ES97R-30 Cohort Project

20/21

Department
School of Engineering
Level
Taught Postgraduate Level
Module leader
Jose Ortiz Gonzalez
Credit value
30
Module duration
10 weeks
Assessment
100% coursework
Study location
University of Warwick main campus, Coventry

Description

Introductory description

ES97R-30 Cohort Project

Module web page

Module aims

The cohort projects aim to give students experience of working within a team, and parallels the way engineers often work in industry. Students will integrate their knowledge and understanding in order to specify and solve a substantial engineering problem (or user need), through the creation and development of a product, process or system. The project also allows students to develop their understanding of project management, time management, ethics, sustainability, health and safety, risk and intellectual property rights. Students will develop effective communication and leadership skills.

Outline syllabus

This is an indicative module outline only to give an indication of the sort of topics that may be covered. Actual sessions held may differ.

The project is an essential component of the CDT programme and establishing the cohort as a

team that can work together to solve a complex problem in the area covered by wide band gap power electronics and connected autonomous vehicles. The team will develop an autonomous vehicle related artefact and fully encompass the two themes of the CDT.

The project will normally involve a cohort of 10 students. Tasks will be predetermined by the School of Engineering / WMG staff Project Director each year to match the skills and mix of the students. Projects will have industrial backing or at least be able to demonstrate industrial applicability.

Depending on the product selected, consideration will be given to design concept, mechanical and/or structural design, materials selection, stress analysis, dynamic performance, electrical/electronic design, control theory, actuator selection, sensors, computer interfacing, signal processing, control software, process planning, facilities planning, process design and development, production economics, customer needs, scheduling, quality control, materials control, tooling requirements, sales and marketing, management structure, programming, manufacturing, procurement, financial planning and management, promotion of the work to a wider public audience or whatever the most suitable vehicle is to measure the stated learning outcome in terms of measuring students' ability to develop their engineering skills and competencies.

Students will be encouraged assume the positions of design engineers, development engineers, production engineers, test engineers, project managers, etc. in the delivery of the project. Each student will have an agreed responsibility. This will develop the engineer's ability to think and communicate in terms of integrated systems.

A member of staff is appointed as Project Director, will provide guidance on technical and organisational matters. Usually a student member of the cohort will be appointed as the Project Manager. Regular meetings take place with formal minutes to provide a record of decisions. The project be communicated via an academic poster, testing the students' ability to rapidly communicate complicated ideas, systems, or processes. Furthermore, it will require a formal write-up describing its delivery in detail, and a reasoned financial cost-benefit analysis. An oral presentation will takes place at the end of the project where the whole team will describe the project to an academic audience and answer question on its delivery.

Learning outcomes

By the end of the module, students should be able to:

- Extrapolate existing knowledge and experience and apply them in an integrated systems approach to solve a complex and unfamiliar engineering problem.
- Extract and critically evaluate relevant data in order to apply engineering analysis and advanced problem solving skills, in order to complete an engineering project to the satisfaction of a customer and/or user.
- Use innovative techniques, materials or methods in delivering the project.
- Consider the wider context of the project including, risk, health and safety, ethics, environmental and sustainability limitations, intellectual property rights, codes of practice and standards, product safety and liability, to inform the project specification (problem brief) as relevant to the project.
- Plan and manage a project from the design process to a deliverable outcome, including

managing a budget and costs, and understanding the commercial, economic and social environment of the project
- Demonstrate effective communication, both verbal and written, to a technical and non-technical audience.
- Demonstrate the ability to work as a member of a team to achieve shared objectives within the scope of the project and monitor and adjust a personal programme of work on an on-going basis.

Indicative reading list

As dictated by the subject of the project. Project Director will advise.

Subject specific skills

Ability to conceive, make and realise a component, product, system or process

Ability to develop economically viable and ethically sound sustainable solutions

Ability to be pragmatic, taking a systematic approach and the logical and practical steps necessary for, often complex, concepts to become reality

Ability to seek to achieve sustainable solutions to problems and have strategies for being creative and innovative

Ability to be risk, cost and value-conscious, and aware of their ethical, social, cultural, environmental, health and safety, and wider professional engineering responsibilities

Transferable skills

Apply problem solving skills, information retrieval, and the effective use of general IT facilities

Communicate (written and oral; to technical and non-technical audiences) and work with others

Exercise initiative and personal responsibility, including time management, which may be as a team member or leader

Overcome difficulties by employing skills, knowledge and understanding in a flexible manner

Ability to formulate and operate within appropriate codes of conduct, when faced with an ethical issue

Be professional in their outlook, be capable of team working, be effective communicators, and be able to exercise responsibility and sound management approaches.

Study

Teaching split

Provider	Weighting
School of Engineering	60%
WMG	40%

Study time

Type	Required
Lectures	5 sessions of 1 hour (2%)
Project supervision	5 sessions of 1 hour (2%)
Supervised practical classes	9 sessions of 3 hours (9%)
Private study	263 hours (88%)
Total	300 hours

Private study description

Students are expected to contribute a total of 300 hours to the project includes the 5 hours project supervision and 5 hours of supporting lectures and 27 hours of supervised lab time in order to design, test and develop practical artefact as per defined project .

Costs

No further costs have been identified for this module.

Assessment

You must pass all assessment components to pass the module.

Assessment group A1

	Weighting	Study time
Peer assessment and statement of contribution.	15%	

Based on individual contribution, evaluated via peer assessment and statement of contribution, and agreed by the project director.

Cohort Presentation	15%
Cohort Portfolio Assignment	70%

Cohort Portfolio: containing a range of professional and engineering documents submitted at stages throughout the project, including academic poster, project plans, design report, cost benefit report etc.

Feedback on assessment

Verbal feedback during cohort meetings with Project Director, milestone report feedback and feedback on the formal presentation
Written feedback on individual elements of the portfolio: poster, design report, cost benefit report, and the cohort presentation

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Availability

Courses

This module is Core for:

- Year 1 of RESA-H6P9 Postgraduate Research Wide Bandgap Power Electronics

This module is Core optional for:

- Year 2 of RESA-H6P9 Postgraduate Research Wide Bandgap Power Electronics