Prifysgol Cymru
Y Drindod Dewi Sant
University of Wales
Trinity Saint David

MODULE DIRECTORY

LEVEL 5

ACADEMIC DISCIPLINE OF ARCHITECTURE, CONSTRUCTION AND THE ENVIRONMENT

WALES INSTITUTE OF SCIENCE AND ART

2025-2026

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INTRODUCTION

This Module Directory includes all the modules for Level 5 within the discipline of Architecture, Construction and the Environment, Wales Institute of Science and Art in the academic year 2025-2026.

This directory accompanies the Programme of Study Handbook, which will provide you with details of which modules you will be studying for your programme this year in the 'Programme of Study' section. This directory may include modules that are running on other programmes of study within your Academic Discipline/Institute. If you require assistance in identifying the modules for your programme of study, please contact the Programme Manager (whose name and contact details are provided in the accompanying Programme of Study Handbook), or the relevant Institute Office.

The University has made every effort to make the information as full and as accurate as possible, but you should note that minor changes in the organisation of modules between the planning stage and the actual teaching are inevitable. We shall try to keep any such changes to a minimum, and you will receive plenty of advance warning in the event of any alteration. We would also be grateful if you would let us know about any changes that you think might be helpful if introduced into future handbooks.

MODULES

Module Code	**ACAA5000**
Title	**Architecture Studio 2A**
Date	**13/07/2024**
Level	**5**
Credits	**20**
Pre-Requisites	**None**

ARB*/RIBA criteria addressed in this module - * Due to national level changes, ARB prescription of Part 1 (BSc Architecture) will end on December 31st 2027. However, the programme will continue to map to the ARB criteria.	
Ability to create architectural designs that satisfy both aesthetic and technical requirements	**GC1**
prepare and present building design projects of diverse scale, complexity, and type in a variety of contexts, using a range of media, and in response to a brief;	1.1
understand the constructional and structural systems, the environmental strategies and the regulatory requirements that apply to the design and construction of a comprehensive design project	1.2
develop a conceptual and critical approach to architectural design that integrates and satisfies the aesthetic aspects of a building and the technical requirements of its construction and the needs of the user	1.3
Adequate knowledge of the histories and theories of architecture and the related arts, technologies and human sciences.	**GC2**
the application of appropriate theoretical concepts to studio design projects, demonstrating a reflective and critical approach.	2.3
Knowledge of the fine arts as an influence on the quality of architectural design.	**GC3**
the creative application of the fine arts and their relevance and impact on architecture;	3.2
the creative application of such work to studio design projects, in terms of their conceptualisation and representation.	3.3
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 needs and aspirations of building users;	5.1
the impact of buildings on the environment, and the precepts of sustainable design;	5.2
the way in which buildings fit into their local context.	5.3
Understanding of the profession of architecture and the role of the architect in society, in particular in preparing briefs that take account of social factors.	**GC6**
the potential impact of building projects on existing and proposed communities.	6.3
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
the need to appraise and prepare building briefs of diverse scales and types, to define client and user requirements and their appropriateness to site and context;	7.2
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
The necessary design skills to meet building users' requirements within the constraints imposed by cost factors and building regulations.	**GC10**
prepare designs that will meet building users' requirements and comply with UK legislation, appropriate performance standards and health and safety requirements.	10.3
RIBA THEMES AND VALUES AT PART ONE LEVEL	**T&V**
Health and Life Safety: Demonstrating authoritative knowledge of statutory frameworks to safeguard the community and the end user.	1
Structures, Construction, and Resources: demonstrating climate literacy, responsible specification, and ethical sourcing to enhance wellbeing, minimise embodied carbon, waste, and pollution, and reduce demands on energy and water.	3
Design pedagogies and architectural expression: critically evaluating authentic aesthetic, compositional, and spatial principles to synthesise socially, ecologically, and environmentally sustainable integrated studio projects.	5
GRADUATE ATTRIBUTES AT PART ONE LEVEL	**GA**
ability to generate design proposals using understanding of a body of knowledge, some at the current boundaries of professional practice and the academic discipline of architecture;	1
ability to apply a range of communication methods and media to present design proposals clearly and effectively;	2
ability to identify individual learning needs and understand the personal responsibility required for further professional education.	6

AIM(S)

- To develop, building on the foundations laid in the first year design modules, the student's architectural design and representation skills through a series of design projects for small and medium sized domestic and community buildings and associated external spaces in defined existing contexts

- To develop the student's ability to apply technical knowledge (of building structure, construction and environmental impact) to create integrated designs that meet user needs and acknowledge physical and contextual constraints.

- To develop the student's understanding the character, quality and performance of buildings through the analysis of precedent

LEARNING OUTCOMES

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

- Create well-resolved designs for groups of dwellings and/or small to medium size non-domestic buildings.

- Demonstrate understanding of the principles of dwelling design, responding creatively to the constraints of topography, built context, orientation and accessibility.

- Apply knowledge of structure, construction and environmental control technologies in the design of buildings of two or three storeys

- Use a variety of manual and computer depiction techniques to describe and explain architectural intentions

- Apply the techniques of the fine arts in the conception and depiction of design ideas.

INDICATIVE CONTENT

- Contextual study requiring the analysis of topography, built, form climatic influences etc

- Measured survey of an existing building presented in drawings and/or a digital model

- Design for the adaptive re-use of an existing building

- Design of a small group dwellings on a real site with clear contextual constraints

- Design of a small to medium size non domestic building in a real setting based on a clearly defined brief

LEARNING AND TEACHING STRATEGY

In this module students build on the design skills acquired in the first year architecture studio modules. The focus is on the design of domestic and small multi-use buildings in real settings and may involve the adaption of existing structures. It is taught in the first semester and leads directly into ACAA5001 Architecture Studio 2B. In a varied sequence of projects students apply observational and analytical methods to further develop their design thinking. Students respond (usually individually but sometimes in groups) to a brief or proposition. Ideas are developed using a variety of graphic and computer-based methods supported by discussion with tutors, fellow students and others. Proposals are presented using drawings, sketchbooks, physical models and digital images, often accompanied by explanatory text.

Scheduled learning: Regular studio sessions include: group project briefings, studio lectures, workshops, site visits, group tutorial sessions (or meetings with tutors off campus if delivered in the summer in block mode). Formative feedback is continuous in tutorial session and reviews in which students present their work to fellow students, tutors and sometimes visitors.

Independent learning. Between scheduled studio sessions students work independently both individually and collaboratively to develop their design ideas, carry out project related research and read relevant texts.

Study Time Allocation

The study time for the module is divided as follows:

Activity type	Hours	Percentage
Scheduled learning	48	24%
Structured Learning	12	6%
Independent learning	140	70%
Placement learning		
TOTAL	**200**	**100%**

ASSESSMENT

Assessment Component 1

☐ Written exam ☒ Coursework ☐ Practical

Mode of assessment	Volume	Weighting
Portfolio of design project work	3 – 4 components	100%

Assessment Summary

Activity type	Percentage
Written exam	
Coursework	100%
Practical	
TOTAL	**100%**

INDICATIVE READING LIST

Module Code	**ACAA5000**	
Module Title	**Architecture Studio 2A**	
Classification	**Reading List entry**	**Electronic***
Essential	Adjaye, D. (2005) *Houses*. London: Thames & Hudson	☐
Essential	Barton, H., Grant, M. & Guise, R. (2010) *Shaping Neighbourhoods*. London: Routledge	☐
Essential	Bourquin, N. et al (2008) *Data Flow – Visualising Information in Graphic Design*. London: Gestalten Verlag	☐
Essential	Rudlin, D. & Falk, N. (2009) *Building the 21st Century Home.* 2nd ed. Oxford: Architectural Press	☐
Further	Harris, C. & Borer, P. (2005). *The Whole House Book* 2nd ed. Machynlleth: Centre for Alternative Technology	☐
Further	Heywood, H. (2012) *101 Rules of Thumb for Low-Energy Architecture*. London: RIBA Publishing	☐
Further	Krasny, E. (2008). *The Force is in the Mind: The Making of Architecture*. Basel: Birkhäuser.	☐
Further	Kwok, A. & Grondzik, W. (2007) *The Green Studio Handbook*. Oxford: Architectural Press	☐
Further	Mostafavi, M. (1995) *On Weathering: The Lives of Buildings in Time*. Cambridge MA: MIT Press.	☐
Further	Rapoport, A. (1969) *House Form and Culture*. Englewood Cliffs New Jersey: Prentice Hall	☐
Further	Roaf, S. (2004) *Closing the Loop: Benchmarks for Sustainable Buildings*. London: RIBA Enterprises	☐
Further	Tarbatt, J. (2012) *The Plot: Designing Diversity in the Built Environment*. London: RIBA Publishing	☐
Further	Unwin, S. (2000) *Architecture Notebook.* London: Routledge	☐
Further	Unwin, S. (2007) *Doorway.* London: Routledge	☐
Further	Unwin, S. (2014) *Analysing Architecture*. London: Routledge	☐

Further	Unwin, S. 1997 *Analysing Architecture*. London: Routledge	☐
Further	Vale, R. and Vale, B. (2007) *The New Autonomous House*. London: Thames & Hudson	☐
Further	Weston, R. (2008) *Materials, Form and Architecture*. London: Laurence King	☐
Background	Hetreed, J, Ross, A & Baden-Powell, C. 2017 *The Architect's Pocket Book* 5th ed, Routledge.	☒
Background	Jones, W. (2011) *Architects' Sketches* London: Thames & Hudson	☐
Background	Littlefield, D (Ed) (2018) *Metric Handbook: Planning & Design Data. 6th Ed.* London: Elsevier	☒
Background	Oliver, P. (2003) *Dwellings: The Vernacular House World Wide*. London: Phaidon	☐
Background	Zell, M. (2017) *The Architectural Drawing Course* London: Thames & Hudson	☐
Journals	*The Architects' Journal*	☐
Journals	*Building Design*	☐
Journals	*Architecture Today*	☐
Journals	*Detail*	☐
Journals	*Building*	☐
Journals	*RIBA Journal*	☐
Journals	*El Croquis*	☐
Journals	*Domus*	☐
Websites	www.architecture.com	☒
Websites	www.architectsjournal.co.uk	☒
Websites	www.bdonline.co.uk	☒
Websites	www.greatbuildings.com	☒
Websites	www.ajbuildingslibrary.co.uk	☒
Websites	www.dezeen.com	☒

Additional titles will be recommended relevant to particular design projects

Module Code	**ACAA5001**
Title	**Architecture Studio 2B**
Date	**13/07/2024**
Level	**5**
Credits	**20**
Pre-Requisites	**None**

ARB*/RIBA criteria addressed in this module - * Due to national level changes, ARB prescription of Part 1 (BSc Architecture) will end on December 31st 2027. However, the programme will continue to map to the ARB criteria.	
Ability to create architectural designs that satisfy both aesthetic and technical requirements	**GC1**
prepare and present building design projects of diverse scale, complexity, and type in a variety of contexts, using a range of media, and in response to a brief;	1.1
understand the constructional and structural systems, the environmental strategies and the regulatory requirements that apply to the design and construction of a comprehensive design project	1.2
develop a conceptual and critical approach to architectural design that integrates and satisfies the aesthetic aspects of a building and the technical requirements of its construction and the needs of the user	1.3
Adequate knowledge of the histories and theories of architecture and the related arts, technologies and human sciences.	**GC2**
the application of appropriate theoretical concepts to studio design projects, demonstrating a reflective and critical approach.	2.3
Knowledge of the fine arts as an influence on the quality of architectural design.	**GC3**
the creative application of the fine arts and their relevance and impact on architecture;	3.2
the creative application of such work to studio design projects, in terms of their conceptualisation and representation.	3.3
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 needs and aspirations of building users;	5.1
the impact of buildings on the environment, and the precepts of sustainable design;	5.2
the way in which buildings fit into their local context.	5.3
Understanding of the profession of architecture and the role of the architect in society, in particular in preparing briefs that take account of social factors.	**GC6**
the potential impact of building projects on existing and proposed communities.	6.3
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
the need to appraise and prepare building briefs of diverse scales and types, to define client and user requirements and their appropriateness to site and context;	7.2
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
The necessary design skills to meet building users' requirements within the constraints imposed by cost factors and building regulations.	**GC10**
prepare designs that will meet building users' requirements and comply with UK legislation, appropriate performance standards and health and safety requirements.	10.3
RIBA THEMES AND VALUES AT PART ONE LEVEL	**T&V**
Health and Life Safety: Demonstrating authoritative knowledge of statutory frameworks to safeguard the community and the end user.	1
Structures, Construction, and Resources: demonstrating climate literacy, responsible specification, and ethical sourcing to enhance wellbeing, minimise embodied carbon, waste, and pollution, and reduce demands on energy and water.	3
Design pedagogies and architectural expression: critically evaluating authentic aesthetic, compositional, and spatial principles to synthesise socially, ecologically, and environmentally sustainable integrated studio projects.	5
GRADUATE ATTRIBUTES AT PART ONE LEVEL	**GA**
ability to generate design proposals using understanding of a body of knowledge, some at the current boundaries of professional practice and the academic discipline of architecture;	1
ability to apply a range of communication methods and media to present design proposals clearly and effectively;	2
understanding of the alternative materials, processes and techniques that apply to architectural design and building construction	3

AIM(S)

- To develop, building on the foundations laid in the first year design modules, the student's architectural design and representation skills through a series of design projects for small and medium sized domestic and community buildings and associated external spaces in defined existing contexts

- To develop the student's ability to apply technical knowledge (of building structure, construction and environmental impact) to create integrated designs that meet user needs and acknowledge physical and contextual constraints.

- To develop the student's understanding the character, quality and performance of buildings through the analysis of precedent

LEARNING OUTCOMES

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

- Design a small non-domestic mixed-use building, developed in significant detail and providing a creative response its physical and cultural context

- Use a variety of manual and computer depiction techniques informed by the traditions and contemporary practice of the fine arts to describe and explain architectural intentions

- Integrate knowledge of structure, construction and environmental control measures into the design of a multi-use building of two or three storeys

- Explain in detail the rationale for the disposition spaces with a building, its relation to its context and the choice of structure, construction and environmental control measures.

