Module Definition Form (MDF)

Module code: MOD008362	**Version:** 2 **Date Amended:** 13/Jun/2024

1. Module Title
Technology A (Architecture)

2a. Module Leader
Graham Terry

2b. School
School of Engineering and the Built Environment

2c. Faculty
Faculty of Science and Engineering

3a. Level
4

3b. Module Type
Standard (fine graded)

4a. Credits
30

4b. Study Hours
300

5. Restrictions

Type	Module Code	Module Name	Condition
Pre-requisites:	None		
Co-requisites:	None		
Exclusions:	None		
Courses to which this module is restricted:	BA (Hons) Architecture		

LEARNING, TEACHING AND ASSESSMENT INFORMATION

6a. Module Description

This module is designed to give you the basics in building technology, which will provide the Technology related knowledge to support you in modules Design Studio A1 and A2.

It will provide you with an array of technical concepts supporting you in your first year towards designing sustainably, structurally sound and safe projects to be developed in your Design Studio modules. In this module you will understand the principles of circular economy on the built environment; you will also investigate how to achieve high levels of environmental performance of domestic scale buildings , through material properties and their potential, construction detailing towards a more environmentally-friendly design approach, principles of health and safety and the fundamentals of structural design.

The module introduces issues and design processes associated with the design of sustainable domestic construction. You will learn and compare sustainable methods of construction of both new and traditional domestic buildings and analyse suitable applications for each method. In particular: foundations, external walls, flooring, roofing are discussed in the module. The module also provides you with an opportunity to examine health and safety issues within the construction industry and their integration throughout the processes of design, tender award and construction. The roles of all parties involved are explored from both moral and legal viewpoints. The safety record within the construction industry and identify health and safety legislation aimed at reducing accident rates will be identified. The module focuses on construction materials such as timber, concrete, steel, glass, masonry. You will become familiar with the consistency, production and manufacturing techniques, thermal properties, structural behaviour and use of these materials. You will also be introduced to the role they play in a building and will appreciate the broader spectrum of interrelations between architecture and structural design through the exploration of basic analytical concepts and processes involved in the design of structures. The issue of ethical sourcing and deployment in relation to sustainability and environmental performance (Life Cycle Analysis) of each project will be key.

The module puts an emphasis on the drawing conventions of construction details. Architectural working and technical drawings will be produced and annotated using commercial CAD software. This will allow you to effectively interpret and produce technical drawing and will give you the skills which can be applied to your specialist discipline area in your Design modules.

6b. Outline Content

Knowledge and Understanding

- Material Resources, Uses and Sustainability, CO2 footprint, material passports.
- Engineering Properties of Materials.
- The problem of “material selection” and deployment in relation to sustainability and environmental performance (Life Cycle Analysis).
- Techniques to calculate predicted operational and embodied energy use and carbon emissions
- Recyclable, recycling and recycled materials.
- Composition, manufacture, thermal properties and structural behaviour and use of: timber, masonry, concrete, steel, glass, brick and blockwork.
- Functional requirements, typical methods of construction of foundations in domestic buildings: shallow foundations.
- Functional requirements, typical methods of construction and construction details of external walls in domestic construction. Analysis of sustainable construction methods: Thermal mass; Double-envelope construction; insulation and U-Values; windows and glazing.
- Functional requirements, typical methods of construction and construction details of floor and roof in domestic construction. Analysis of sustainable construction methods: thermal performance; insulation and U-Values; cool roofs; green roofs; radiant barriers.
- Understand the qualities of the products specified in respect of fire performance, and record how they will perform as part of a construction system
- Building regulations and introduction of relevant regulations and secondary legislation relating to structural and fire safety
- Safety record of the construction industry.
- Development of law in matters of safety.
- Current Acts and Regulations and the responsibilities that flow from them, including the functions under CDM of the principal designer, principal contractor, other contractors and the client.
- Preparation and use of method statements.
- Hazard spotting and risk assessment.
- Introduction to relevant regulations and secondary legislation relating to health and safety; ISO18001.

Skills based:

- Communication by written report, proportional sketches, scale drawings and specifications.
- Correct use of specialised terminology commonly used within the industry.
- Problem-solving in relation to materials, methods of construction.
- Architectural and technical drawings and techniques.
- 2D drafting techniques for drawing and detailing using industry standard software.

6c. Key Texts/Literature

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

6d. Specialist Learning Resources

LinkedIn Learning

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	Recognise and describe a range of materials commonly used in construction and discuss the sustainability issues that might arise from their use.
2	Knowledge and Understanding	Demonstrate knowledge and understanding of the structural behaviour of typical construction materials and how this relates to architectural design.
3	Knowledge and Understanding	Explain the primary functional requirements of sustainable domestic construction, how technologies can achieve these requirements.
4	Knowledge and Understanding	Demonstrate a general awareness of health and safety legislation applicable to construction projects throughout their life cycle.
5	Intellectual, practical, affective and transferrable skills	Demonstrate an understanding of industry relevant communication tools and techniques such as computer aided design (CAD).
6	Intellectual, practical, affective and transferrable skills	Demonstrate an ability to develop 2D drafting techniques for drawing and detailing using industry standard software.

8a. Module Occurrence to which this MDF Refers				
Year	**Occurrence**	**Period**	**Location**	**Mode of Delivery**
2025/6	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	2 hours per week.
Other teacher managed learning	0	None	Students are expected to take part in two, one day “crits” in the studio timetabled concurrently with their design module.
Student managed learning	252	1-6	Private study.
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	1-6	50 (%)	Fine Grade	40 (%)
Research-based Portfolio - 2400 word equivalent					
Assessment No.	**Assessment Method**	**Learning Outcomes**	**Weighting (%)**	**Fine Grade or Pass/Fail**	**Qualifying Mark (%)**
011	Coursework	1-6	50 (%)	Fine Grade	40 (%)
Research-based Portfolio - 2400 word equivalent					

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]