INDIVIDUAL PROJECT - 2024/5

Module code: ENG3163

Module Overview

All students undertake this project module at level 6. The module focuses on the application of theoretical knowledge and practical techniques to address a complex engineering issue or problem related to the student's degree discipline. The issue is explored by means of guided independent study which produces (i) an interim plan and presentation examined orally, (ii) a body of practical work and (iii) a final report.

The projects include experimental work, design, analysis, synthesis, computing and information processing in varying proportions consistent with the engineering topic being addressed.

Project allocation is based on projects proposed by academic staff (often in liaison with industrial partners) being allocated according to students' stated preferences regarding both the project type and subject area. Each project has a designated Principal Supervisor.

Module provider

Mechanical Engineering Sciences

Module Leader

HILLS Nicholas (Mech Eng Sci)

Number of Credits: 30

ECTS Credits: 15

Framework: FHEQ Level 6

Module cap (Maximum number of students): N/A

Overall student workload

Independent Learning Hours: 237

Lecture Hours: 1

Tutorial Hours: 11

Guided Learning: 50

Captured Content: 1

Module Availability

Year long

Prerequisites / Co-requisites

None

Module content

As each project is an independent, individual piece of work, the content here is only indicative. However, all students would be expected to familiarise themselves with current literature before either undertaking a design, modelling or practical project. They would be expected to consider both the health and safety and project risks when planning and undertaking their project.

Assessment pattern

Assessment type	Unit of assessment	Weighting
Oral exam or presentation	ORAL PRESENTATION AND DEFENSE	20
Project (Group/Individual/Dissertation)	PROJECT PERFORMANCE SEMESTER 1	10
Project (Group/Individual/Dissertation)	PROJECT PERFORMANCE SEMESTER 2	10
Coursework	FINAL REPORT	60

Alternative Assessment

N/A

Assessment Strategy

The assessment strategy is designed to provide students with the opportunity to demonstrate that they are able to demonstrate all of the key competences associated with planning, performing and reporting on an individual piece of research work.

Thus, the summative assessment for this module consists of:

- Final Report [Learning Outcomes 2,3,4, 7]
- Project Performance sem 1 and sem 2 Learning Outcomes 1, 2, 3]
- Oral Presentation and Defence [Learning Outcomes 5, 6]

Formative assessment and feedback

Students discuss their work on a weekly basis with their project supervisors.

They are provided with written feedback on their project presentation, using a standard marking template accompanied by free-form comments, at the end of semester 1.

Module aims

- Equip students with the experience of working on an independent supervised project that addresses a complex engineering issue relating to their programme of study
- Provide students with the opportunity to use and further develop appropriate planning, analytical, practical and interpersonal skills including health and safety, risk assessment and project management risk appreciation.
- Facilitate development and practice of professional skills in maintaining a log book, producing, producing a substantial final report and defending their work orally.

Learning outcomes

Ref		Attributes Developed	
001	Maintain a log book in line with professional conventions including health and safety risk assessment.	PT	C/M9, C/M15, C/M18
002	Plan and undertake an individual and original engineering investigation which demonstrates knowledge and understanding of scientific principles and good engineering practice within their engineering discipline, including the range of risks that are associated with research projects	KCPT	C1, C2, C3, C4, C5, C/M6, C/M8, C/M9, C/M10, C/M11, C/M15, C16, C17, C/M18
003	Select and evaluate data from literature sources and/or obtained from practical or computer-based studies to support a line of reasoning and/or develop a solution to a complex engineering issue.	C	C1, C4, C5
004	Structure and write a technical report which presents the context, technical data and findings of an engineering investigation in line with normal professional expectations to both specialist and non-specialist readers.	PT	C17
005	Select and implement an appropriate oral presentation format to effectively communicate the conduct and outcomes of an engineering investigation to audience comprising both specialists and non-specialists.	PT	C17
006	Combine prior knowledge and analytical skills to synthesise answers to a range of technical questions about the context and rationale of the project work.	CT	C1, C2, C/M6
007	Demonstrate appropriate ethical conduct with regard to acknowledgement of source data , treatment of research results and conduct of experiments, especially where these involve people or animals.	P	C/M8

Attributes Developed

C - Cognitive/analytical

K - Subject knowledge

T - Transferable skills

P - Professional/Practical skills

Methods of Teaching / Learning

The learning and teaching strategy is designed to support students as they undertake an individual research project by providing them with a project supervisor who can offer a bespoke response to individual needs. Project supervisors are encouraged to meet with students on a weekly basis but this can be more or less frequent by mutual consent.

