



Module Definition Form (MDF)

Module code: MOD010255	Version: 1 Date Amended: 17/Apr/2024
1. Module Title	
Structure and Construction Project	
2a. Module Leader	
Yingang Du	
2b. School	
School of Engineering and the Built Environment	
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 aims to develop students' understanding on the principles and methods of structural design to the current Codes of Practices. It's also designed to build up students' ability to evaluate and resolve practical engineering problems and to design structural members in accordance with Structural Eurocodes and by looking at past failures. This, in turn, would reinforce students' knowledge and understanding of the effect of design assumptions on the safety of a structure and economy of its construction. Your knowledge and skills obtained from the class will be immediately applied to the design project of green bridges in the trimester one.</p> <p>In this module, you also will learn how to use software package to perform structural design and critically compare your manual design with those using software package.</p> <p>You'll apply the principles of construction management and contract administration to the project to develop a sequence and management for your construction project as well as a method statement. You'll also consider the financial implications, resources and contract management necessary for the project.</p>

6b. Outline Content

Knowledge

- Grades and properties of construction materials.
- Structural properties and failure modes of concrete, steel and timber elements
- Principles of codified structural design (RC, steel and timber elements)
- Actions assessment and loading paths.
- Analysis and viability of alternate designs (material and dimensions)
- Use of software for structural design

Construction Management and contract administration

- Construction resources
- Human resources
- Financial resources
- CDM regulations
- Contract administration
- On-site construction activities
- Risk assessment and mitigation for construction works

Skills

- Produce design calculations in a clear and standard format.
- Correct use of specialised terminology commonly used within the industry.
- Problem-solving in relation to materials and methods of construction.
- Managing time effectively.
- Questioning current theories and practice.
- Effective oral communication.
- Technical report writing.
- Application of engineering concepts to analyse and solve problems.
- Critical thinking and analysis.
- Effective planning and organisation.
- Effective autonomous work.
- Data interpretation.
- Develop engineering strategies.
- Health and safety awareness.
- Ethics awareness.

6c. Key Texts/Literature

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

6d. Specialist Learning Resources

- Structural design software
- 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	Describe the principles of limit state design method and the performance of the structural members made from concrete, steelwork, and timber.
2	Knowledge and Understanding	Demonstrate, by their appropriate preparation and use, a full understanding of the inter-relationships between contract documents.
3	Knowledge and Understanding	Describe the health and safety requirements and legislations related the use of lab spaces, equipment, and procedures to a construction project.
4	Intellectual, practical, affective and transferrable skills	Select appropriate material types and strengths and apply structural analysis and design principles to obtain safe and economical member sizes for the applied loads in a practical context.
5	Intellectual, practical, affective and transferrable skills	Design and detail structural elements (steel, concrete and timber) in accordance with current Eurocodes.
6	Intellectual, practical, affective and transferrable skills	Present and communicate technical concepts effectively to a range of stakeholders through well-constructed arguments developed by critically evaluating technical literature.

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	48	1-6	Normally 2 hrs of 24 sessions: However, this should be scheduled in accordance with the project requirements
Other teacher managed learning	24	1-6	Normally 1 hr of 24 sessions: It will be performed via group work, workshops, site visit and field work, scheduled in accordance with the project requirements.
Student managed learning	228	1-6	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	1,4,5,6	40 (%)	Fine Grade	30 (%)
Structural design report; 2000-word equivalent (group & individual). This element is aligned with the C5 Engineering Council's AHEP4 Learning Outcomes and JBM's threads Design, Structures.					
Assessment No.	Assessment Method	Learning Outcomes	Weighting (%)	Fine Grade or Pass/Fail	Qualifying Mark (%)
011	Examination Chelmsford	1,4,5	30 (%)	Fine Grade	30 (%)
Structural design exam; 2-hour exam (2000-word equivalent). This element is aligned with the C3 Engineering Council's AHEP4 Learning					
Assessment No.	Assessment Method	Learning Outcomes	Weighting (%)	Fine Grade or Pass/Fail	Qualifying Mark (%)
012	Coursework	2,3,6	30 (%)	Fine Grade	30 (%)
Construction contract administration report: 2000-word equivalent (individual). This element is aligned with the C15 Engineering Council's AHEP4 Learning Outcomes and JBM's thread Health and Safety, Construction management					

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]