ES9ZE-15 Sustainable Energy Technologies Group Project

21/22

Department
School of Engineering
Level
Taught Postgraduate Level
Module leader
Nicholas Grant
Credit value
15
Module duration
10 weeks
Assessment
100% coursework
Study location
University of Warwick main campus, Coventry

Description

Introductory description

Sustainable Energy Technologies Group Project

Module aims

The group projects aim to give students experience of working within a team, and parallels the way engineers often work in industry or an academic engineering research environment. Students will integrate their knowledge and understanding in order to solve a problem or meet a user need in the Sustainable Energy Technologies area. This could be through the creation and development of a product, process or system. The project exercise allows students to develop their understanding of project and time management, and to develop improved communication and leadership skills. Depending on the nature of the project, experience may also be gained in areas such as sustainability, ethics, intellectual property management, risk management, regulatory requirements, or health and safety compliance.

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.

Projects will vary in nature. Some will be "design and make" type projects. In this case small unit manufacture of prototype solutions may be possible and if required will be specified as part of the project briefing. Other projects will be more focussed on design and proof of concept stage, and might include no realization of the design in a physical form. Other projects may be evaluation exercises using proprietary software. Other projects may be restoration or re-commissioning projects, whilst others will be design evolutions of high-technology / high-complexity systems.

In each case the project will normally involve groups of 5 to 8. Projects will have industrial applicability and/ or relevance to academic research programmes in Sustainable Energy Technologies. Projects may have industrial involvement if possible.

Students will be encouraged to assume positions which best suit the delivery of the project. Individual roles could include engineering researchers, design engineers, development engineers, production engineers, test engineers, project managers. Each student will have an agreed responsibility, and will have to interact with students with other agreed responsibilities and hence appreciate the complexities of complete systems from both the technical and organisational point of view. This will develop the student engineer’s ability to think and communicate in terms of integrated projects and systems.

Each project will be assigned a member of academic staff to act as Project Director, who will provide an initial project briefing and ongoing guidance on technical and organisational matters. Regular meetings take place with minutes recorded by students to provide a record of decisions and actions between meetings/ seminars.

Learning outcomes

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

- Design, create and develop a product, process or system to solve a Sustainable Energy Technologies problem or meet an end user need, overcoming technical challenges by integrating existing and new technical knowledge and experience to produce a valid and innovative solution to the satisfaction of a customer/end-user.
- Critically evaluate relevant information (including incomplete and uncertain data) so as to apply engineering analysis and advanced problem solving skills in order to quantify the impact of these findings on the solution and, using theory or research, to mitigate deficiencies.
- Evaluate environmental and societal impact of design solutions (to include the entire life cycle of the product or process) to minimise adverse affects.
- Consider the wider context of the project, including (where relevant) risk, health and safety, ethics, environmental and sustainability limitations, intellectual property rights, codes of practice and standards, product safety and liability (as appropriate) to inform the project solution.
- Plan and manage a project from the design process to a deliverable outcome, including managing a budget and costs, and understand 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 and project management goals within the scope of the project, then monitor and adjust a personal programme of work on an on-going basis.

Subject specific skills

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

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

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

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

Transferable skills

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

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

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

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.

Study

Study time

Type	Required
Lectures	4 sessions of 1 hour (3%)
Seminars	10 sessions of 2 hours (13%)
Private study	126 hours (84%)
Total	150 hours

Private study description

Students are expected to contribute a total of 126 hours to the project in addition to the 4 hours of lectures and 20 hours of facilitated seminars, leading to a total of 150 hours work per student. This 126 hours will be a combination of group and individual work.

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	Eligible for self-certification
Assessment component			
Group report 60% report (maximum 50 pages).	60%		No
Reassessment component			
Individual assignment Individual written report.			No
Assessment component			
Group & Individual presentation The group will perform a presentation, but within the group presentation, each team member will be given a set amount of time to present what they have done in the project. Overall, the group and individual presentations should form a coherent story.	30%		No
Reassessment component			
Individual presentation Individual presentation.			No

	Weighting	Study time	Eligible for self-certification
Assessment component			
Individual assessment	10%		No
10% individual logbook and/ or reflective report (maximum four pages) to determine contribution and fulfillment of learning outcomes. The School reserves the right to viva individual students where there is considered a need to verify individual contribution and fulfillment of learning outcomes.			
Reassessment component is the same			

Feedback on assessment

Verbal formative feedback during group meetings with Project Director.

Written feedback on the group and individual presentations.

Written feedback on individual assessment.

Availability

Courses

This module is Core for:

- Year 1 of TESA-H1A0 Postgraduate Taught Sustainable Energy Technologies