INDICATIVE CONTENT

- Contextual study requiring the analysis of topography, built, form climatic influences etc

- Measured survey of an existing building presented in drawings and/or a digital model

- Design for the adaptive re-use of an existing building

- Design of a small group dwellings on a real site with clear contextual constraints

- Design of a small to medium size non domestic building in a real setting based on a clearly defined brief

LEARNING AND TEACHING STRATEGY

This is the first of two second year second semester modules (ACAA5001 Architecture Studio 2B and ACAA5002 Architecture Studio 2C) which together offer an integrated sequence of design projects and share the same learning outcomes. Students build on the design skills acquired in the first year architecture studio modules and ACAA5000 Architecture Studio 2A which runs in the first semester. The focus is on the design of domestic and small multi-use buildings in real settings and may involve the adaption of existing structures and culminates (in ACAA5002 Architecture Studio 2C) in the detailed technical resolution of the design of a small multi-use building or group of buildings. In a varied sequence of projects students apply observational and analytical methods to further develop their design thinking.

Students respond (usually individually but sometimes in groups) to a brief or proposition. Ideas are developed using a variety of graphic and computer-based methods supported by discussion with tutors, fellow students and others. Proposals are presented using drawings, sketchbooks, physical models and digital images, often accompanied by explanatory text.

Scheduled learning
Regular studio sessions include: group project briefings, studio lectures, workshops, site visits, group tutorial sessions (or meetings with tutors off campus if delivered in the summer in block mode). Formative feedback is continuous in tutorial session and reviews in which students present their work to fellow students, tutors and sometimes visitors.

Independent learning
Between scheduled studio sessions students work independently both individually and collaboratively to develop their design ideas, carry out project-related research and read relevant texts.

Study Time Allocation

The study time for the module is divided as follows:

Activity type	Hours	Percentage
Scheduled learning	48	24%
Structured Learning	12	6%
Independent learning	140	70%
Placement learning		
TOTAL	**200**	**100%**

ASSESSMENT

Assessment Component 1

☐ Written exam ☒ Coursework ☐ Practical

Mode of assessment	Volume	Weighting
Portfolio of design project work	3 – 4 components	100%

Assessment Summary

Activity type	Percentage
Written exam	
Coursework	100%
Practical	
TOTAL	**100%**

INDICATIVE READING LIST

Module Code	**ACAA5001**	
Module Title	**Architecture Studio 2B**	
Classification	**Reading List entry**	**Electronic***
Essential	Heywood, H. (2012) *101 Rules of Thumb for Low-Energy Architecture*. London: RIBA Publishing	☒
Essential	Silver, P. (2008) *Introduction to Architectural Technology*. London: Laurence King	☒
Further	Alexander, C., Ishikawa, S. and Silverstein, M. (1978) *A Pattern Language: Towns, Buildings, Construction*. New York: Oxford University Press	☐
Further	Alread, J, & Thomas, L. (2007) *Design-Tech: Building Science for Architects.* Oxford: Architectural Press	☐
Further	Ballard Bell, V. & Rand, P. (2006) *Materials: For Architectural Design.* London: Laurence King	☐
Further	Brand, S. (1997) *How Buildings Learn: What Happens After They Are Built.*, London: Phoenix.	☐
Further	Brown, G. Z. & DeKay, M. (2014) *Sun, Wind and Light: Architectural Design Strategies.* Hoboken New Jersey: Wiley	☐
Further	Bryan, T. (2010) *Construction Technology: Analysis and Choice*. 2nd ed. Chichester: Wiley-Blackwell	☒
Further	Ching, F. (2020) *Building Construction Illustrated*. New York: John Wiley	☒

Further	Cotterell, S. (2014) *Dissertations and Project Reports: A Step by Step Guide.* Basingstoke: Palgrave Macmillan	☐
Further	Deplazes, A. (Ed.) (2005) *Constructing Architecture: Materials, Processes, Structures: A Handbook.* Basel: Birkhäuser	☐
Further	Dye, A. & McEvoy, M. (2008) *Environmental Construction Handbook.* London: RIBA Publishing	☐
Further	Edwards, B. (2014) *Rough Guide to Sustainability*. 4th ed. London: RIBA Publishing	☐
Further	Evans, H. (2015) *Guide to the Building Regulations 2011.* 3rd ed. London: RIBA Publishing	☐
Further	Farrelly, L. (2008) *Representational Techniques* Lausanne, Ava	☐
Further	Gething, B. (2013) *Design for Climate Change* London: RIBA Publishing	☐
Further	Goldsmith, S. (2000) *Universal Design.* Oxford: Architectural Press	☒
Further	Harris, C. & Borer, P. (2005) *The Whole House Book.* 2nd Ed. Machynlleth: Centre for Alternative Technology	☐
Further	Krasny, E. (2008). *The Force is in the Mind: The Making of Architecture*. Basel: Birkhäuser.	☐
Further	Kwok, A. & Grondzik, W. (2007) *The Green Studio Handbook*. Oxford: Architectural Press	☐
Further	Mostafavi, M. (1995) *On Weathering: The Lives of Buildings in Time*. Cambridge MA: MIT Press.	☐
Further	Radford, A. et al *(*2014) *Elements of Modern Architecture: Understanding Contemporary Buildings* London: Thames & Hudson	☐
Further	Stacey, M. (2011) *Concrete: A Studio Design Guide* London: RIBA Publishing	☐
Further	Turrent, D. (Ed) (2007) *Sustainable Architecture*. London: RIBA Publishing	☐
Further	Unwin, S. (2000) *Architecture Notebook.* London: Routledge	☐
Further	Unwin, S. (2007) *Doorway.* London: Routledge	☐
Further	Unwin, S. (2014) *Analysing Architecture*. London: Routledge	☐
Further	Weston, R. (2008) *Materials, Form and Architecture*. London: Laurence King	☐
Essential	Zell, M. (2017) *The Architectural Drawing Course* London: Thames & Hudson	☐
Background	Bingham, N. (2013) *100 Years of Architectural Drawing.* London: Laurence King	☐
Background	Hetreed, J, Ross, A & Baden-Powell, C. 2017 *The Architect's Pocket Book* 5th ed, Routledge.	
Background	Littlefield, D (Ed) (2018) *Metric Handbook: Planning & Design Data. 6th Ed.* London: Elsevier	☒
Background	Pelsmakers, S. (2015) *Environmental Design Pocket Book.* 2nd ed. London: RIBA Publishing	☐
Background	Roaf, S. (2004) *Closing the Loop: Benchmarks for Sustainable Buildings*. London: RIBA Enterprises	☐
Journals	*The Architects' Journal*	☐
Journals	*Building Design*	☐

Journals	*Architecture Today*	☐
Journals	*Detail*	☐
Websites	www.architecture.com	☒
Websites	www.architectsjournal.co.uk	☒
Websites	www.bdonline.co.uk	☒
Websites	www.greatbuildings.com	☒
Websites	http://www.ajbuildingslibrary.co.uk	☒

Additional titles will be recommended relevant to individual design projects

Module Code	**ACAA5002**
Title	**Architecture Studio 2C**
Date	**13/07/2024**
Level	**5**
Credits	**20**
Pre-Requisites	**None**

ARB*/RIBA criteria addressed in this module - * Due to national level changes, ARB prescription of Part 1 (BSc Architecture) will end on December 31st 2027. However, the programme will continue to map to the ARB criteria.	
Ability to create architectural designs that satisfy both aesthetic and technical requirements	**GC1**
prepare and present building design projects of diverse scale, complexity, and type in a variety of contexts, using a range of media, and in response to a brief;	1.1
understand the constructional and structural systems, the environmental strategies and the regulatory requirements that apply to the design and construction of a comprehensive design project	1.2
develop a conceptual and critical approach to architectural design that integrates and satisfies the aesthetic aspects of a building and the technical requirements of its construction and the needs of the user	1.3
Adequate knowledge of the histories and theories of architecture and the related arts, technologies and human sciences.	**GC2**
the application of appropriate theoretical concepts to studio design projects, demonstrating a reflective and critical approach.	2.3
Knowledge of the fine arts as an influence on the quality of architectural design.	**GC3**
the creative application of the fine arts and their relevance and impact on architecture;	3.2
the creative application of such work to studio design projects, in terms of their conceptualisation and representation.	3.3
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 needs and aspirations of building users;	5.1
the impact of buildings on the environment, and the precepts of sustainable design;	5.2
the way in which buildings fit into their local context.	5.3
Understanding of the profession of architecture and the role of the architect in society, in particular in preparing briefs that take account of social factors.	**GC6**
the potential impact of building projects on existing and proposed communities.	6.3
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
the need to appraise and prepare building briefs of diverse scales and types, to define client and user requirements and their appropriateness to site and context;	7.2
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
The necessary design skills to meet building users' requirements within the constraints imposed by cost factors and building regulations.	**GC10**
prepare designs that will meet building users' requirements and comply with UK legislation, appropriate performance standards and health and safety requirements.	10.3
RIBA THEMES AND VALUES AT PART ONE LEVEL	**T&V**
Health and Life Safety: Demonstrating authoritative knowledge of statutory frameworks to safeguard the community and the end user.	1
Structures, Construction, and Resources: demonstrating climate literacy, responsible specification, and ethical sourcing to enhance wellbeing, minimise embodied carbon, waste, and pollution, and reduce demands on energy and water.	3
Design pedagogies and architectural expression: critically evaluating authentic aesthetic, compositional, and spatial principles to synthesise socially, ecologically, and environmentally sustainable integrated studio projects.	5
GRADUATE ATTRIBUTES AT PART ONE LEVEL	**GA**
ability to generate design proposals using understanding of a body of knowledge, some at the current boundaries of professional practice and the academic discipline of architecture;	1
ability to apply a range of communication methods and media to present design proposals clearly and effectively;	2
understanding of the alternative materials, processes and techniques that apply to architectural design and building construction	3

AIM(S)

- To develop, building on the foundations laid in the first year design modules, the student's architectural design and representation skills through a series of design projects for small and medium sized domestic and community buildings and associated external spaces in defined existing contexts

- To develop the student's ability to apply technical knowledge (of building structure, construction and environmental impact) to create integrated designs that meet user needs and acknowledge physical and contextual constraints.

- To develop the student's understanding the character, quality and performance of buildings through the analysis of precedent

LEARNING OUTCOMES

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

- Design a small non-domestic mixed-use building, developed in significant detail and providing a creative response its physical and cultural context

- Use a variety of manual and computer depiction techniques, informed by the traditions and contemporary practice of the fine arts to describe and explain architectural intentions

- Integrate knowledge of structure, construction and environmental control measures into the design of a multi-use building of two or three storeys

- Explain in detail the rationale for the disposition spaces with a building, its relation to its context and the choice of structure, construction and environmental control measures.

INDICATIVE CONTENT

- Contextual study requiring the analysis of topography, built, form climatic influences etc

- Measured survey of an existing building presented in drawings and/or a digital model

- Design for the adaptive re-use of an existing building

- Design of a small group dwellings on a real site with clear contextual constraints

- Design of a small to medium size non domestic building in a real setting based on a clearly defined brief

LEARNING AND TEACHING STRATEGY

Students build on the design skills acquired in the first year architecture studio modules and ACAA5000 Architecture Studio 2A which runs in the first semester The focus is on the design of domestic and small multi-use buildings in real settings and may involve the adaption of existing structures and culminates (in ACAA5002 Architecture Studio 2C) in the detailed technical resolution of the design of a small multi-use building or group of buildings. In a varied sequence of projects students apply observational and analytical methods to further develop their design thinking. In a varied sequence of projects students apply observational and analytical methods to further develop their design thinking. Students respond (usually individually but sometimes in groups) to a brief or proposition. Ideas are developed using a variety of graphic and computer-based methods supported by discussion with tutors, fellow students and others. Proposals are presented using drawings, sketchbooks, physical models and digital images, often accompanied by explanatory text.

Scheduled learning: Regular studio sessions include: group project briefings, studio lectures, workshops, site visits, group tutorial sessions (or meetings with tutors off campus if delivered in the summer in block mode). Formative feedback is continuous in tutorial session and reviews in which students present their work to fellow students, tutors and sometimes visitors.

Independent learning. Between scheduled studio sessions students work independently both individually and collaboratively to develop their design ideas, carry out project related research and read relevant texts.

