

Module Specification

Module Summary Information

1	Module Title	Science and Materials
2	Module Credits	20
3	Module Level	4
4	Module Code	BNV4112

5	Module Overview
<p>The module combines environmental science, materials science, and principles of construction management, in order to provide the students with an awareness of the properties, behaviour, and use of construction materials and the application of scientific principles to the design and use of buildings. It encourages students to consider how these properties affect the design and use of buildings, both from a professional's and a user's perspective.</p> <p>The module commences with introducing the key scientific methods, based on mathematics and physics, which underpin the design of buildings. It proceeds with a coverage of the environmental performance of buildings, with an emphasis on the aspects that affect user comfort, such as heat, light, and sound. The structural performance of buildings is addressed via key aspects of materials science, including the design of a building component. The module concludes with a coverage of contemporary issues on materials-related aspects, such as sustainability, health and safety, and design management regulations.</p> <p>The module employs a range of approaches and learning materials, reflecting the varied nature of the content. Directed learning exercises are employed so the students produce a portfolio of work at the end of the semester, exploring the issues covered in class. Design exercises are combined with experimental work in order to assess the environmental and structural performance of building components. A group exercise covers the design management and sustainability aspects, encouraging students to collaborate. Besides the subject knowledge, the module also provides an excellent opportunity for students to develop their written, verbal, analytical, teamwork, and other employability skills.</p>	

6	Indicative Content
<p>1. Identify and explain common terminology relating to environmental and materials science</p> <ul style="list-style-type: none"> • Notation and concepts in environmental and materials science. • Principles of mathematics. • Units & measurements. <p>2. Evaluate the environmental performance of building components, with respect to human comfort and sustainability aspects, including experimental data.</p> <ul style="list-style-type: none"> • Heat Transfer and Thermal Comfort Control. • Ventilation and Humidity control. • Physics of Light and Lighting Design. • Physics of Sound and Acoustic Design. • Physics of Water and Hydraulic Design. 	

3. Evaluate the structural performance of building components and how they affect material choices, including experimental data.

- Structural analysis of members.
- Mechanics of materials.
- Design in concrete, steel, timber, and masonry.
- Quality control of materials.

4. Demonstrate effective group working and communication skills relating to sustainability, health and safety, and design management regulations

- Sustainability of materials
- Energy Demand and Renewable Energy.
- Health and Safety in the construction site.
- Design Management Regulations.

7		Module Learning Outcomes
		On successful completion of the module, students will be able to:
	1	Identify and explain common terminology relating to environmental and materials science.
	2	Discuss the environmental performance of building components, with respect to human comfort and sustainability aspects, including experimental data.
	3	Explain the structural performance of building components and how they affect material choices, including experimental data.
	4	Demonstrate effective group working and communication skills relating to sustainability, health and safety, and design management regulations.

8				Module Assessment
Learning Outcome		Coursework	Exam	In-Person
1-4		X		

9		Breakdown Learning and Teaching Activities
Learning Activities	Hours	
Scheduled Learning (SL) includes lectures, practical classes and workshops, peer group learning, Graduate+, as specified in timetable	48	
Directed Learning (DL) includes placements, work-based learning, external visits, on-line activity, Graduate+, peer learning, as directed on VLE	60	
Private Study (PS) includes preparation for exams	92	
Total Study Hours:	200	

