

MODULE CODE: M4X01974
TITLE: TECHNOLOGY & ENVIRONMENT 1
DATED: 17/03/2015

LEVEL: 4
CREDITS: 20

JACS CODE: K100

ARB/RIBA criteria addressed in this module	
Understanding of the relationship between people and buildings, and between buildings and their environment, and the need to relate buildings and the spaces between them to human needs and scale.	GC5
the impact of buildings on the environment, and the precepts of sustainable design;	5.2
Understanding of the methods of investigation and preparation of the brief for a design project.	GC7
the need to critically review precedents relevant to the function, organisation and technological strategy of design proposals;	7.1
Understanding of the structural design, constructional and engineering problems associated with building design.	GC8
the investigation, critical appraisal and selection of alternative structural, constructional and material systems relevant to architectural design;	8.1
strategies for building construction, and ability to integrate knowledge of structural principles and construction techniques;	8.2
the physical properties and characteristics of building materials, components and systems, and the environmental impact of specification choices.	8.3
Adequate knowledge of physical problems and technologies and the function of buildings so as to provide them with internal conditions of comfort and protection against the climate.	GC9
principles associated with designing optimum visual, thermal and acoustic environments;	9.1
systems for environmental comfort realised within relevant precepts of sustainable design;	9.2
strategies for building services, and ability to integrate these in a design project.	9.3
GRADUATE ATTRIBUTES AT PART 1 LEVEL	GA
understanding of the alternative materials, processes and techniques that apply to architectural design and building construction;	3

AIMS

- To provide the student with a basic knowledge of the principles of building construction and structural design.
- To provide the student with a basic knowledge of the key concepts of building physics and low carbon building design

LEARNING OUTCOMES

Upon the successful completion of this module, the student should be able to demonstrate the ability to:

1. Describe accurately appropriate methods of construction of small domestic buildings in the UK
2. Describe accurately the principles that inform the selection of materials and structural strategies for buildings
3. Explain the principles of energy consumption and conservation in the construction and use of buildings

INDICATIVE CONTENT

- Design principles for load-bearing structures, building frames, short and long span structures
- Domestic masonry and timber frame construction including innovative methods
- Properties of most common building materials – including timber, masonry, metals, concrete.
- Key environmental design concepts including comfort, efficiency and sustainability

- Heat transfer in buildings: conduction, convection and radiation including calculation of U values, embodied energy, energy inputs
- Low carbon building strategies and typologies

LEARNING AND TEACHING STRATEGY

Lectures, on-line teaching resources and guided reading will introduce the key concepts and principles. In-class workshops and seminars will introduce practical examples, which will be used to support the application, discussion, and critical evaluation of knowledge acquired. Case studies will also be used to develop understanding and application of the principles.

The allocation of teaching to deliver the module is:

Activity type	Hours	Percentage
Scheduled learning	60	30
Independent learning	140	70
Placement learning		
TOTAL	200	100%

ASSESSMENT

Assessment Component 1 – 50%

Coursework: practical exercises completed outside class (total 2000 words).

Assessment Component 2 – 50%

Examination (2 hours)

Assessment Summary

Activity type	Percentage
Written exam	50%
Coursework (portfolio)	50%
Practical	
TOTAL	100%

EDUCATION FOR SUSTAINABLE DEVELOPMENT (ESD)

Does the module contribute to ESD?	Yes
This module sets the foundation of students' technical knowledge base. The primary focus is on the technologies of construction and environmental control in domestic and small mixed use buildings. The principles of sustainable design and construction are fundamental considerations in the shaping of the module content.	

BIBLIOGRAPHY

Essential

BRYAN, T. 2010 *Construction Technology: analysis and choice*. 2nd ed. Chichester, Wiley-Blackwell.

SILVER, P. 2008 *Introduction to Architectural Technology*. London, Laurence King

Recommended

ALREAD, J, & THOMAS, L. 2007 *Design-Tech: Building Science for Architects*. Oxford, Architectural

BALLARD BELL, V. & RAND, P. 2006 *Materials for architectural design*. London, Laurence King

BENNETT, D. 2010 *Sustainable Concrete Architecture* London, RIBA Publishing

BROWN, G.Z & DeKAY, M. 2014 *Sun, Wind and Light: Architectural Design Strategies* Hoboken NJ, Wiley

CHING, F. 1975 *Building Construction Illustrated*. New York, Van Nostrand Reinhold

CLARK, D. 2013 *What Colour is Your Building?* London, RIBA Publishing

DYE, A & McEVOY, M 2008 *Environmental Construction Handbook*. London, RIBA Publishing

EVANS, H ed 2012 *Guide to the Building Regulations 2011 Edition* London, RIBA Publishing

GETHING, B. 2013 *Design for Climate Change* London, RIBA Publishing

HEYWOOD, H. 2012 *101 Rules of Thumb for Low Energy Architecture*. London, RIBA Publishing

HUNT, T., 2003. *Tony Hunt's Structures Notebook*. 2nd ed. London, Architectural Press

RUDLIN, D. & FALK, N 1999 *Building the 21st Century Home* Oxford, Architectural Press

STACEY, M. 2011 *Concrete: a studio design guide* London, RIBA Publishing

THOMAS, R. 2000 *Environmental Design : an introduction for Architects and Engineers*. London, Spon

THOMPSON, R. 2007 *Manufacturing Processes for Design Professionals*. London: Thames & Hudson

Background

ALLEN, P. et al 2013 *Zero Carbon Britain* Machynlleth, Centre for Alternative Technology

BADEN-POWELL, C. 2011 *The Architect's Pocket Book* 4th ed. Oxford, Architectural Press

EDWARDS, B. 2014 *Rough Guide to Sustainability* 4th ed. London, RIBA Publishing

LITTLEFIELD, D (ed) 2008 *Metric Handbook: Planning & Design Data* 3rd edition.

PELSMAKERS, S. 2012 *Environmental Design Pocket Book*. London, RIBA Publishing

Journals

Architects Journal

Building Design

Architecture Today

Detail

Building

Websites

www.architecture.com

www.architectsjournal.co.uk

www.bdonline.co.uk

www.greatbuildings.com

<http://www.ajbuildingslibrary.co.uk>