Study Time Allocation

The study time for the module is divided as follows:

Activity type	Hours	Percentage
Scheduled learning	48	24%
Structured Learning	12	6%
Independent learning	140	70%
Placement learning		
TOTAL	**200**	**100%**

ASSESSMENT

Assessment Component 1

☐ Written exam ☒ Coursework ☐ Practical

Mode of assessment	Volume	Weighting
Portfolio	1 - 2 components	75%

Assessment Component 2

☐ Written exam ☒ Coursework ☐ Practical

Mode of assessment	Volume	Weighting
Design report	2,000 word	25%

Assessment Summary

Activity type	Percentage
Written exam	
Coursework	100%
Practical	
TOTAL	**100%**

INDICATIVE READING LIST

Module Code	**ACAA5002**	
Module Title	**Architecture Studio 2C**	
Classification	**Reading List entry**	**Electronic***
Essential	Adjaye, David. (2006) *Making Public Buildings*. London: Thames & Hudson	☐
Essential	Heywood, H. (2012) *101 Rules of Thumb for Low-Energy Architecture*. London: RIBA Publishing	☒
Essential	Silver, P. (2008) *Introduction to Architectural Technology*. London: Laurence King	☒
Further	Alread, J, & Thomas, L. (2007) *Design-Tech: Building Science for Architects.* Oxford: Architectural Press	☐
Further	Ballard Bell, V. & Rand, P. (2006) *Materials for Architectural Design*. London: Laurence King	☐

Further	Brand, S. (1997) *How Buildings Learn: What Happens After They Are Built*. London: Phoenix.	☐
Further	Brown, G. Z. & DeKay, M. (2014) *Sun, Wind and Light: Architectural Design Strategies.* Hoboken New Jersey: Wiley	☐
Further	Bryan, T. (2010) *Construction Technology: Analysis and Choice*. 2nd ed. Chichester: Wiley-Blackwell	☒
Further	Ching, F. (2020) *Building Construction Illustrated*. New York: John Wiley	☒
Further	Cotterell, S. (2014) *Dissertations and Project Reports: A Step by Step Guide.* Basingstoke: Palgrave Macmillan	☐
Further	Deplazes, A. (Ed.) (2005) *Constructing Architecture: Materials, Processes, Structures: A Handbook.* Basel: Birkhäuser	☐
Further	Dye, A. & McEvoy, M. (2008) *Environmental Construction Handbook.* London: RIBA Publishing	☐
Further	Edwards, B. (2014) *Rough Guide to Sustainability.* 4th ed. London: RIBA Publishing	☐
Further	Evans, H. (2015) *Guide to the Building Regulations 2011.* 3rd ed. London: RIBA Publishing	☐
Further	Farrelly, L. (2008) *Representational Techniques* Lausanne, Ava	☐
Further	Gething, B. (2013) *Design for Climate Change* London: RIBA Publishing	☐
Further	Goldsmith, S. (2000) *Universal Design.* Oxford: Architectural Press	☐
Further	Handisyde, C. C. (1977) *Everyday Details*. London: Butterworth	☐
Further	Harris, C. & Borer, P. (2005) *The Whole House Book.* 2nd Ed. Machynlleth: Centre for Alternative Technology	☐
Further	Krasny, E. (2008). *The Force is in the Mind: The Making of Architecture*. Basel: Birkhäuser.	☐
Further	Kwok, A. & Grondzik, W. (2007) *The Green Studio Handbook*. Oxford: Architectural Press	☐
Further	Mostafavi, M. (1995) *On Weathering: The Lives of Buildings in Time*. Cambridge MA: MIT Press.	☐
Further	Radford, A. et al (2014) *Elements of Modern Architecture: Understanding Contemporary Buildings* London: Thames & Hudson	☐
Further	Stacey, M. (2011) *Concrete: A Studio Design Guide* London: RIBA Publishing	☐
Further	Turrent, D. (Ed) (2007) *Sustainable Architecture*. London: RIBA Publishing	☐
Further	Unwin, S. (2000) *Architecture Notebook.* London: Routledge	☐
Further	Unwin, S. (2007) *Doorway.* London: Routledge	☐
Further	Unwin, S. (2014) *Analysing Architecture*. London: Routledge	☐
Further	Weston, R. (2008) *Materials, Form and Architecture*. London: Laurence King	☐
Further	Zell, M. (2017) *The Architectural Drawing Course* London: Thames & Hudson	☐

Background	Bingham, N. (2013) *100 Years of Architectural Drawing.* London: Laurence King	☐
Background	Hetreed, J, Ross, A & Baden-Powell, C. 2017 *The Architect's Pocket Book* 5th ed, Routledge.	☒
Background	Littlefield, D (Ed) (2018) *Metric Handbook: Planning & Design Data. 6th Ed.* London: Elsevier	☒
Background	Pelsmakers, S. (2015) *Environmental Design Pocket Book.* 2nd ed. London: RIBA Publishing	☐
Background	Roaf, S. (2004) *Closing the Loop: Benchmarks for Sustainable Buildings*. London: RIBA Enterprises	☐
Journals	*The Architects' Journal*	☐
Journals	*Building Design*	☐
Journals	*Architecture Today*	☐
Journals	*Detail*	☐
Websites	www.architecture.com	☒
Websites	www.architectsjournal.co.uk	☒
Websites	www.bdonline.co.uk	☒
Websites	www.greatbuildings.com	☒
Websites	http://www.ajbuildingslibrary.co.uk	☒

Additional titles will be recommended relevant to individual design projects

Module Code	**ACAA5003**
Title	**History and Theory 2**
Date	**13/07/2024**
Level	**5**
Credits	**20**
Pre-Requisites	**None**

ARB*/RIBA criteria addressed in this module - * Due to national level changes, ARB prescription of Part 1 (BSc Architecture) will end on December 31st 2027. However, the programme will continue to map to the ARB criteria.	
Ability to create architectural designs that satisfy both aesthetic and technical requirements	**GC1**
develop a conceptual and critical approach to architectural design that integrates and satisfies the aesthetic aspects of a building and the technical requirements of its construction and the needs of the user	1.3
Adequate knowledge of the histories and theories of architecture and the related arts, technologies and human sciences.	**GC2**
the cultural, social and intellectual histories, theories and technologies that influence the design of buildings;	2.1
the influence of history and theory on the spatial, social, and technological aspects of architecture;	2.2
the application of appropriate theoretical concepts to studio design projects, demonstrating a reflective and critical approach.	2.3
Knowledge of the fine arts as an influence on the quality of architectural design.	**GC3**
how the theories, practices and technologies of the arts influence architectural design;	3.1
the creative application of the fine arts and their relevance and impact on architecture;	3.2
Adequate knowledge of urban design, planning and the skills involved in the planning process.	**GC4**
theories of urban design and the planning of communities;	4.1
the influence of the design and development of cities, past and present on the contemporary built environment;	4.2
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 needs and aspirations of building users;	5.1
Understanding of the profession of architecture and the role of the architect in society, in particular in preparing briefs that take account of social factors.	**GC6**
the nature of professionalism and the duties and responsibilities of architects to clients, building users, constructors, co-professionals and the wider society;	6.1
the potential impact of building projects on existing and proposed communities.	6.3
RIBA THEMES AND VALUES AT PART ONE LEVEL	**T&V**
Histories, Theories, and Methodologies: critically analysing and researching narratives and cultural, environmental, and social values in architecture to understand and extend architectural pedagogy.	4
GRADUATE ATTRIBUTES AT PART ONE LEVEL	**GA**
ability to evaluate evidence, arguments and assumptions in order to make and present sound judgments within a structured discourse relating to architectural culture, theory and design;	4

AIM(S)

- To provide students with knowledge of the intellectual, economic and political forces that have shaped the built environment in the last two centuries with an emphasis the UK and (in particular) Wales

- To provide students with an understanding of the nature of theory in the field of architecture and related disciplines and basic knowledge of the main themes of architectural theory

LEARNING OUTCOMES

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

- engage in an informed discussion of the factors that have influenced the design of the built environment in the last two centuries

- design a research project related to architecture that will form the basis of a dissertation to be completed in the third year

INDICATIVE CONTENT

- Analytical study of village, town or neighbourhood in Wales

- Analytical study of the design, construction and philosophy of a seminal building.

- Research methods in architecture and related disciplines

- Dissertation proposal

LEARNING AND TEACHING STRATEGY

Lectures, on-line teaching resources and guided reading introduce the key ideas and themes. Seminars give students the opportunity to explore particular ideas, theories and/or exemplary buildings in detail and assist them in the critical evaluation of knowledge acquired. Lectures and seminars provide students with guidance on the nature of a dissertation, the selection of an appropriate subject and the preparation of a proposal.

Study Time Allocation

The study time for the module is divided as follows:

Activity type	Hours	Percentage
Scheduled learning	48	24%
Independent learning	152	76%
Placement learning		
TOTAL	**200**	**100%**

ASSESSMENT

Assessment Component 1

☐ Written exam ☒ Coursework ☐ Practical

Mode of assessment	Volume	Weighting
Essay	2,500 words	40%

Assessment Component 2

☐ Written exam ☒ Coursework ☐ Practical

Mode of assessment	Volume	Weighting
Essay including presentation of outcomes of research	1,500 words + presentation (10 - 15 minutes)	40%

Assessment Component 3

☐ Written exam ☐ Coursework ☒ Practical

Mode of assessment	Volume	Weighting
Dissertation proposal	500 words	20%

Assessment Summary

Activity type	Percentage
Written exam	
Coursework	80%
Practical	20%
TOTAL	**100%**

INDICATIVE READING LIST

Module Code	**ACAA5003**	
Module Title	**History and Theory 2**	
Classification	**Reading List entry**	**Electronic***
Essential	Curtis, W. (1996) *Modern Architecture since 1900* London: Phaidon	☐
Essential	Davies, C. (2011) *Thinking About Architecture*. London: Laurence King	☐
Essential	Hilling, J. (2019) *The Historic Architecture of Wales*. Cardiff: University of Wales Press	☐
Further	Ballantyne, A. (2002) *What is Architecture?* London: Routledge	☒
Further	Ballantyne, A. (2012) *Key Buildings from Prehistory to the Present: Plans, Sections and Elevations.* London: Laurence King	☒
Further	Blundell-Jones, P. (2002) *Modern Architecture Through Case Studies*. Oxford: Architectural Press	☒

Further	Borden, I & Rüedi, E. (2014) *The Dissertation: An Architecture Student's Handbook 2nd ed*. Oxford: Architectural Press	☒
Further	Bowen, H. (2013) *Buildings and Places in Welsh History* Llandyssul, Gomer	☐
Further	Carmona, M. & Tiesdell, S. (2007) *Urban Design Reader* Oxford: Architectural Press	☐
Further	Colquhoun, A. (1983) *Essays in Architectural Criticism*. London: MIT	☐
Further	Forty, A. (2004) *Words And Buildings* London: Thames Hudson	☐
Further	Frampton, K. (2007) *Modern Architecture - A Critical History*. London: Thames & Hudson	☐
Further	Gelernter, M. (1995) *Sources of Architectural Form: A Critical History Of Western Design Theory* Manchester: Manchester University Press	☐
Further	Hilling, J. (1973) *Cardiff and the Valleys.* London: Lund Humphries	☐
Further	Hughes, R. (1991) *The Shock of the New.* London: Thames & Hudson	☐
Further	Jencks, C. & Kropf, K. (2005) *Theories and Manifestoes of Contemporary Architecture*. London: Academy Editions	☐
Further	Le Corbusier, F. (2008) *Toward an Architecture.* London: Frances Lincoln (new translation by Goodman, J. of *Vers une Architecture,* 1928)	☐
Further	Leach, N. (Ed). (1997) *Rethinking Architecture: A Reader in Cultural Theory* London: Routledge	☐
Further	Legates, R. and Stout, F. (Eds) (2015) *The City Reader* London: Routledge,	☐
Further	Lloyd, T. (1986) *The Lost Houses of Wales.* London: Save	☐
Further	Loew, S. (Ed) (2012) *Urban Design Practice: An International Review* London: RIBA Publishing	☐
Further	Lynch, K. (1984) *Good City Form.* London: MIT	☐
Further	Miles, M., Hall, T. and Borden, I. (Eds) (2000) *The City Cultures Reader* London: Routledge,	☐
Further	Millais, M. (2009) *Exploding the Myths of Modern Architecture*. London: Francis Lincoln	☐
Further	Nesbitt, K. et al (2000) *Theorizing a New Agenda for Architecture* New York Princeton Architectural Press	☐
Further	Newman, O. (1973) *Defensible Space* New York: Macmillan	☐
Further	Norberg-Schulz, C. (1971) *Existence, Space and Architecture*. London: Studio Vista	☐
Further	Radford, A*. et al (*2014) *Elements of Modern Architecture: Understanding Contemporary Buildings* London: Thames & Hudson	☐
Further	Rasmussen, S. E. (1978) *Experiencing Architecture* 2nd Ed. Cambridge MA: MIT Press	☐
Further	Rossi, A. (1982) *The Architecture of the City*. Cambridge MA: MIT Press	☐

Further	Rowe, C. & Koetter, F. (1978) *Collage City*. Cambridge MA: MIT Press	☐
Further	Rybczynski, W. (1987) *Home: A Short History of an Idea* New York: Penguin	☐
Further	Saint, A. (1985) *The Image Of The Architect* New Haven Ct & London: Yale	☐
Further	Smith, P. (1975) *Houses of the Welsh Countryside* London: HMSO	☐
Further	Tarbatt, J. (2012) *The Plot: Designing Diversity in the Built Environment*. London: RIBA Publishing	☐
Further	Till, J .(2013) *Architecture Depends* Cambridge MA: MIT Press	☐
Further	Unwin, S. (2010) *Twenty Buildings Every Architect Should Understand*. London: Routledge	☐
Further	Venturi, R. (1984) *Complexity and Contradiction in Architecture* 2nd Ed. New York: Museum Of Modern Art	☐
Further	Weston R. (2010) *Plans, Sections And Elevations: Key Buildings of the Twentieth Century London: Laurence King*	☐
Background	Blaxter, L., Hughes, C. and Tight, M. (2010) *How to Research*. Buckingham: Open University Press	☒
Background	Cotterell, S. (2014) *Dissertations and Project Reports: A Step by Step Guide.* Basingstoke: Palgrave Macmillan	☐
Background	Cruickshank, D. (ed) (1996) *Sir Banister Fletcher's A History of Architecture.* 20th ed. Oxford: Architectural Press	☐
Background	Cumming, E. & Kaplan, W. (1991) *The Arts and Crafts Movement.* London: Thames & Hudson	☐
Background	Girouard, M. (2012) *Cities and People: A Social and Architectural History.* New Haven & London: Yale	☐
Background	Harbison, R. (1993) *The Built, The Un-Built And The Unbuildable*, London: Thames & Hudson	☐
Background	Harbison, R. (1997) *Thirteen Ways*. Cambridge MA: MIT Press	☐
Background	Heynen, H. (1999) *Architecture and Modernity: A Critique* Cambridge MA: MIT Press	☐
Background	Hollis, E. (2010) *The Secret Lives of Buildings*. London: Portobello	☐
Background	HRH The Prince of Wales (1989) *A Vision of Britain*. London: Doubleday	☐
Background	Jencks, C (1977) *The Language of Post-Modern Architecture* London: Rizzoli	☐
Background	Koolhaus, R. and Mau, B. (1997) *S, M, L, Xl* Köln: Taschen	☐
Background	Kostof, S. (2009) *A History of Architecture*. 2nd ed Oxford: Oxford University Press	☐
Background	Lampugnani, V. E. & Kaplan, W. (1988) *Encyclopaedia of 20th Century Architecture.* London: Thames & Hudson	☐
Background	Nebois, T. (ed) (2003) *Architecture Theory from the Renaissance to the Present.* Köln: Taschen	☐
Background	Oliver, P. (ed). (1997) *Encyclopedia of Vernacular Architecture of the World.* Cambridge: Cambridge University Press	☐

