



## Module Definition Form (MDF)

<b>Module code: MOD007057</b>	<b>Version: 3</b> <b>Date Amended: 12/Jul/2023</b>
<b>1. Module Title</b>	
Civil Engineering Design Project	
<b>2a. Module Leader</b>	
Reuben Brambleby	
<b>2b. School</b>	
School of Engineering and the Built Environment	
<b>2c. Faculty</b>	
Faculty of Science and Engineering	
<b>3a. Level</b>	
6	
<b>3b. Module Type</b>	
Standard (fine graded)	
<b>4a. Credits</b>	
60	
<b>4b. Study Hours</b>	
600	

5. Restrictions			
Type	Module Code	Module Name	Condition
Pre-requisite:	MOD007038	Civil Engineering Project 2	Compulsory
Pre-requisite:	MOD007044	Structural Analysis	Compulsory
Pre-requisite:	MOD007041	Hydraulics and Geotechnics	Compulsory
Co-requisites:	None		
Exclusions:	None		
<b>Courses to which this module is restricted:</b>	BEng Civil Engineering, MEng Civil Engineering		

## LEARNING, TEACHING AND ASSESSMENT INFORMATION

6a. Module Description
<p>This module takes advantage of the broad range of construction industry skills available in the School of Engineering and the Built Environment. It is designed to give you an opportunity to apply skills and knowledge previously gained throughout your course and to develop your ability to both manage and carry out the design of a small civil engineering project. You will generate a range of engineering solutions, making a considered assessment of each option and to recommend a design proposal.</p> <p>The design scenario for this module will challenge you to integrate your civil engineering design skills into an industry standard design process. While delivering a range of meaningful engineering solutions to the project, your designs will need to consider and balance a broad range of design aspirations such as:</p> <ul style="list-style-type: none"> <li>• Maximising site opportunities.</li> <li>• Delivering a resilient / loose fit design.</li> <li>• The three pillars of sustainability.</li> <li>• Design For Manufacture and Assembly / Dis-assembly considerations.</li> </ul> <p>You will be expected to demonstrate that you are drawing on and making effective use of your knowledge and understanding from a broad range of civil engineering subject areas including team work, communication, engineering analysis, design, geotechnics, construction materials, construction techniques and construction management.</p>
6b. Outline Content

## Knowledge

Strategic definition of a project:

- Project appraisal
- Concept design options
- Outline Design

Structures:

- Appropriate structural analysis and design.
- Selection and specification of appropriate construction materials and construction methods.

Geotechnics:

- Calculation of lateral soil stresses.
- Design of retaining walls.
- Slope stability analysis.
- Design of shallow and deep foundations.
- Application of empirical, closed-form, finite element methods in analysis and design of geotechnical engineering structures.
- Application of Codes of Practice in Geotechnical Engineering.

Hydraulics:

- Appropriate hydraulic analysis and design

Environmental Impact:

- Application of sustainable development goals.
- Evaluating the environmental and societal impacts of proposed solutions aiming to minimise any adverse impacts.

Construction Management:

- Appropriate use of construction management techniques.
- Human and financial resource management.
- Consideration of operatives, plant and materials in construction management proposals.

## Skills

- Effective team work.
- Effective oral communication.
- Proficient technical report writing.
- Application of engineering concepts to analyse, design and appraise engineering solutions.
- Critical analysis of design problems and proposed solutions.
- Effective planning and organisation as well as an ability to adapt to change.
- Effective autonomous work.
- Data interpretation.

## 6c. Key Texts/Literature

The reading list to support this module is available at: <https://readinglists.aru.ac.uk/>

## 6d. Specialist Learning Resources

Computer lab with the following software: CAD drawing, Robot structural analysis, Plaxis geotechnical analysis, Matlab programming, project planning, Microsoft office.

