



Module Definition Form (MDF)

Module code: MOD010256	Version: 1 Date Amended: 17/Apr/2024
1. Module Title	
Sustainable Conceptual Design for Civil Engineering	
2a. Module Leader	
Shadi Ostovari	
2b. School	
School of Life Sciences	
2c. Faculty	
Faculty of Science and Engineering	
3a. Level	
5	
3b. Module Type	
Standard (fine graded)	
4a. Credits	
30	
4b. Study Hours	
300	

5. Restrictions			
Type	Module Code	Module Name	Condition
Pre-requisite:	MOD010257	Materials, Design and Construction Project	Compulsory
Co-requisites:	None		
Exclusions:	None		
Courses to which this module is restricted:	None		

LEARNING, TEACHING AND ASSESSMENT INFORMATION

6a. Module Description
<p>This module has been crafted to enhance your ability to analyse challenges within the built environment. By applying engineering principles, theories and mathematical concepts, you'll gain valuable insights into addressing complex issues. Additionally, this module aims to broaden your perspective on built environment projects by emphasising sustainability as a fundamental value.</p> <p>Key Aspects of the Module:</p> <ul style="list-style-type: none"> • Integration of Sustainability: We recognise sustainability as a core pillar. Throughout the course, you'll explore how environmental, social and financial considerations intersect with engineering solutions. • Strands of Civil Engineering: Drawing from your knowledge of civil engineering, particularly in structures and geotechnics, you'll propose conceptual designs. These designs will undergo critical assessment to evaluate their suitability. • Sustainable Design Assessment: Your proposed designs will be evaluated for sustainability. This assessment will guide you in identifying areas for improvement while ensuring alignment with environmental goals. <p>You'll collaborate within teams to complete your project. The collective effort and diverse perspectives will enrich your experience. ARU Live Brief's partners and Civil Engineering team will support you during this process to make sure you are provided with the guidance and mentorship you need throughout the module.</p>

6b. Outline Content

Knowledge

- Structures and Construction Materials
- Conceptual Design
- Loading assessment
- Analysis and viability of alternate designs (material and concept)
- Total stress, effective stress and porewater pressure
- Consolidation theory and laboratory determination of consolidation parameters
- Soil Shear Strength Laboratory determination of soil strength parameters

Sustainability

- Defining sustainable development in civil engineering
- The three pillars of sustainability : environment – economy- society
- United Nations Sustainable Development Goals (UN SDGs)
- Impact analysis: environmental – economic – social
- Quantification of sustainability in civil engineering projects
- Case studies

Skills

- Effective teamwork
- Effective oral communication
- Technical report writing
- Application of engineering concepts to analyse and solve problems
- Critical thinking and analysis
- Ability to adapt to change
- Effective planning and organisation
- Effective autonomous work
- Data interpretation
- Develop engineering strategies

6c. Key Texts/Literature

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

6d. Specialist Learning Resources

- Geotechnics lab
- Work room

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	Select and assess appropriate structural and geotechnical analyses for a built environment project
2	Knowledge and Understanding	Understand the sustainability of a built environment project and analyse the environmental, social and economic implications of that.
3	Intellectual, practical, affective and transferrable skills	Apply structural and geotechnical concepts to analyse built environment problems using lab-based and/or computer analysis where appropriate.
4	Intellectual, practical, affective and transferrable skills	Collect, present, interpret, analyse and reflect upon data and information.

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	36	1-4	Normally 3 hrs of 12 sessions: However, this should be scheduled in accordance with the project requirements
Other teacher managed learning	36	1-4	Normally 3 hrs of 12 sessions: However, laboratories, practical, workshops, scheduled in accordance with the project requirements.
Student managed learning	228	1-4	Group work, autonomous study and individual learning activities.
TOTAL:	300		

9. Assessment for the above Module Occurrence					
Assessment No.	Assessment Method	Learning Outcomes	Weighting (%)	Fine Grade or Pass/Fail	Qualifying Mark (%)
010	Coursework	1,3,4	30 (%)	Fine Grade	30 (%)
Geotechnics Report; 2000-word equivalent This element is aligned with Engineering Council AHEP4 Learning Outcomes: C9 & C12. This element is aligned with JBM threads: Design, Structures and Materials					
Assessment No.	Assessment Method	Learning Outcomes	Weighting (%)	Fine Grade or Pass/Fail	Qualifying Mark (%)
011	Coursework	2,4	20 (%)	Fine Grade	30 (%)
Sustainability and Impact report 1500 – word equivalent (group) This element is aligned with Engineering Council AHEP4 Learning Outcomes: C7 & C8. This element is aligned with JBM threads: Sustainability					
Assessment No.	Assessment Method	Learning Outcomes	Weighting (%)	Fine Grade or Pass/Fail	Qualifying Mark (%)
012	Coursework	1,3,4	50 (%)	Fine Grade	30 (%)
Conceptual design report –2500-word equivalent (individual & group) This element is aligned with Engineering Council AHEP4 Learning Outcomes: C3 & C6. This element is aligned with JBM threads: Design, Structures, Materials					

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]