Background	Pile, S. *The Body And The City* London: Routledge (1996)	☐
Background	Powers, A. (2007) *Modern: The Modern Movement in Britain*. London: Merrell	☐
Background	Rogers, R. (1997) *Cities for a Small Planet* London: Faber	☐
Background	Rogers, R. (1999) *Towards an Urban Renaissance* London: Spon	☐
Background	Rybczynski, W. (1993) *Looking Around: A Journey Through* Architecture. New York: Penguin	☐
Background	Rybczynski, W. (2001) *The Look of Architecture.* New York: Oxford University Press	☐
Background	Sadler, S. (1999)*The Situationist City* Cambridge MA: MIT Press	☐
Background	Sennett, R. (1992) *The Conscience of the Eye*. London: Faber	☐
Background	Sennett, R. (2009) *The Craftsman*. London: Penguin	☒
Background	Service, A. (1977) *Edwardian Architecture.* London: Thames & Hudson	☐
Background	Summerson, J. (1980) *The Classical Language of Architecture*. London: Thames & Hudson	☐
Background	Watkin, D. (2011) A *History of Western Architecture.* 5th ed. London: Laurence King	☐
Background	Weston, R. (1998) *Modernism* London: Phaidon	☐
Background	Woodward, C. (2002) *In Ruins,* London: Vintage.	☐
Journals	*The Architects' Journal*	☐
Journals	*Building Design*	☐
Journals	*Architecture Today*	☐
Journals	*Detail*	☐
Websites	www.architecture.com	☒
Websites	www.architectsjournal.co.uk	☒
Websites	www.bdonline.co.uk	☒
Websites	www.greatbuildings.com	☒
Websites	http://www.ajbuildingslibrary.co.uk	☒

Module Code	**ACAA5004**
Title	**Profession and Business 1**
Date	**13/07/2024**
Level	**5**
Credits	**20**
Pre-Requisites	**None**

ARB*/RIBA criteria addressed in this module - * Due to national level changes, ARB prescription of Part 1 (BSc Architecture) will end on December 31st 2027. However, the programme will continue to map to the ARB criteria.	
Adequate knowledge of urban design, planning and the skills involved in the planning process.	**GC4**
theories of urban design and the planning of communities;	4.1
the influence of the design and development of cities, past and present on the contemporary built environment;	4.2
current planning policy and development control legislation, including social, environmental and economic aspects, and the relevance of these to design development.	4.3
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 needs and aspirations of building users;	5.1
the impact of buildings on the environment, and the precepts of sustainable design;	5.2
the way in which buildings fit into their local context.	
Understanding of the profession of architecture and the role of the architect in society, in particular in preparing briefs that take account of social factors.	**GC6**
the nature of professionalism and the duties and responsibilities of architects to clients, building users, constructors, co-professionals and the wider society;	6.1
the role of the architect within the design team and construction industry, recognising the importance of current methods and trends in the construction of the built environment;	6.2
the potential impact of building projects on existing and proposed communities.	6.3
Understanding of the methods of investigation and preparation of the brief for a design project.	**GC7**
the need to appraise and prepare building briefs of diverse scales and types, to define client and user requirements and their appropriateness to site and context;	7.2
the contributions of architects and co-professionals to the formulation of the brief, and the methods of investigation used in its preparation.	7.3
The necessary design skills to meet building users' requirements within the constraints imposed by cost factors and building regulations.	**GC10**
critically examine the financial factors implied in varying building types, constructional systems, and specification choices, and the impact of these on architectural design;	10.1
understand the cost control mechanisms which operate during the development of a project;	10.2
Adequate knowledge of the industries, organisations, regulations and procedures involved in translating design concepts into buildings and integrating plans into overall planning.	**GC11**

the fundamental legal, professional and statutory responsibilities of the architect, and the organisations, regulations and procedures involved in the negotiation and approval of architectural designs, including land law, development control, building regulations and health and safety legislation;	11.1
the professional inter-relationships of individuals and organisations involved in procuring and delivering architectural projects, and how these are defined through contractual and organisational structures;	11.2
the basic management theories and business principles related to running both an architect's practice and architectural projects, recognising current and emerging trends in the construction industry.	11.3
RIBA THEMES AND VALUES AT PART ONE LEVEL	**T&V**
Ethical and Professional Practice: acquiring professional and communication skills to ensure projects are delivered with integrity and accountability within global, national, and professional climate targets.	2
Business Skills: developing capability in business skills relevant to working in practice and practice management	6
GRADUATE ATTRIBUTES AT PART ONE LEVEL	**GA**
knowledge of the context of the architect and the construction industry, and the professional qualities needed for decision making in complex and unpredictable circumstances;	5

AIM(S)

- To provide students with a basic knowledge of the nature and history of the architectural and other built environment professions and the construction and development industries in the UK

- To provide students with an understanding of the role of the state in the control of development through spatial planning, building regulations and other relevant legislation

- To provide students with knowledge of the nature of the building project from the development of the design brief to post-occupancy evaluation

LEARNING OUTCOMES

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

- explain concept of 'professionalism' and describe the various roles that architects play in the development process and the construction industry

- identify the legislation that must be complied with when designing and constructing buildings in the UK

- describe the key issues in the procurement of construction working including the selection of design teams and the control of the short and long term cost of construction

INDICATIVE CONTENT

- The architectural profession

- The development and construction industry and built environment professions

- The origins and development of planning and other building control legislation
- Introduction to health and safety
- Universal design
- The legal framework or construction
- Building procurement models

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.

Study Time Allocation

The study time for the module is divided as follows:

Activity type	Hours	Percentage
Scheduled learning	48	24%
Independent learning	152	76%
Placement learning		
TOTAL	**200**	**100%**

ASSESSMENT

Assessment Component 1

☐ Written exam ☒ Coursework ☐ Practical

Mode of assessment	Volume	Weighting
Report	4,000 words	100%

Assessment Summary

Activity type	Percentage
Written exam	
Coursework	100%
Practical	
TOTAL	**100%**

INDICATIVE READING LIST

Module Code	**ACAA5004**	
Module Title	**Profession and Business 1**	
Classification	**Reading List entry**	**Electronic***
Essential	Brookhouse, S. (2013) *Professional Studies in Architecture: A Primer*. London: RIBA Publishing	☒
Essential	Greed, C. & Johnson, D. (2014) *Planning in the UK.* Basingstoke: Palgrave Macmillan	☐

Further	Clamp, H. (2012) *Which Contract?* London: RIBA Publishing	☐
Further	Evans, H. (2015) *Guide to the Building Regulations 2011.* 3rd ed. London: RIBA Publishing	☐
Further	Foxell, S. et al (2006) *Good Practice Guide: Starting a Practice* London: RIBA Publishing	☐
Further	Goldsmith, S. (2000) *Universal Design.* Oxford: Architectural Press	☒
Further	Loew, S. (Ed) (2012) *Urban Design Practice: An International Review* London: RIBA Publishing	☐
Further	Minton, A. (2012) *Ground Control: Fear and Happiness in the Twenty First Century City*. London: Penguin	☐
Further	Morton, R. (2008) *Construction UK: An Introduction to the Industry*. Oxford: Blackwell	☐
Further	RIBA (2013) RIBA *Plan of Work 2013: Overview* London: RIBA Publishing	☐
Further	Salisbury, F. (1998) *Briefing Your Architect*. Oxford: Architectural Press	☐
Further	Tarbatt, J. (2012) *The Plot: Designing Diversity in the Built Environment*. London: RIBA Publishing	☐
Background	Lewis, R. (1998) *Architect? A Candid Guide to the Profession*. London: MIT	☐
Background	Makstutis, G. (2010) *Architecture*. London: Laurence King	☐
Background	Rogers, R. (1997) *Cities for a Small Planet.* London: Faber	☐
Background	Rogers, R. (1999) *Towards an Urban Renaissance.* London: Spon	☐
Journals	*The Architects' Journal*	☐
Journals	*Building Design*	☐
Journals	*Architecture Today*	☐
Journals	*Detail*	☐
Websites	www.architecture.com	☒
Websites	www.architectsjournal.co.uk	☒
Websites	www.bdonline.co.uk	☒
Websites	www.greatbuildings.com	☒
Websites	http://www.ajbuildingslibrary.co.uk	☒

Module Code	**ACAA5005**
Title	**Technology and Environment 2**
Date	**13/07/2024**
Level	**5**
Credits	**20**
Pre-Requisites	**None**

ARB*/RIBA criteria addressed in this module - * Due to national level changes, ARB prescription of Part 1 (BSc Architecture) will end on December 31st 2027. However, the programme will continue to map to the ARB criteria.	
Ability to create architectural designs that satisfy both aesthetic and technical requirements	**GC1**
understand the constructional and structural systems, the environmental strategies and the regulatory requirements that apply to the design and construction of a comprehensive design project	1.2
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
RIBA THEMES AND VALUES AT PART ONE LEVEL	**T&V**
Health and Life Safety: Demonstrating authoritative knowledge of statutory frameworks to safeguard the community and the end user.	1
Structures, Construction, and Resources: demonstrating climate literacy, responsible specification, and ethical sourcing to enhance wellbeing, minimise embodied carbon, waste, and pollution, and reduce demands on energy and water.	3
GRADUATE ATTRIBUTES AT PART ONE LEVEL	**GA**
understanding of the alternative materials, processes and techniques that apply to architectural design and building construction;	3

AIM(S)

- To provide the student with knowledge of construction technology and environmental control systems appropriate to the design of non-domestic and multi storey buildings
- To provide the student with knowledge and analytical and synthetic skills relevant to the design of low carbon buildings
- To develop further the student's understanding of the performance of buildings through the analysis of precedent

LEARNING OUTCOMES

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

- Describe accurately the appropriate methods of construction of non-domestic and multi-storey buildings in the UK
- Describe accurately the principles that inform the selection of structural systems and the design of cladding systems for non-domestic and multi-storey buildings in the UK
- Explain the principles that inform the definition of an environmental design strategy for a large non-domestic building in the UK.

INDICATIVE CONTENT

- Building frames – steel, concrete and timber
- Cladding systems
- Multi- storey design – lifts, stair and cores
- Ventilation, heating and cooling in non-domestic buildings
- Building services
- Low carbon design and energy modelling

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.

Study Time Allocation

The study time for the module is divided as follows:

Activity type	Hours	Percentage
Scheduled learning	48	24%
Independent learning	152	76%
Placement learning		
TOTAL	**200**	**100%**

ASSESSMENT

Assessment Component 1

☐ Written exam ☒ Coursework ☐ Practical

Mode of assessment	Volume	Weighting
Technical Report	2,000 words	50%

Assessment Component 2

☐ Written exam ☒ Coursework ☐ Practical

Mode of assessment	Volume	Weighting
A report aligned with Studio 2C to investigate the structural and environmental factors associated with the proposed scheme.	2000 words	50%

Assessment Summary

Activity type	Percentage
Written exam	
Coursework	100%
Practical	
TOTAL	**100%**

INDICATIVE READING LIST

Module Code	**ACAA5005**	
Module Title	**Technology and Environment 2**	
Classification	**Reading List entry**	**Electronic***
Essential	Alread, J, & Thomas, L. (2007) *Design-Tech: Building Science for Architects.* Oxford: Architectural Press	☐
Essential	McLeod, V. (2008) *Detail in Contemporary Residential Architecture.* London: Laurence King	☐
Essential	Thomas, R. (2005) *Environmental Design: An Introduction for Architects and Engineers*. London: Spon	☐
Further	Ballard Bell, V. & Rand, P. (2006) *Materials for Architectural Design*. London: Laurence King	☐
Further	Bennett, D. (2010) *Sustainable Concrete Architecture* London: RIBA Publishing	☐
Further	Brown, G. Z. & DeKay, M. (2014) *Sun, Wind and Light: Architectural Design Strategies.* Hoboken New Jersey: Wiley	☐
Further	Dye, A. & McEvoy, M. (2008) *Environmental Construction Handbook.* London: RIBA Publishing	☐
Further	Edwards, B. (2014) *Rough Guide to Sustainability.* 4th ed. London: RIBA Publishing	☐
Further	Evans, H. (2015) *Guide to the Building Regulations 2011.* 3rd ed. London: RIBA Publishing	☐

Further	Gething, B. (2013) *Design for Climate Change* London: RIBA Publishing	☐
Further	Kwok, A. & Grondzik, W. (2007) *The Green Studio Handbook*. Oxford: Architectural Press	☐
Further	McLeod, V. (2008) *Detail in Contemporary Landscape Architecture* London: Laurence King	☐
Further	Silver, P. (2008) *Introduction to Architectural Technology*. London: Laurence King	☒
Further	Stacey, M. (2011) *Concrete: A Studio Design Guide* London: RIBA Publishing	☐
Further	Thompson, R. (2007) *Manufacturing Processes for Design Professionals*. London: Thames & Hudson	☐
Further	Trebilcock, P. & Lawson, M. (2004) *Architectural Design in Steel.* London: Spon	☐
Background	Allen, P. (2013) *Zero Carbon Britain.* Machynlleth: Centre for Alternative Technology	☐
Background	Clark, D. (2019) *What Colour is Your Building?* London: RIBA Publishing	☐
Background	Hetreed, J, Ross, A & Baden-Powell, C. 2017 *The Architect's Pocket Book* 5th ed, Routledge.	☒
Background	Hunt, T. (2003) *Tony Hunt's Structures Notebook.* 2nd Ed. London: Architectural Press	☐
Background	Littlefield, D (Ed) (2018) *Metric Handbook: Planning & Design Data. 6th Ed.* London: Elsevier	☒
Background	Pelsmakers, S. (2015) *Environmental Design Pocket Book.* 2nd ed. London: RIBA Publishing	☐
Background	Roaf, S. (2004) *Closing the Loop: Benchmarks for Sustainable Buildings*. London: RIBA Enterprises	☐
Journals	*The Architects' Journal*	☐
Journals	*Building Design*	☐
Journals	*Architecture Today*	☐
Journals	*Detail*	☐
Websites	www.architecture.com	☒
Websites	www.architectsjournal.co.uk	☒
Websites	www.bdonline.co.uk	☒
Websites	www.greatbuildings.com	☒
Websites	http://www.ajbuildingslibrary.co.uk	☒

Module Code	**ACBA5014**
Title	**Changemakers: Creativity and Value Creation**
Date	**25/06/2020**
Level	**5**
Credits	**20**
Pre-Requisites	**None**

AIM(S)

- To develop the concepts and practice of creativity and value creation for the development of innovative, aspiring and progressive solutions.