The learning and teaching methods include:

- Explaining the requirements of a log book then reviewing it at each project meeting
- Working through a risk assessment together
- Identifying and discussing key pieces of literature
- Suggesting and reviewing ideas and plans
- Discussing results and challenging findings
- Providing constructive criticism of written work

Indicated Lecture Hours (which may also include seminars, tutorials, workshops and other contact time) are approximate and may include in-class tests where one or more of these are an assessment on the module. In-class tests are scheduled/organised separately to taught content and will be published on to student personal timetables, where they apply to taken modules, as soon as they are finalised by central administration. This will usually be after the initial publication of the teaching timetable for the relevant semester.

Reading list

https://readinglists.surrey.ac.uk
Upon accessing the reading list, please search for the module using the module code: ENG3163

Other information

The School of Mechanical Engineering Sciences is committed to developing graduates with strengths in Employability, Digital Capabilities, Global and Cultural Capabilities, Sustainability and Resourcefulness and resilience. This module is designed to allow students to develop knowledge, skills and capabilities in the following areas:

Employability: students will be able to demonstrate to a prospective employer their independent project planning skill, research skills of information retrieval, project specific deliverables and analysis, and delivery to set deadlines. Their written report will demonstrate student's ability to document their planning, research, and analysis. The use of a viva-voce examination allows students to explain their project in both technical and non-technical language and answer questions, a skill highly valued by employers.

Digital Capabilities: students may have opportunity to analyse experimental data using Excel, use engineering software such as CAD, FEA or Fluent, or write and test their own code. Furthermore, their digital capabilities will be enhanced via the writing of mid-project presentation and final written reports using data analysis software and presentation, generation of figures, tables etc. and use of appropriate referencing style. Students will be able to build upon and apply their experiences of using software to produce an effective individual project.

Global and cultural responsibilities: students will be able to become members of the supervisor's research term which will expose them to staff and PhD student researchers from around the globe and their personal and professional experiences. Students will learn to communicate their ideas with both a technical and non-technical audience. Students should consider ethical aspects of their projects.

Sustainability: Depending on the project type, students may consider aspects of sustainability in an engineering content and the UN's Sustainability Development goals in their project planning and delivery.

Resourcefulness and Resilience: Students' skills will be enhanced through demonstration of risk identification and minimisation to ensure as successful a project as possible as judged by the project objectives. Students will have an opportunity to reflect on the progress of the project via meetings with their supervisor and the associated feedback. Students may face challenges as the projects progress and they need to demonstrate the ability to adapt the project to overcome these challenges.

Programmes this module appears in

Programme	Semester	Classification	Qualifying conditions
Aerospace Engineering BEng (Hons)(YEAR LONG)	Year-long	Compulsory	A weighted aggregate mark of 40% is required to pass the module
Aerospace Engineering MEng(YEAR LONG)	Year-long	Compulsory	A weighted aggregate mark of 40% is required to pass the module
Automotive Engineering (Dual degree with HIT) BEng (Hons)(YEAR LONG)	Year-long	Optional	A weighted aggregate mark of 40% is required to pass the module
Automotive Engineering BEng (Hons)(YEAR LONG)	Year-long	Compulsory	A weighted aggregate mark of 40% is required to pass the module
Automotive Engineering MEng(YEAR LONG)	Year-long	Compulsory	A weighted aggregate mark of 40% is required to pass the module
Biomedical Engineering BEng (Hons)(YEAR LONG)	Year-long	Compulsory	A weighted aggregate mark of 40% is required to pass the module
Biomedical Engineering MEng(YEAR LONG)	Year-long	Compulsory	A weighted aggregate mark of 40% is required to pass the module
Mechanical Engineering BEng (Hons)(YEAR LONG)	Year-long	Compulsory	A weighted aggregate mark of 40% is required to pass the module
Mechanical Engineering MEng(YEAR LONG)	Year-long	Compulsory	A weighted aggregate mark of 40% is required to pass the module