## 7. Learning Outcomes (threshold standards)

No.	Type	On successful completion of this module the student will be expected to be able to:
1	Knowledge and Understanding	Critically evaluate professional codes of conduct and the need for professional and ethical conduct in engineering. Make reasoned choices that are informed by professional codes of conduct.
2	Knowledge and Understanding	Demonstrate an ability to apply the relevant codes of practice that govern civil engineering activities. Demonstrate an ability to consider inclusion and health and safety.
3	Knowledge and Understanding	Plan and manage the design process considering environmental and financial drivers. Evaluate outcomes recognising the impact of design choices.
4	Intellectual, practical, affective and transferrable skills	Select and apply appropriate engineering analysis and design techniques in order to generate viable and creative design solutions to a built environment project. Use effective and appropriate methods to communicate design options and a proposed engineering solution.
5	Intellectual, practical, affective and transferrable skills	Identify and define sustainable engineering solutions for a complex built environment project, critically evaluating environmental, economic and societal considerations.
6	Intellectual, practical, affective and transferrable skills	Plan and record self-learning, self-development and CPD

## 8a. Module Occurrence to which this MDF Refers

Year	Occurrence	Period	Location	Mode of Delivery
2024/5	ZZF	Template For Face To Face Learning Delivery		Face to Face

8b. Learning Activities for the above Module Occurrence			
Learning Activities	Hours	Learning Outcomes	Details of Duration, frequency and other comments
Lectures	50	1-3	Scheduled in accordance with the project requirements.
Other teacher managed learning	94	1-6	Workshops, field work and tutorials scheduled in accordance with the project requirements.
Student managed learning	456	1-6	Group work, autonomous study and individual learning activities.
TOTAL:	600		

### 9. Assessment for the above Module Occurrence

Assessment No.	Assessment Method	Learning Outcomes	Weighting (%)	Fine Grade or Pass/Fail	Qualifying Mark (%)
010	Coursework	6	20 (%)	Fine Grade	30 (%)

**Individual Log book/reflective journal, 1500 word equivalent. This element is aligned with Engineering Council AHEP4 Learning Outcome C18**

Assessment No.	Assessment Method	Learning Outcomes	Weighting (%)	Fine Grade or Pass/Fail	Qualifying Mark (%)
011	Coursework	1-5	40 (%)	Fine Grade	30 (%)

**Component 1 – Individual Geotechnics Report; 1750 word equivalent. This element is aligned with Engineering Council AHEP4 Learning Outcomes: C3, C5. This element is aligned with JBM thread: Design. Component 2 – Building Design Report; 2250 word equivalent. This element is aligned with Engineering Council AHEP4 Learning Outcomes: C3, C5. This element is aligned with JBM thread: Design. Component 3 – Geotechnics; Individual assessment. This element is aligned with JBM thread: Design.**

Assessment components for Element 011				
Component No.	Assessment Title	Submission Method	Weighting (%)	Components needed for Mark Calculation?
011/1	Individual Geotechnics Report (1750 words)	Canvas	30 (%)	All
011/2	Group Building Design Report (2250 words)	Canvas	40 (%)	
011/3	Individual Geotechnics Assessment (1500 words)	Scheduled Activity: Timetabled assessment task	30 (%)	

Assessment No.	Assessment Method	Learning Outcomes	Weighting (%)	Fine Grade or Pass/Fail	Qualifying Mark (%)
012	Coursework	1-5	40 (%)	Fine Grade	30 (%)

**Component 1 – Individual Construction Report; 1500 word equivalent. This element is aligned with Engineering Council AHEP4 Learning Outcomes: C8, C14, C15. This element is aligned with JBM thread: Health and Safety, Professionalism and Ethics. Component 2 – Integrated Design Report; 2000 word equivalent. This element is aligned with Engineering Council AHEP4 Learning Outcomes: C6, C9, C10. This element is aligned with JBM thread: Design, Sustainability. Component 3 – Structures; Individual assessment. This element is aligned with Engineering Council AHEP4 Learning Outcomes: C3. This element is aligned with JBM thread: Design.**

Assessment components for Element 012				
Component No.	Assessment Title	Submission Method	Weighting (%)	Components needed for Mark Calculation?
012/1	Individual Construction Management Report (1500 words)	Canvas	20 (%)	All
012/2	Integrated Design Report (2000 words)	Canvas	50 (%)	
012/3	Individual Structures Assessment (1500 words)	Scheduled Activity: Timetabled assessment task	30 (%)	

**In order to pass this module, students are required to achieve an overall mark of 40% (for modules at levels 3, 4, 5 and 6) or 50% (for modules at level 7\*).**

**In addition, students are required to:**

- (a) achieve the qualifying mark for each element of fine graded assessment as specified above**
- (b) pass any pass/fail elements**

**[\* the pass mark of 50% applies for all module occurrences from the academic year 2024/25 – see Section 3a of this MDF to check the level of the module and Section 8a of this MDF to check the academic year]**