LEARNING OUTCOMES

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

- Demonstrate knowledge and critical understanding of innovation, creativity and enterprising mindset, recognising the values and the contribution creativity makes to the common good.

- Conceive, articulate and apply creative thinking within a work-based or academic context to develop novel solutions and/or value creation.

INDICATIVE CONTENT

- Creativity in theory and practice.

- Value creation in theory and practice.

- Creative and ethical leadership: skills and challenges.

- Driving innovation and change, the intra and entrepreneurial individual.

- Critical thinking, troubleshooting and problem solving, developing novel solutions.

- Information gathering for inspiration, vision creation and ideation.

- Developing the enterprising and data driven mindset.

- Contemporary technologies: virtual and augmented reality and artificial intelligence to enhance creativity and innovation.

- Time management practices for an entrepreneurial mindset.

- Being resourceful, in the context of making do with less.

- Reflection and self-reflection.

Study Time Allocation

The study time for the module is divided as follows:

Activity type	Hours	Percentage
Scheduled learning	48	24%
Independent learning	152	76%
Placement learning		
TOTAL	**200**	**100%**

ASSESSMENT

Assessment Component 1
(Tick one)

☐ **Written exam** ☒ **Coursework** ☐ **Practical**

Mode of assessment	Volume	Weighting
Online portfolio of set exercises	2,000 words or equivalent	50%

Assessment Component 2
(Tick one)

☐ **Written exam** ☒ **Coursework** ☐ **Practical**

Mode of assessment	Volume	Weighting
Assignment	2,000 words or equivalent	50%

Assessment Summary

Activity type	Percentage
Written exam	
Coursework	100%
Practical	
TOTAL	**100%**

INDICATIVE READING LIST
This will be guided by the student's subject area.

Module Code	**ACBA5014**	
Module Title	**Changemakers: Creativity and Value Creation**	
Classification	**Reading List entry**	**Electronic***
Essential	Hargreaves, J., and Page, L. (2013) *Reflective Practice*. (Key Themes in Health and Social Care Series). Polity Press.	☒
Essential	Nardi, P.M. (2017) *Critical Thinking : Tools for Evaluating Research*. University of California Press	☒
Essential	Westerman, G., Bonnet, D. and McAfee, A., (2017) *Leading Digital: Turning Technology Into Business Transformation. (Audiobook)* Recorded Books.	☒
Further	Schiuma, G. (2011) *Managing Knowledge Assets and Business Value Creation in Organizations : Measures and Dynamics* Hershey, Pa.: Business Reference Service.	☒

Further	Rescher, N. (2014). *A System of Pragmatic Idealism, Volume II The Validity of Values, A Normative Theory of Evaluative Rationality* (Princeton Legacy Library). Princeton: Princeton University Press.	☒
Further	Turner, E. (2020) *Be Less Zombie: How great companies create dynamic innovation, fearless leadership and passionate people*. John Wiley & Sons.	☒

Module Code	**ACBA5015**
Title	**Advanced Estimating and Tendering**
Date	**20/05/2024**
Level	**5**
Credits	**20**
Pre-Requisites	**None**
DBS Check	**May be required ☐ Not required ☒**

AIM(S)

- To develop essential skills in interpreting drawings and an understanding of the quantity surveying techniques of measurement for the compilation of tender information using industry standard methods of measurement.

LEARNING OUTCOMES

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

- critically appraise standard measurement techniques used for taking off quantities for estimating purposes;
- identify and interpret the data necessary for inclusion into a tender document for competitive pricing.

INDICATIVE CONTENT

- The use of standard methods for the measurement and recording of quantities.
- Techniques for quantifying budget.
- Calculation of unit rates in building up an estimate.
- The significance of the tendering process in procurement
- Standard methods of measurement for Industry, e.g. The Royal Institution of Chartered Surveyors (RICS) New Rules of Measurement for the measurement and recording of data.
- Preparation of appropriate documentation, including Bills of Quantities and elemental cost plan for the tendering processes.
- Application of Industry appropriate software.

Study Time Allocation

The study time for the module is divided as follows:

Activity type	Hours	Percentage
Scheduled learning	48	24%
Independent learning	152	76%
Placement learning		
TOTAL	**200**	**100%**

ASSESSMENT

Assessment Component 1
(Tick one)

☐ **Written exam** ☒ **Coursework** ☐ **Practical**

Mode of assessment	Volume	Weighting
Report	2,500 words	50%

Assessment Component 2
(Tick one)

☐ **Written exam** ☒ **Coursework** ☐ **Practical**

Mode of assessment	Volume	Weighting
Case Study	2,500 words or equivalent	50%

Assessment Summary

Activity type	Percentage
Written exam	
Coursework	100%
Practical	
TOTAL	**100%**

INDICATIVE READING LIST

Module Code	**ACBA5015**	
Module Title	**Advanced Estimating and Tendering**	
Classification	**Reading List entry**	**Electronic***
Essential	Lee, S. (2020) Willis's *Elements of Quantity Surveying*, 13th Edition. Willey Blackwell, London.	☐
Essential	Cartlidge, D. (2022) *Quantity Surveyor's Pocket Book* 4th Ed. Abingdon, Oxon: Routledge.	☐
Essential	Brook, M (2008) *Estimating and Tendering for Construction Work.* Oxford: Butterworth-Heinemann.	☐

Module Code	**ACBA5016**
Title	**Building Information Modelling**
Date	**20/05/2024**
Level	**5**
Credits	**20**
Pre-Requisites	**None**
DBS Check	**May be required ☐ Not required ☒**

AIM(S)

- To provide learners with the skills needed to analyse, classify and produce two and three-dimensional drawings using industry-standard software, as well as evaluating and applying knowledge of the information delivery cycle in Building Information Modelling (BIM) and its influence upon project efficiency through a collaborative process.

LEARNING OUTCOMES

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

- demonstrate an ability to analyse, classify and produce 2D and 3D drawings using industry-standard software applications;
- demonstrate an ability to render drawings to various scales and media and export drawings to different formats;
- comprehend and manage the life cycle of a built structure in a Building Information Modelling environment and subsequently to produce digital data through the collaborative process.

INDICATIVE CONTENT

- Classification and analysis of drawings using industry-standard software applications.
- Data rich (3D) models.
- Rendering to 3D drawings and explore Virtual Reality (VR) & Augmented Reality (AR) capabilities.
- Functions and processes needed to manage the life cycle of a built structure in a Building Information Modelling environment.
- Production of digital data for built structures through the use of collaborative platforms.
- Extraction of data from prepared Building Information Models to satisfy several different requirements.
- Intellectual property within the innovation process.
- Extraction of BIM data from a prepared model.

Study Time Allocation

The study time for the module is divided as follows:

Activity type	Hours	Percentage
Scheduled learning	48	24%
Independent learning	152	76%
Placement learning		
TOTAL	**200**	**100%**

ASSESSMENT

Assessment Component 1
(Tick one)

☐ **Written exam** ☒ **Coursework** ☐ **Practical**

Mode of assessment	Volume	Weighting
Technical Report with drawings	2,500 words or equivalent	50%

Assessment Component 2
(Tick one)

☐ **Written exam** ☒ **Coursework** ☐ **Practical**

Mode of assessment	Volume	Weighting
Group Portfolio	Maximum of 3 elements to 2,500 words or equivalent per person	50%

Assessment Summary

Activity type	Percentage
Written exam	
Coursework	100%
Practical	
TOTAL	**100%**

INDICATIVE READING LIST

Module Code	**ACBA5016**	
Module Title	**Building Information Modelling**	
Classification	**Reading List entry**	**Electronic***
Essential	C.M. Eastman (ed.) (2011) *BIM handbook : a guide to building information modeling for owners, managers designers, engineers, and contractors* . 2nd ed. Chichester,; Hoboken, N.J. : Wiley .	☐
Essential	BSI (2023) *Little Book of BIM 2023*. 2023. https://page.bsigroup.com/.	☐
Essential	NBS (n.d.) *NBS BIM Library*. https://www.nationalbimlibrary.com/en-gb/.	☒
Essential	Mordue, S. (2016) *Building information modeling for dummies* . Chichester, England : John Wiley & Sons Ltd.	☐

Essential	Hardin, B. (2015) *BIM and construction management : proven tools, methods, and workflows* . 2nd ed. Indianapolis, Indiana : Sybex.	☐
Essential	Rossiter D (n.d.) *There's No BIM Like Home*. https://bimblog.house/.	☒
Essential	Revizto (n.d.) *Revizto*. https://revizto.com/en/.	☒
Essential	Enscape (n.d.) *Enscape Render and VR*. https://enscape3d.com/.	☒
Essential	Anon (n.d.) *IHS Markit*.	☐
Further	Fane, B. (2013) *AutoCAD 2014 for dummies [electronic resource]* . Hoboken, NJ : John Wiley & Sons.	☐
Further	Chudley, R. (2013) *Building Construction Handbook [electronic resource].* 8th ed. Hoboken : Taylor and Francis.	☐
Further	Reid, E. (1988) *Understanding buildings : a multidisciplinary approach* . London : Longman Scientific and Technical.	☐
Further	Smith, D.K. (2009) *Building information modeling [electronic resource] : a strategic implementation guide for architects, engineers, constructors, and real estate asset managers* . Hoboken, NJ : Wiley.	☐
Further	LinkedIn learning curated for the module.	☐

Module Code	**ACBA5017**
Title	**Building Services 2 - Integration**
Date	**20/05/2024**
Level	**5**
Credits	**20**
Pre-Requisites	**None**
DBS Check	**May be required ☐ Not required ☒**

AIM(S)

- To introduce the broad application of technologies and sustainable design and installation techniques used to satisfy the building service requirements within buildings.

LEARNING OUTCOMES

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

- comprehend Building Services technologies that serve large commercial, multi-zone and domestic buildings;
- critically appraise the system and equipment choice, design and installation practice, in the context of sustainable futures, lifecycle, energy and cost savings;
- recognise the requirements for safe installation and maintenance access and provision.

INDICATIVE CONTENT

- Heating, Ventilation, and Air Conditioning (HVAC) systems – characteristics and choices, routing.
- Heating Systems – Centralised and localised systems, system sizing and emplacement. Calculative analysis of reasons for choice.
- Ventilation and air conditioning systems – Natural and Mechanical types and their suitability for use, given building type and environmental considerations. Air Handling Unit (AHU's), fan coil unit (FCU's), Vent intake and extraction sizing.
- Ductwork, types, sizing and installation requirements. Airflow calculation.
- Below and above ground building waste collection and disposal. Risk associated with system install and system type. Choosing the correct system for the building.
- Hot and Cold water provision, radiator system types, Boiler types and their sizing for adequate supply and energy conservation.
- SMART buildings.
- Lifecycle assessment.

Study Time Allocation

The study time for the module is divided as follows:

Activity type	Hours	Percentage
Scheduled learning	48	24%
Independent learning	152	76%
Placement learning		
TOTAL	**200**	**100%**

ASSESSMENT

Assessment Component 1
(Tick one)

☐ **Written exam** ☒ **Coursework** ☐ **Practical**

Mode of assessment	Volume	Weighting
Research report	2,000 words	40%

Assessment Component 2
(Tick one)

☐ **Written exam** ☒ **Coursework** ☐ **Practical**

Mode of assessment	Volume	Weighting
Case study analysis	3,000 words	60%

Assessment Summary

Activity type	Percentage
Written exam	
Coursework	100%
Practical	
TOTAL	**100%**

INDICATIVE READING LIST

Module Code	**ACBA5017**	
Module Title	**Building Services 2 - Integration**	
Classification	**Reading List entry**	**Electronic***
Essential	Hall, F. and Greeno, R. (2023) *Building Services Handbook*. 10th ed. England. Routledge.	☐
Essential	Hens, H. (2017) *Building Physics – Heat, Air and Moisture: Fundamentals and Engineering Methods.* 3rd ed. Ernst and Sohn.	☐
Essential	Wijeysundera, N.E (2015) *Principles of Heating, Ventilation and Air Conditioning with Worked Examples.* 1st ed. England. WSPC.	☐
Essential	McMullan, R. (2017) *Environmental Science in Building 8th ed.* Red Globe Press.	☐
Further	Building Regulations Part F: Ventilation in Buildings.	☐
Further	BS EN 12056 (Part 2) (2000) Gravity Wastewater drainage systems.	☐
Further	CIBSE (2016) *CIBSE Guide B set: Heating, Ventilating, Air Conditioning and Refrigeration.* London CIBSE.	☐

Module Code	**ACBA5018**
Title	**Business Management for Construction**
Date	**20/05/2024**
Level	**5**
Credits	**10**
Pre-Requisites	**None**
DBS Check	**May be required ☐ Not required ☒**

AIM(S)

- To introduce the concepts of business and financial management, focusing on understanding the business strategies employed by construction companies.

