferencing.pdf;

Guidelines for writing an undergraduate engineering project: http://ieeexplore.ieee.org/stamp/stamp.jsp?tp=&arnumber=5310138

IET Study Resources: http://www.theiet.org/students/resources/index.cfm;

Project guide document available on the VLE and additional sources as directed by the Project Supervisor.

Administrative Information

For office use only	
Initial approval date	24/09/2020
With effect from date	24/09/2020
Date and details of revision	22/07/2025 revalidated, assessment recategorized as dissertation/project, updated template, derogation removed
Version number	2