YEAR 3 PROJECT - 2024/5

Module code: EEE3017

Module Overview

Expected prior/parallel learning: Appropriate background knowledge related to the project topic.

Module purpose: The purpose of the Year 3 Individual Project is to prepare students for independent problem solving and independent work in engineering (or other professional environment). The module builds from the shorter projects undertaken in Year 1 (EEE1027 and EEE1028) and Year 2 (EEE2036 and EEE2037) labs, design and professional studies modules. Students undertake an extended piece of research and development work on a particular topic over two semesters, and then present the outcomes of this work via a written Final Project Report and an oral presentation, in the form of a viva-voce examination. This module will further develop a student's skills in planning, problem-solving and analysis, formal writing and presenting their work. For students staying on to MEng programme, this individual module feeds into the group Multidisciplinary Design project.

Module provider

Computer Science and Electronic Eng

Module Leader

WELLS Kevin (CS & EE)

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: 299

Lecture Hours: 1

Module Availability

Year long

Prerequisites / Co-requisites

None.

Module content

The project forms an integral and important part of your programme. The normal arrangement is for students to carry out a project on Campus, but projects suggested by and in collaboration with industry may also be available and are welcome.

Students are expected to spend time each week dedicated to their project, organise their time effectively allowing for lead times on ordered components, development time for sub-modules or sub-tasks, and adequate time to write up their mid-project report as well as their final project report. They are also expected to keep a log book, as well as meet with their supervisor regularly, ideally each week, but at least once every two weeks.

Students are expected to gain an understanding of relevant background theory/technology in their topic area, and understand the context and motivation for the project work being undertaken. They are expected to report this in a professional manner, being able to report on the successes and limitations of their work. Students should identify and act upon any ethical or societal concerns of their project. Their project should adopt an inclusive approach to engineering practice and recognise the responsibilities, benefits and importance of supporting equality, diversity and inclusion within engineering. The project should consider sustainability and consider how the research may be aligned to the UN's Sustainability goals.

Assessment pattern

Assessment type	Unit of assessment	Weighting
Project (Group/Individual/Dissertation)	Mid project report	10
Project (Group/Individual/Dissertation)	Project report and Technical Analysis	45
Oral exam or presentation	Presentation and Technical Achievement	45

Alternative Assessment

N/A

Assessment Strategy

The assessment strategy for this module is designed to provide students with the opportunity to demonstrate success in the process of carrying out a project. Students will have an opportunity to demonstrate their project, if relevant. While it is helpful if the project actually works, discussion and understanding of why a project has not worked can also be valuable from an engineering point of view. The project will also require the student to write-up their findings in the form of a technical report and be able to discuss the findings in viva-voce examination.

Thus, the summative assessment for this module consists of the following:

- A mid-project report focusing on project objectives and aspects of the literature review putting the project objectives in wider context (technical landscape.
- Assessment called 'Project Report and Technical Analysis' based on assessment of the final report assessment focussing on (i) the structure and quality of the report (abstract, literature review, written description of approach taken, presentation of results - layout, figures, tables and citation coverage) and (ii) assessment of the technical analysis as described in the report.
- Assessment called 'Presentation and Technical Achievement', based on assessment of the technical aspects of the project with an oral presentation and viva by the student. This viva would address how the student approached the project's objectives, the validity of the methods used, analysis, verification, and validation of the results. The oral presentation and related questioning are used as a measure of your technical achievement, and on the quality of your performance.

Formative assessment and feedback

For the module, a student will receive formative assessment/feedback in the following ways.

- During regular meetings with their project supervisor

- Following the mid-project review meeting with feedback from the examiner and supervisor.

Module aims

- To provide an opportunity for the student to tackle a research and/or development problem, and to gain experience of the process of doing this, including experience in having to work independently on project-related activities, and experience of needing to produce a report and defend their work under viva-voce examination conditions.
- The module aims to provide an in-depth understanding of, and experience of, research and development, often within a research institute or centre with regular meetings with their academic supervisor. Students may propose their own project in an area where there is expertise.
- The module also aims to provide opportunities for students to learn about the Surrey Pillars listed below.

Learning outcomes

Ref		Attributes Developed	
003	Select and evaluate technical literature and other sources of information to address complex problems	KCPT	C4
004	Select and apply appropriate materials, equipment, engineering technologies and processes, recognising their limitations and employ practical laboratory and workshop skills to investigate complex problems	KCPT	C13
005	Identify and analyse ethical concerns and make reasoned ethical choices informed by professional codes of conduct	PT	C8
006	Plan and record self-learning and development as the foundation for lifelong learning/CPD	PT	C18
007	Communicate effectively on complex engineering matters with technical and non-technical audiences in written and verbal form	PT	C17
001	Apply knowledge and analysis of mathematics, statistics, natural science and engineering principles to the solution of complex problems.	KC	C1, C2
002	Select and evaluate technical literature and other sources of information to address complex problems applying and integrated or systems approach to their solution	KCT	C3

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 allow students to achieve the specified learning outcomes by means of study and research & development work. This is supervised by a full-time academic or an experienced research worker via regular meetings. In this way, a student can gain mentored experience in applying knowledge achieved during academic studies to particular theoretical or practical problems. As part of this process, the student will need to critically evaluate the relevant literature, marshal ideas for research or lab evaluation, and produce a reliable and coherent report.

Students are expected to arrange a project with a supervisor before the end of the first few weeks of Semester 1. Most project ideas come from the supervisors, but students may propose their own projects. Students returning from a professional placement often come with an idea inspired by their year in industry, and/or actively supported by their company, which is encouraged. A student who wishes to carry out a project that he/she has personally proposed will need to find a member of the academic staff who is willing to supervise the project.

Students are expected to plan their own use of time with feedback from their supervisors. Most hardware-oriented laboratories are available for student use during normal working hours during semesters.

Learning and teaching methods include the following.

- An introductory project-oriented lecture delivered by the project coordinator which outlines the selection of projects procedure and the running of the project
- Bespoke training on equipment or software for the student organised by the project supervisor, where relevant
- Student centred information retrieval from the current state of the art literature.
- Research by the student on hardware, software, information or science, as relevant to the nature of the project,
- Validation and verification testing undertaken by the student including trial-and-error methods
- Regular meetings between the student and supervisor
- Experience of the project-management process.
- Experience of preparing both a written project report and an associated oral presentation, and of being subject to viva-voce examination.

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: EEE3017

Other information

- Employability: Successful completion of the individual project will enhance a student's employability as the student 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 the 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.
- Resourcefulness and resilience's skills of the student will be enhanced through demonstration of risk identification and minimisation to ensure as successful a project as possible as judged by the project objectives. The student will have an opportunity to reflect on the progress of the project via meetings with their supervisor and the associated feedback.
- The student should consider aspects of sustainability in an engineering content and the UN's Sustainability Development goals in their project planning and delivery. Strong students should fully integrate sustainability in their design of the project.
- With regard to global and cultural capabilities, 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.
- Depending on the project the student may have opportunity to interface electronic hardware to extract data, or write and test their own code, or use high level and sophisticated code any one of which will enhance a student's digital capabilities. Furthermore, their digital capabilities will be enhanced via the writing of mid-project and final written reports using data analysis software and presentation, generation of figures, tables etc. and use of appropriate referencing style. Students may present their findings using appropriate presentation software.

Programmes this module appears in

Programme	Semester	Classification	Qualifying conditions
Electronic Engineering with Space Systems BEng (Hons)(CORE)	Year-long	Core	Each unit of assessment must be passed at 40% to pass the module