

# ES97M-45 Group Design Project

**21/22**

**Department**

School of Engineering

**Level**

Taught Postgraduate Level

**Module leader**

Alan Bloodworth

**Credit value**

45

**Module duration**

12 weeks

**Assessment**

100% coursework

**Study location**

University of Warwick main campus, Coventry

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## Description

### Introductory description

ES97M-45 Group Design Project

[Module web page](#)

### Module aims

This module provides the opportunity to integrate and apply the knowledge and understanding gained in the other core modules of the programme and demonstrate the skills required of professional engineers in an industrial context.

This is by means of a group design project, which is inspired by an industrial partner and prepares students for professional practice. The project provides experience of team working whilst being assessed on an individual basis. Students will integrate their knowledge and understanding in order to specify and solve a complex engineering problem (or user need) related to tunnelling, through the creation and development of a designed infrastructure or system. The project also allows students to develop their understanding of project management, time management, ethics, sustainability and environment, health and safety and risk. Students will develop effective communication and leadership skills and are encouraged to reflect upon the skills they have and are developing.

## 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.

Application of the design process to a set problem: Students will be provided with a design brief specified normally by an industrial partner and will work in teams to produce a concept and detailed design appropriate to the problem set. The process of design comprises understanding the client's requirements and any interfaces with third parties, gathering and interpreting site investigation data, exploring the feasibility of a number of design options that satisfy the project constraints, selecting on a rational basis a preferred option or preferred elements from a number of options, undertaking design of the permanent works along with major elements of temporary works and selection and justification of construction methods, evaluation of environmental issues (e.g. treatment and disposal of waste, vibration, settlement, etc.), production of construction method statements including health and safety risk assessments and inspection and test plans, cost estimation and value engineering. The design output will be communicated by means of written reports, sketches, technical drawings, artistic impressions, models (where appropriate) and oral presentation.

## 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, ethics, environmental and sustainability limitations, intellectual property rights, codes of practice and standards, health and safety and liability, to inform the project specification (problem brief) as relevant to the project.
- Plan and manage a project from the initial brief to a deliverable outcome.
- Demonstrate effective communication, both verbal and written, to a technical and non-technical audience.
- Interpret a project brief and integrate their knowledge to develop a conceptual design to meet that brief through critical thinking and analysis.
- Work constructively as a team member to address a realistic design brief, managing their time and contribution for the benefit of the group as a whole.

## Subject specific skills

1. Ability to conceive, make and realise a component, product, system or process
2. Ability to develop economically viable and ethically sound sustainable solutions
3. Ability to be pragmatic, taking a systematic approach and the logical and practical steps necessary for, often complex, concepts to become reality

4. Ability to seek to achieve sustainable solutions to problems and have strategies for being creative and innovative
5. 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

1. Numeracy: apply mathematical and computational methods to communicate parameters, model and optimize solutions
  2. Apply problem solving skills, information retrieval, and the effective use of general IT facilities
  3. Communicate (written and oral; to technical and non-technical audiences) and work with others
  4. Plan self-learning and improve performance, as the foundation for lifelong learning/CPD
  5. Exercise initiative and personal responsibility, including time management, which may be as a team member or leader
  6. Awareness of the nature of business and enterprise in the creation of economic and social value
  7. Overcome difficulties by employing skills, knowledge and understanding in a flexible manner
  8. Ability to formulate and operate within appropriate codes of conduct, when faced with an ethical issue
  9. Appreciation of the global dimensions of engineering, commerce and communication
  10. Be professional in their outlook, be capable of team working, be effective communicators, and be able to exercise responsibility and sound management approaches.
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## Study

### Study time

Type	Required
Seminars	4 sessions of 1 hour (1%)
Project supervision	20 sessions of 1 hour (4%)
Private study	426 hours (95%)
Total	450 hours

### Private study description

426 hrs of guided independent learning

## Costs

No further costs have been identified for this module.

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## Assessment

You must pass all assessment components to pass the module.

### Assessment group A2

	Weighting	Study time
Written report Stage 1	25%	
Written Report with Peer Assessment (Total page limit for Stages 1 and 2/3 combined 350 pages, each student should have an identifiable individual contribution of 30 pages.)		
Group Presentation Stage 1	10%	
Group Presentation Stage 1 (30min), with Peer Assessment		
Written Report Stages 2 and 3	55%	
Written Report, including identifiable individual component, and Peer Assessment (Total page limit for Stages 1 and 2/3 combined 350 pages, each student should have an identifiable individual contribution of 30 pages.)		
Group Presentation Final	10%	
Group Presentation Final (50min), with Peer Assessment		

### Feedback on assessment

Verbal feedback during group meetings with project supervisor

Written comments on written submissions.

Written comments and verbal feedback on presentations.

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## Availability

### Courses

This module is Core for:

- TESS-H214 Postgraduate Taught Tunnelling and Underground Space
  - Year 1 of H214 Tunnelling and Underground Space
  - Year 1 of H214 Tunnelling and Underground Space