LEARNING OUTCOMES

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

- define the various legal status of construction companies and evaluate the sources of finance available and how finance can be managed;
- evaluate the effectiveness of different forms of company organisation and entrepreneurship;
- describe the ways in which resources can be managed.

INDICATIVE CONTENT

- Company types including sole trader, private company, public company etc.
- Legal requirements for companies.
- Company closure.
- Capital including short, medium and long term.
- Finance.
- Company accounts.
- Organisational structures.
- Management theory.
- Human resource management.

Study Time Allocation

The study time for the module is divided as follows:

Activity type	Hours	Percentage
Scheduled learning	24	24%
Independent learning	76	76%
Placement learning		
TOTAL	**100**	**100%**

ASSESSMENT

Assessment Component 1
(Tick one)

☐ **Written exam** ☒ **Coursework** ☐ **Practical**

Mode of assessment	Volume	Weighting
Portfolio	Maximum of 3 elements 2,500 words or equivalent	100%

Assessment Summary

Activity type	Percentage
Written exam	
Coursework	100%
Practical	
TOTAL	**100%**

INDICATIVE READING LIST

Module Code	**ACBA5018**	
Module Title	**Business Management for Construction**	
Classification	**Reading List entry**	**Electronic***
Essential	Houston, I. (2019) *Small Business Financial Management: How to Organise and Manage the Finances in Your Small Business.* McGraw.	☒
Essential	Roosevelt, C. (2022) *Small Business Accounting Made Simple For Non-Accountants, Dummies, Beginners & Beyond.* Independent.	☐
Essential	Mullins, L. (2022) *Organisational Behaviour in the Workplace.* 12th Edition. Pearson.	☐
Further	Goleman, D. (2004) *Emotional Intelligence.* Bloomsbury.	☐

Module Code	**ACBA5019**
Title	**Construction Technology 2**
Date	**20/05/2024**
Level	**5**
Credits	**20**
Pre-Requisites	**None**
DBS Check	**May be required ☐ Not required ☒**

AIM(S)

- To further develop understanding of previously established principles with their application to high rise and wider spanning structures, and the implementation of sustainable approaches to material choice, internal flexibility and the environment in which the building stands.

LEARNING OUTCOMES

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

- appraise a range of materials, methodological techniques and constructional forms suited to medium to high-rise buildings;
- explain the concepts of buildability, sustainability and flexibility when applied to a range of building structures.

INDICATIVE CONTENT

- Structural Frames, basement construction in variable ground conditions, structural floors.
- Building envelopes, material and method choices, off-site.
- prefabrication/construction, automation and on-site build, modular forms.
- Environmental impact in orientation. Life cycle, longevity, and aesthetics. Wind loading.
- Façade retention systems.
- Façade greening, Sustainable Urban Drainage Systems (SUDS).
- Incorporation of flexibility in design and use.
- Consideration of buildability and sustainability.
- Building alteration, renovation, remediation of defects and the decision to de-construct.
- De-construction, demolition, and recycling potential.

Study Time Allocation

The study time for the module is divided as follows:

Activity type	Hours	Percentage
Scheduled learning	48	24%
Independent learning	152	76%
Placement learning		
TOTAL	**200**	**100%**

ASSESSMENT

Assessment Component 1
(Tick one)

☐ **Written exam** ☒ **Coursework** ☐ **Practical**

Mode of assessment	Volume	Weighting
Report	2,500 words	50%

Assessment Component 2
(Tick one)

☐ **Written exam** ☒ **Coursework** ☐ **Practical**

Mode of assessment	Volume	Weighting
Case Study Analysis	2,500 words or equivalent with drawings	50%

Assessment Summary

Activity type	Percentage
Written exam	
Coursework	100%
Practical	
TOTAL	**100%**

This module is linked to the requirements of CABE accreditation.
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INDICATIVE READING LIST

Module Code	**ACBA5019**	
Module Title	**Construction Technology 2**	
Classification	**Reading List entry**	**Electronic***
Essential	Riley, M. and Cotgrave, A. (2018) *Construction Technology 1: House Construction.* 4th Ed. London: Red Globe Press.	☐
Essential	Emmett, S. (2023) Barry's Advanced Construction of Buildings. 5th ed. England: Wiley-Blackwell.	☐
Essential	Riley M and Cotgrave A (2014) *Construction Technology Part. 3: Industrial and Commercial Building.* 3rd Ed. London: Bloomsbury .	☐
Essential	Riley, M., and Cotgrave, A., (2011) *Construction Technology 3: The Technology of Refurbishment and Maintenance.* 2nd Ed. Basingstoke:Palgrave Macmillan.	☐
Further	'Building' Magazine	☐

Module Code	**ACBA5020**
Title	**Contract Administration**
Date	**20/05/2024**
Level	**5**
Credits	**10**
Pre-Requisites	**None**
DBS Check	**May be required ☐ Not required ☒**

AIM(S)

- To provide students with an understanding of common procurement methods and the factors influencing their selection, along with an understanding of contractual procedures.

LEARNING OUTCOMES

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

- evaluate the factors that affect the selection of construction procurement methods;
- demonstrate project-management control and contract procedures to monitor progress and supply of resources.

INDICATIVE CONTENT

- Selection of procurement route.
- Construction procurement methods and contractual arrangements.
- Management of construction contracts such as Joint Contracts Tribunal (JCT) and New Engineering Contract (NEC).
- Monitoring progress of site works including Gantt Charts.
- Management of materials supply.
- Payments, responsibilities etc.

Study Time Allocation

The study time for the module is divided as follows:

Activity type	Hours	Percentage
Scheduled learning	24	24%
Independent learning	76	76%
Placement learning		
TOTAL	**100**	**100%**

ASSESSMENT

Assessment Component 1
(Tick one)

☐ **Written exam** ☒ **Coursework** ☐ **Practical**

Mode of assessment	Volume	Weighting
Report	2,500 words or equivalent	100%

Assessment Summary

Activity type	Percentage
Written exam	
Coursework	100%
Practical	
TOTAL	**100%**

INDICATIVE READING LIST

Module Code	**ACBA5020**	
Module Title	**Contract Administration**	
Classification	**Reading List entry**	**Electronic***
Essential	Heaphy, I. (2021) *Procurement and Contract Strategies for Construction.* London: ICE Publishing.	☐
Essential	Hughes, W, Hillebrandt P, Greenwood D and Kwawu W. (2006) *Procurement in the Construction Industry: The impact and cost of alternative market and supply processes*. New York: Taylor & Francis.	☐
Essential	Morledge, R and Smith, A (2013) *Building Procurement*. Oxford: Wiley-Blackwell.	☐
Further	Cooke, B. and Williams, P. (2009) *Construction Planning, Programming and Control*. London: Wiley-Blackwell.	☐

Module Code	**ACBA5021**
Title	**Geotechnical and Foundation Technology**
Date	**20/05/2024**
Level	**5**
Credits	**20**
Pre-Requisites	**None**
DBS Check	**May be required ☐ Not required ☒**

AIM(S)

- To provide learners with skills to classify rock and soil types and structure to establish primary engineering design parameters for soils; current codes of practice and criteria for testing the stability of foundations and earthworks.

LEARNING OUTCOMES

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

- evaluate the principle classification methods for soil and rock types in order to establish mechanical, physical and engineering design parameters;
- critically analyse and interpret the characteristics, procedures and significance of data, in line with current codes of practice;
- apply geological mapping to the interpretation of ground conditions for foundation and earthworks stability;
- apply hydraulics and fluid mechanics within the context of permeability and seepage flow of percolating ground waters.

INDICATIVE CONTENT

- Geological structures: petrographic classification of igneous, sedimentary and metamorphic rock types; common stable and unstable minerals and their geographical/geological distribution.
- Characteristics of discontinuities which influence the engineering performance of rock materials, stability of foundations, consolidation and compaction, settlement, angle of repose and bearing capacity.
- Rock and un-cemented sediments for construction use.
- Current techniques for the acquisition of soil and rock samples for laboratory testing; impact of sample quality on measured parameters, common methods of in-situ testing.
- Laboratory measurements of soil density, moisture content, permeability, porosity and determination of shear strength using shear box and tri-axial tests.
- Mohr’s circles of stresses.
- The Atterburg limits.

- Soil description and classification: classifications to current codes of practice.
- Particulate nature of soils; The Soil Model, three-phase and two-phase states, calculations for mass, density, moisture content, void ratio and degree of saturation, porosity, cohesion and specific gravity.
- Principles of effective stresses: influence on the strength and deformation of soil, drained and undrained behaviour; influence of seepage on effective stress.
- Hydraulics and Fluid Mechanics as used in foundation technology.

Study Time Allocation

The study time for the module is divided as follows:

Activity type	**Hours**	**Percentage**
Scheduled learning	48	24%
Independent learning	152	76%
Placement learning		
TOTAL	**200**	**100%**

ASSESSMENT

Assessment Component 1
(Tick one)

☐ **Written exam** ☒ **Coursework** ☐ **Practical**

Mode of assessment	**Volume**	**Weighting**
Laboratory testing portfolio	3 elements - 2,500 words or equivalent	50%

Assessment Component 2
(Tick one)

☒ **Written exam** ☐ **Coursework** ☐ **Practical**

Mode of assessment	**Volume**	**Weighting**
Exam	2 hours	50%

Assessment Summary

Activity type	**Percentage**
Written exam	50%
Coursework	50%
Practical	
TOTAL	**100%**

INDICATIVE READING LIST

Module Code	**ACBA5021**	
Module Title	**Geotechnical and Foundation Technology**	
Classification	**Reading List entry**	**Electronic***
Essential	Smith, I. (2021) *Smith's Elements of Soil Mechanics.* 10th ed. England. Wiley-Blackwell.	☐
Essential	Knappett, J. and Craig, R (2019) Craig's Soil Mechanics, 9th Edition. London: CRC Press.	☐
Essential	Atkinson, J. (2017) *The mechanics of soils and foundations*. 2nd ed. Abingdon: Taylor & Francis.	☐
Essential	Cosgrove, J. (2016) *Structural geology and rock engineering*. Imperial College Press.	☐
Further	Barnes, G. E. (2016) S*oil Mechanics: Principles and Practice*. 4th Ed. Basingstoke: Red Globe Press.	☐
Further	Mclean, A. and Gribble, C. (2017) *Geology for Civil Engineers. 2nd ed.* CRC Press.	☐

Module Code	**ACBA5022**
Title	**Materials Engineering**
Date	**20/05/2024**
Level	**5**
Credits	**10**
Pre-Requisites	**None**
DBS Check	**May be required ☐ Not required ☒**

AIM(S)

- To further develop understanding of a range of materials for civil engineers. Concrete timber and masonry will be examined in terms of structural behaviour, analysis and design.

LEARNING OUTCOMES

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

- describe concrete design in terms of manufacture, composition and hydration including aggregates and admixtures;
- explain the required tests to check the quality of concrete and interpret results;
- explain tests to check the quality of steel and timber and interpret results.

INDICATIVE CONTENT

- Materials Specification.
- Casting of concrete samples. Moulding and curing to assess properties and quality.
- Evaluation of the structural behaviour of concrete, timber and steel.
- The mechanical properties of concrete.
- Understand the link between sustainability and the manufacture of cement and concrete.
- Understand the latest UK regulatory framework around concrete, steel and timber.
- The quantitative and qualitative structural analysis of materials.
- Stress and strain structural analysis of materials.

Study Time Allocation

The study time for the module is divided as follows:

Activity type	Hours	Percentage
Scheduled learning	24	24%
Independent learning	76	76%
Placement learning		
TOTAL	**100**	**100%**

ASSESSMENT

Assessment Component 1
(Tick one)

☐ **Written exam** ☒ **Coursework** ☐ **Practical**

Mode of assessment	Volume	Weighting
Report	2,500 words or equivalent	100%

Assessment Summary

Activity type	Percentage
Written exam	
Coursework	100%
Practical	
TOTAL	**100%**

INDICATIVE READING LIST

Module Code	**ACBA5022**	
Module Title	**Materials Engineering**	
Classification	**Reading List entry**	**Electronic***
Essential	Mamlouk, M. (2017) *Materials for Civil and Construction Engineers.* 4th Ed. Harlow, Essex: Pearson Education Ltd.	☐
Essential	Nawy, E.G. (2008) *Concrete Construction Engineering Handbook*. Florida: CRC Press, Taylor & Francis Group.	☐
Further	British Standards Institute (2016) BS EN 206 :2013+A2:2021. *Concrete. Specification, Performance, Production and Conformity*. London: British Standards Institute.	☐
Further	British Standards Institute (2016) BS 8500-1:2015+A1:2019. *Concrete. Complementary British Standard to BS EN 206.* London: British Standards Institute.	☐
Further	Zhou, X., Li, Z., Ma, H. and Hou, D. (2022) Advanced Concrete Technology, 2nd Edition. London: Wiley.	☐

Module Code	**ACBA5023**
Title	**Project Control**
Date	**20/05/2024**
Level	**5**
Credits	**10**
Pre-Requisites	**None**
DBS Check	**May be required ☐ Not required ☒**

AIM(S)

- To provide tools of analysis and decision-making to the quantity surveyor to be able to control and monitor finances during the project construction stage.

LEARNING OUTCOMES

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

- apply knowledge of financial management to assess and calculate contract variations including the assessment of claims for scenarios.

INDICATIVE CONTENT

- Management of expenditure against budget.
- Preparation of interim valuations.
- Preparation, negotiation and documentation of claims.
- Assessment of variations.
- Risk management (financial etc).
- Delay and disruption.
- Delay analysis.

Study Time Allocation

The study time for the module is divided as follows:

Activity type	Hours	Percentage
Scheduled learning	24	24%
Independent learning	76	76%
Placement learning		
TOTAL	**100**	**100%**

ASSESSMENT

Assessment Component 1
(Tick one)

☐ **Written exam** ☐ **Coursework** ☒ **Practical**

Mode of assessment	Volume	Weighting
Presentation	15 minutes	100%

Assessment Summary

Activity type	Percentage
Written exam	
Coursework	
Practical	100%
TOTAL	**100%**

INDICATIVE READING LIST

Module Code	**ACBA5023**	
Module Title	**Project Control**	
Classification	**Reading List entry**	**Electronic***
Essential	Brook, M (2016) *Estimating and Tendering for Construction Work.* 5th ed. England. Routledge.	☐
Essential	Lee, S. (2020) Willis' Elements of Quantity Surveying, 13th Edition. London: Willey Blackwell.	☐
Essential	Morledge, R., Smith, A.J. and Appiah, S.Y (2021) *Building Procurement*. 3rd ed. Oxford: Wiley-Blackwell.	☐
Further	Arthur, A. (2022) Construction Risk Management Decision Making: Understanding Current Practices. London: Wiley Blackwell.	☐

Module Code	**ACBA5024**
Title	**Research Project Design**
Date	**20/05/2024**
Level	**5**
Credits	**20**
Pre-Requisites	**None**
DBS Check	**May be required ☐ Not required ☒**

AIM(S)

- To develop an understanding of the importance of research within the construction industry.

LEARNING OUTCOMES

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

- recognise the use and pros and cons of different research methodologies;
- demonstrate understanding of ethical responsibilities within research;
- to produce a research proposal and a pilot study piece of research.

INDICATIVE CONTENT

- Define research and types of research.
- Research methodologies.
- Approaches to research.
- Literature searches.
- Data gathering.
- Sampling methods.
- Analysis of data.
- Ethics.
- Presenting data.

Study Time Allocation

The study time for the module is divided as follows:

Activity type	Hours	Percentage
Scheduled learning	48	24%
Independent learning	152	76%
Placement learning		
TOTAL	**200**	**100%**

ASSESSMENT

Assessment Component 1
(Tick one)

☐ **Written exam** ☐ **Coursework** ☒ **Practical**

Mode of assessment	Volume	Weighting
Presentation	6 minutes	20%

Assessment Component 2
(Tick one)

☐ **Written exam** ☒ **Coursework** ☐ **Practical**

Mode of assessment	Volume	Weighting
Research Project	4,000 words or equivalent	80%

Assessment Summary

Activity type	Percentage
Written exam	
Coursework	80%
Practical	20%
TOTAL	**100%**

INDICATIVE READING LIST

Module Code	**ACBA5024**	
Module Title	**Research Project Design**	
Classification	**Reading List entry**	**Electronic***
Essential	Creswell, J. and Creswell, D. (2022) *Research Design*: *Qualitative, Quantitative and Mixed Methods Approaches*. 6th Edition. London: Sage Publications.	☒
Essential	Journal of Workplace Learning (2023) Online: Emerald Journals.	☒
Further	Denscombe, M. (2019) *Research Proposals.* Open University Press, London.	☒
Further	Andrews, G. (Research Proposal: Academic Writing Guide for Graduate Students (Essay and Thesis Writing) Kindle Edition by Grant Andrews (Author).	☐
Further	Fellows, R. and Liu, A. (2021) *Research Methods for Construction* 5th Edition, Blackwell Publishing, London.	☐
Further	Journal of Vocational Behaviour (2023) Online: Elsevier.	☒
Further	Stenström, M. and Tynjälä, P. (eds.) (2010) *Towards Integration of Work and Learning: Strategies for Connectivity and Transformation.* 2nd Ed. Dordrecht: Springer Science & Business Media V.B.	☐

Module Code	**ACBA5025**
Title	**Project Planning for Construction**
Date	**20/05/2024**
Level	**5**
Credits	**20**
Pre-Requisites	**None**
DBS Check	**May be required ☐ Not required ☒**

AIM(S)

- To provide students with the tools and analytical skills with which a construction manager can plan and programme a construction project as a team.

LEARNING OUTCOMES

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

- determine and assess the principles and application of effective project planning and programming;
- produce method statements and programme of works, analysing time, cost and resources needed for the project construction;
- evaluate the implications of quality; environmental considerations; health and safety, and how to plan them on site.

INDICATIVE CONTENT

- Principles of management.
- Effective communication and documentation for construction projects.
- Site investigation.
- Method statements.
- Productivity and costing. Cash-flow forecast analysis.
- Programming. Gantt charts and arrow diagrams.
- Programming resources.
- Planning quality control, quality assurance and quality management.
- Environmental management.
- Waste management plans.
- Quality and monitoring methods and procedure.
- Collaboration.

Study Time Allocation

The study time for the module is divided as follows:

Activity type	Hours	Percentage
Scheduled learning	48	24%
Independent learning	152	76%
Placement learning		
TOTAL	**200**	**100%**

ASSESSMENT

Assessment Component 1
(Tick one)

☐ **Written exam** ☒ **Coursework** ☐ **Practical**

Mode of assessment	Volume	Weighting
Group Portfolio	Maximum of 3 components (2,500 words or equivalent per person)	50%

Assessment Component 2
(Tick one)

☐ **Written exam** ☒ **Coursework** ☐ **Practical**

Mode of assessment	Volume	Weighting
Report	2,500 words	50%

Assessment Summary

Activity type	Percentage
Written exam	
Coursework	100%
Practical	
TOTAL	**100%**

INDICATIVE READING LIST

Module Code	**ACBA5025**	
Module Title	**Project Planning for Construction**	
Classification	**Reading List entry**	**Electronic***
Essential	AECOM (2024) *SPON's Architects and Builders Price Book*. 14th Ed. Abingdon, Oxon: CRC Press, Taylor & Francis Group.	☐
Essential	Chartered Institute of Building (2022) *Code of Practice for Project Management for Construction and Development*. 6th Ed. London: Wiley-Blackwell.	☐
Essential	March, C. (2017) *Construction Management: Theory and Practice*. Oxon: Routledge.	☐
Further	Coles, D., Bailey, G. and Calvert, R. E. (2012) *Introduction to Building Management*. London: Routledge.	☐
Further	Cooke, B. and Williams, P. (2024) *Construction Planning, Programming and Control*. 4th ed. London: Wiley-Blackwell.	☐

Further	Langford, D., Fellows, R., Hancock, M. and Gale, A. (2016) Human Resources Management in Construction. Chartered Institute of Building – London.	☐
Further	Harris, F., McCaffer, R. and Edum-Fotwe, F. (2021). *Modern Construction Management, 8th Edition*. London: Wiley-Blackwell	☐
Further	www.ciob.org	☒

Module Code	**ACBA5026**
Title	**Retrofit Coordination and Management**
Date	**20/05/2024**
Level	**5**
Credits	**20**
Pre-Requisites	**None**
DBS Check	**May be required ☐ Not required ☒**

AIM(S)

- To equip students with the understanding of the need for the retrofit of the existing building stock, with a particular focus on domestic construction, including outlining the technologies viewed as low carbon, material and construction method selection, systems, and their challenges, with the need to move to a zero-carbon society within the context of decarbonisation.

LEARNING OUTCOMES

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

- evaluate the theory and practice in the applicability of a range of technologies in relation to the retrofit of existing buildings to align with carbon emission reduction and sustainability;

- consider and apply appropriate solutions for retrofit applied to given scenarios.

INDICATIVE CONTENT

- The need for decarbonisation in context of global, national, and local policies and legislation.

- Historical context and evaluation of the progress towards retrofit, considering the key sectors across the UK within the building industry.

- The performance gap and building performance evaluation.

- Reality and the design and build process.

- Retrofit and conservation outlining the significance of thorough surveys.

- User interface, control, and maintenance.

- Construction, coordination, and skills challenges for retrofit.

- The devil in the detail. Building element retrofit interface issues for walls, roofs, floors, windows, doors, building services, sustainable technologies.

- Managing expectations and the costs of retrofit.

- Collaboration.

Study Time Allocation

The study time for the module is divided as follows:

Activity type	Hours	Percentage
Scheduled learning	48	24%
Independent learning	152	76%
Placement learning		
TOTAL	**200**	**100%**

ASSESSMENT

Assessment Component 1
(Tick one)

☐ **Written exam** ☒ **Coursework** ☐ **Practical**

Mode of assessment	Volume	Weighting
Group Portfolio	Maximum of 3 components - 2,500 words or equivalent per person	50%

Assessment Component 2
(Tick one)

☐ **Written exam** ☒ **Coursework** ☐ **Practical**

Mode of assessment	Volume	Weighting
Case Study	2,500 words or equivalent	50%

Assessment Summary

Activity type	Percentage
Written exam	
Coursework	100%
Practical	
TOTAL	**100%**

INDICATIVE READING LIST

Module Code	**ACBA5026**	
Module Title	**Retrofit Coordination and Management**	
Classification	**Reading List entry**	**Electronic***
Essential	HM Government (2020) Powering our Net Zero Future, 181 London: OGL.	☒
Essential	3 ENCULT: Energy Efficient Solutions for Historic Buildings. A Handbook (2014).	☐
Essential	Harris.C. and Borer.P. (2005) *The Whole House Book: Ecological Building Design and Materials*. 2nd Ed. Centre for Alternative Technology Publications.	☒
Essential	British Standards Institute. PAS 2035:2019 Specification for the energy retrofit of domestic buildings.	☐
Further	Hunt, R. and Suhr, M. (2013) Old House Eco Handbook.	☐
Further	HM Government (2020) United Kingdom of Great Britain 181 and Northern Ireland's Adaptation Communication	☒

	to the United Nations Framework Convention on Climate Change, London: OGL.	
Further	International Journal of Low Carbon Technologies.	☒
Further	www.thepebbletrust.org	☒
Further	Changeworks: Energy Heritage- A Guide to Improving Energy Efficiency in Traditional and Historic Homes (2008).	☐
Further	CIBSE: Guide to building services for historic buildings- Sustainable services for traditional buildings (2002).	☐
Further	Up to date policy papers relating to climate change from 181 the Welsh Government.	☒
Further	Energy Policy journal.	☒
Further	Residential Retrofit. 20 Case Studies (2013) Baeli, M.	☐

Module Code	**ACBA5027**
Title	**Structural Analysis**
Date	**20/05/2024**
Level	**5**
Credits	**20**
Pre-Requisites	**None**
DBS Check	**May be required ☐ Not required ☒**

AIM(S)

- To equip students with the ability to be able to analyse indeterminate structures.

LEARNING OUTCOMES

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

- resolve the forces in trusses and frameworks;
- carry out beam and frame analysis of indeterminate structures.

INDICATIVE CONTENT

- Structural classification into determinate and indeterminate structures.
- Introduction to the beam theory and analysis of simply supported and cantilevered beams.
- Analysis of indeterminate structures: Beams and Frame Analysis.
- Flexibility and Moment methods to solve statically indeterminate structures.
- Moment Distribution Method for analysing indeterminate beam and frame structure.
- Moment area method for analysing indeterminate beam and frame structure.
- Method of sections, “BOW” notation and Resolution of forces techniques to determine member forces in trusses and frameworks.
- Introduction to loading analysis on structure.
- Introduction CAD application to structural modelling and analysis.

Study Time Allocation

The study time for the module is divided as follows:

Activity type	Hours	Percentage
Scheduled learning	48	24%
Independent learning	152	76%
Placement learning		
TOTAL	**200**	**100%**

ASSESSMENT

Assessment Component 1
(Tick one)

☒ **Written exam** ☐ **Coursework** ☐ **Practical**

Mode of assessment	Volume	Weighting
Exam	2 hours	50%

Assessment Component 2
(Tick one)

☐ **Written exam** ☒ **Coursework** ☐ **Practical**

Mode of assessment	Volume	Weighting
Portfolio	3 elements, 2,500 words or equivalent	50%

Assessment Summary

Activity type	Percentage
Written exam	50%
Coursework	50%
Practical	
TOTAL	**100%**

INDICATIVE READING LIST

Module Code	ACBA5027	
Module Title	Structural Analysis	
Classification	Reading List entry	Electronic*
Essential	Arya, C. (2022) *Design of Structural Elements: Concrete, Steelwork, Masonry and Timber Designs to Eurocodes*. 4th ed. England: CRC Press.	☐
Essential	Hibbler (2019) *Structural Analysis in SI Units*, 10th Ed. London: Pearson.	☒
Essential	Cirulus and Wicks (2015) *Structural Analysis*. London: ICE Publishing.	☒
Further	Byfield, M. (2018). S*tructural Design from First Principles*. 1st ed. England: Routledge.	☐
Further	Seward, D. (2014) *Understanding Structures: Analysis Materials and Design*. 5th edition. Basingstoke: Palgrave Macmillan.	☐

Module Code	**ACNA5001**
Title	**Coastal, Marine and Wildlife Conservation**
Date	**05/05/2021**
Level	**5**
Credits	**20**
Pre-Requisites	**None**

AIM(S)

- To introduce coastal and marine ecosystems, and their conservation. From a scientific consideration of these pressures, students will evaluate strategies for the protection of the maritime environment and wider conservation of species, ecosystems and natural resources.

LEARNING OUTCOMES

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

- Comprehend the functioning of coastal and marine systems
- Discuss current conservation issues affecting the coastline/inshore waters and evaluate coastal defence strategies
- Contextualise and demonstrate awareness of the science and practicalities of wildlife conservation, sustainability and wildlife exploitation.

INDICATIVE CONTENT

- Introduction to the functioning of the marine environment
- Pollution and impacts – microplastics and hydrocarbons
- Oceanic over-harvesting and future implications of key policies.
- Role of oceans in climate regulation
- Impacts of climate change on marine systems.
- Sustainable management of marine wildlife
- Coastal geomorphology and the impact of anthropogenic forces
- Ecosystem services in coastal environments
- Climate change and coastal adaption
- Coastal priorities and management in a changing demography
- Coastal Zone Management, vulnerability and resilience in a changing world
- Wildlife Handing, Ethics and Conservation
- ID Skills and Population Assessment

- Rewilding, Species and Landscape Approach
- Making Space for Wildlife in an Urban Setting
- Green prescribing and the role of Ecological Engagement in the Community

Study Time Allocation

The study time for the module is divided as follows:

Activity type	Hours	Percentage
Scheduled learning	48	24%
Independent learning	152	76%
Placement learning		
TOTAL	**200**	**100%**

ASSESSMENT

Assessment Component 1
(Tick one)

☒ **Written exam** ☐ **Coursework** ☐ **Practical**

Mode of assessment	Volume	Weighting
Examination	2 hours	50%

Assessment Component 2
(Tick one)

☐ **Written exam** ☒ **Coursework** ☐ **Practical**

Mode of assessment	Volume	Weighting
Scientific Report	Based upon a practical fieldtrip, students will produce a scientific report of their findings (2500 words)	50%

Assessment Summary

Activity type	Percentage
Written exam	50%
Coursework	50%
Practical	
TOTAL	**100%**

INDICATIVE READING LIST

Module Code	**ACNA5001**	
Module Title	**Coastal, Marine and Wildlife Conservation**	
Classification	**Reading List entry**	**Electronic ***
Essential	Probert, P.K. (2017) *Marine Conservation*. Cambridge University Press	☐
Essential	Earll, B. (2018) *Marine Conservation: People, Ideas and Action (Perspectives in Conservation Biology)*, Pelagic Publishing.	☐

Essential	Haslett, S.K. (2016) *Coastal Systems* (3rd Edition). University of Wales Press, Cardiff	☐
Essential	Esteves, L. S. (Ed.) (2014) *Managed realignment: A viable long-term coastal management strategy*. Dodrecht Springer	☐

Module Code	ACNA5002
Title	Environmental Legislation and Circular Economy
Date	05/05/2021
Level	5
Credits	20
Pre-Requisites	None

AIM(S)

- To enable students to make informed judgments concerning the principal legal aspects relating to the environment, as well as outlining the importance of circular economy in policy and practice.

LEARNING OUTCOMES

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

- Use and apply legal materials that influence the environment and apply these to a range of case study scenarios

- Introduce the circular economy and its importance of policy and practice

INDICATIVE CONTENT

- Introduction of the legal framework for England and Wales

- Identification of key stakeholders within the legal and policy framework, and their respective roles and responsibilities for the environment

- Coverage of key legal controls for differing environmental media

- Introduction to the circular economy, its associated policy framework and importance globally, nationally and locally

- Underlying principles of circular economy, including progress towards achievement via case studies that demonstrate the fundamentals (globally, nationally and locally).

Study Time Allocation

The study time for the module is divided as follows:

Activity type	Hours	Percentage
Scheduled learning	48	24%
Independent learning	152	76%
Placement learning		
TOTAL	**200**	**100%**

ASSESSMENT

Assessment Component 1
(Tick one)

☐ **Written exam** ☐ **Coursework** ☒ **Practical**

Mode of assessment	Volume	Weighting
Video (or similar multimedia file)	10 minutes or equivalent	50%

Assessment Component 2
(Tick one)

☒ **Written exam** ☐ **Coursework** ☐ **Practical**

Mode of assessment	Volume	Weighting
Exam (open book)	7 hours (open book)	50%

Assessment Summary

Activity type	Percentage
Written exam	50%
Coursework	
Practical	50%
TOTAL	**100%**

INDICATIVE READING LIST

Module Code	ACNA5002	
Module Title	Environmental Legislation and Circular Economy	
Classification	Reading List entry	Electronic*
Essential	Bell, McGillivray & Pedersen (2013) *Environmental Law*, 8th ed, Oxford: Oxford University Press	☐
Essential	Torre, Cattaneo, Lenzi & Zanelli (2020) *Regeneration of the Built Environment from a Circular Economy Perspective*, Switzerland: Springer Open	☒
Further	Lange & Scotford (2013) *Environmental Law: text, cases and materials*, Oxford: Oxford University Press	☐
Further	Review of European, Comparative & International Environmental Law journal	☒
Further	Modern Law Review journal	☒
Further	Materials Circular Economy journal	☒
Further	Journal of Economic Issues	☒
Further	The Ellen MacArthur Foundation website	☒
Further	UK legislation website	☒

Cod y Modwl	**ACNA5002C**
Teitl	**Deddfwriaeth Amgylcheddol ac Economi Gylchol**
Dyddiad	**05/05/2021**
Lefel	**5**
Credydau	**20**
Rhagofynion	**Dim**

AMCAN(ION)

- Galluogi myfyrwyr i lunio barn wybodus ynghylch y prif agweddau cyfreithiol sy'n ymwneud â'r amgylchedd, yn ogystal ag amlinellu pwysigrwydd economi gylchol mewn polisi ac ymarfer.

DEILLIANNAU DYSGU

Ar ôl cwblhau'r modwl hwn yn llwyddiannus, dylai'r myfyrwyr allu:

- Defnyddio a chymhwyso deunyddiau cyfreithiol sy'n dylanwadu ar yr amgylchedd a chymhwyso'r rhain i amrywiaeth o senarios astudiaeth achos

- Cyflwyno'r economi gylchol a'i phwysigrwydd o ran polisi ac ymarfer

CYNNWYS DANGOSOL

- Cyflwyno'r fframwaith cyfreithiol ar gyfer Cymru a Lloegr

- Adnabod rhanddeiliaid allweddol yn y fframwaith cyfreithiol a pholisi, a'u rolau a'u cyfrifoldebau perthynol mewn perthynas â'r amgylchedd

- Ymdrin â rheolaethau cyfreithiol allweddol ar gyfer cyfryngau amgylcheddol gwahanol

- Cyflwyniad i'r economi gylchol, ei fframwaith polisi cysylltiedig a'i phwysigrwydd yn fyd-eang, yn genedlaethol ac yn lleol

- Egwyddorion sylfaenol economi gylchol, gan gynnwys cynnydd tuag at gyflawniad trwy astudiaethau achos sy'n dangos yr hanfodion (yn fyd-eang, yn genedlaethol ac yn lleol).

Dyraniad Amser Astudio

Mae'r amser astudio ar gyfer y modwl wedi'i rannu fel a ganlyn:

Math o weithgaredd	**Oriau**	**Canran**
Dysgu ar yr amserlen	48	24%
Dysgu annibynnol	152	76%
Dysgu ar leoliad		
CYFANSWM	**200**	**100%**

ASESU

Cydran Asesu 1
(Ticiwch un)

☐ **Arholiad ysgrifenedig** ☐ **Gwaith cwrs** ☒ **Tasg ymarferol**

Dull asesu	Maint	Pwysiad
Fideo (neu ffeil amlgyfrwng debyg)	10 munud neu gyfwerth	50%

Cydran Asesu 2
(Ticiwch un)

☒ **Arholiad ysgrifenedig** ☐ **Gwaith cwrs** ☐ **Tasg ymarferol**

Dull asesu	Maint	Pwysiad
Arholiad (llyfr agored)	7 awr (llyfr agored)	50%

Crynodeb Asesu

Math o weithgaredd	Canran
Arholiad ysgrifenedig	50%
Gwaith cwrs	
Tasg ymarferol	50%
CYFANSWM	**100%**

RHESTR DDARLLEN DDANGOSOL

Cod y Modwl	**ACNA5002C**	
Teitl y Modwl	**Deddfwriaeth Amgylcheddol ac Economi Gylchol**	
Dosbarthiad	**Cofnod ar y Rhestr Ddarllen**	**Electronig***
Hanfodol	Bell, McGillivray a Pedersen (2013) *Environmental Law*, 8fed arg, Rhydychen: Gwasg Prifysgol Rhydychen	☐
Hanfodol	Torre, Cattaneo, Lenzi a Zanelli (2020) *Regeneration of the Built Environment from a Circular Economy Perspective*, Y Swistir: Springer Open	☒
Pellach	Lange a Scotford (2013) *Environmental Law: text, cases and materials*, Rhydychen: Gwasg Prifysgol Rhydychen	☐
Pellach	Cyfnodolyn Review of European, Comparative & International Environmental Law	☒
Pellach	Cyfnodolyn Modern Law Review	☒
Pellach	Cyfnodolyn Materials Circular Economy	☒
Pellach	Journal of Economic Issues	☒
Pellach	Gwefan Sefydliad Ellen MacArthur	☒
Pellach	Gwefan deddfwriaeth y DU	☒

Module Code	**ACNA5003**
Title	**Low Carbon Technologies**
Date	**05/05/2021**
Level	**5**
Credits	**20**
Pre-Requisites	**None**

AIM(S)

- To equip students with the understanding of the need for decarbonisation, including outlining the technologies viewed as low carbon, grid distribution systems and their challenges, and the need to move to a zero-waste society within the context of decarbonisation.

LEARNING OUTCOMES

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

- Evaluate the applicability of a range of technologies in relation to carbon emission reduction, selecting those most appropriate to given scenarios

- Debate the merits and demerits between theory and practice.

INDICATIVE CONTENT

- The need for decarbonisation in context of global, national and local policies and legislation.

- Evaluation of the progress towards decarbonisation, considering the key sectors across the UK such as waste management.

- The Psychology of waste

- Evaluation of current and emerging low carbon technologies to replace historic energy generation technologies.

- Consideration of delivery systems, including the current grid distribution system and future developments.

- The need to consider energy efficiency in all aspects (building, appliance, transport, etc.)

Study Time Allocation

The study time for the module is divided as follows:

Activity type	Hours	Percentage
Scheduled learning	48	24%
Independent learning	152	76%
Placement learning		
TOTAL	**200**	**100%**

ASSESSMENT

Assessment Component 1
(Tick one)

☐ **Written exam** ☒ **Coursework** ☐ **Practical**

Mode of assessment	Volume	Weighting
Assignment	3500 words	70%

Assessment Component 2
(Tick one)

☐ **Written exam** ☐ **Coursework** ☒ **Practical**

Mode of assessment	Volume	Weighting
Oral presentation	12 minutes	30%

Assessment Summary

Activity type	Percentage
Written exam	0
Coursework	70%
Practical	30%
TOTAL	**100%**

INDICATIVE READING LIST

Module Code	**ACNA5003**	
Module Title	**Low Carbon Technologies**	
Classification	**Reading List entry**	**Electronic***
Essential	HM Government (2020) *Powering our Net Zero Future*, London: OGL	☒
Essential	HM Government (2020) *United Kingdom of Great Britain and Northern Ireland's Adaptation Communication to the United Nations Framework Convention on Climate Change*, London: OGL	☒
Essential	United Nations (2015) *The Paris Agreement*, Paris: UN	☒
Further	International Journal of Low Carbon Technologies	☒
Further	United Nations Framework Convention on Climate Change website (www.unfccc.int)	☒
Further	Up to date policy papers relating to climate change and energy from HM Government	☒
Further	Up to date policy papers relating to climate change from the Welsh Government	☒
Further	Energy Policy journal	☒
Further	Science Direct database (via UWTSD online library)	☒
Further	BP Statistical review of world energy	☒

Cod y Modwl	**ACNA5003C**
Teitl	**Technolegau Carbon Isel**
Dyddiad	**05/05/2021**
Lefel	**5**
Credydau	**20**
Rhagofynion	**Dim**

AMCAN(ION)

- Rhoi dealltwriaeth i fyfyrwyr o'r angen am ddatgarboneiddio, gan gynnwys amlinellu'r technolegau yr ystyrir eu bod yn rhai carbon isel, systemau dosbarthu grid a'u heriau, a'r angen i symud tuag at gymdeithas ddiwastraff yng nghyd-destun datgarboneiddio.

DEILLIANNAU DYSGU

Ar ôl cwblhau'r modwl hwn yn llwyddiannus, dylai'r myfyrwyr allu:

- Gwerthuso cymhwysedd amrywiaeth o dechnolegau mewn perthynas â lleihau allyriadau carbon, gan ddewis y rhai sydd fwyaf addas i senarios penodol

- Dadlau'r rhinweddau a'r diffygion rhwng theori ac ymarfer.

CYNNWYS DANGOSOL

- Yr angen am ddatgarboneiddio yng nghyd-destun polisïau a deddfwriaeth fyd-eang, genedlaethol a lleol.

- Gwerthuso'r broses tuag at ddatgarboneiddio, gan ystyried y sectorau allweddol ar draws y DU megis rheoli gwastraff.

- Seicoleg gwastraff.

- Gwerthuso technolegau carbon isel presennol ac sy'n dod i'r amlwg i ddisodli technolegau cynhyrchu ynni hanesyddol.

- Ystyried systemau cyflenwi, gan gynnwys y system ddosbarthu grid bresennol a datblygiadau i'r dyfodol.

- Yr angen i ystyried effeithlonrwydd ynni ym mhob agwedd (adeiladau, dyfeisiau, trafnidiaeth, ac ati.)

Dyraniad Amser Astudio

Mae'r amser astudio ar gyfer y modwl wedi'i rannu fel a ganlyn:

Math o weithgaredd	**Oriau**	**Canran**
Dysgu ar yr amserlen	48	24%
Dysgu annibynnol	152	76%
Dysgu ar leoliad		
CYFANSWM	**200**	**100%**

ASESU

Cydran Asesu 1
(Ticiwch un)

☐ **Arholiad ysgrifenedig** ☒ **Gwaith cwrs** ☐ **Tasg ymarferol**

Dull asesu	Maint	Pwysiad
Aseiniad	3500 o eiriau	70%

Cydran Asesu 2
(Ticiwch un)

☐ **Arholiad ysgrifenedig** ☐ **Gwaith cwrs** ☒ **Tasg ymarferol**

Dull asesu	Maint	Pwysiad
Cyflwyniad llafar	12 munud	30%

Crynodeb Asesu

Math o weithgaredd	Canran
Arholiad ysgrifenedig	0
Gwaith cwrs	70%
Tasg ymarferol	30%
CYFANSWM	**100%**

RHESTR DDARLLEN DDANGOSOL

Cod y Modwl	**ACNA5003C**	
Teitl y Modwl	**Technolegau Carbon Isel**	
Dosbarthiad	**Cofnod ar y Rhestr Ddarllen**	**Electronig***
Hanfodol	Llywodraeth EF (2020) *Powering our Net Zero Future*, Llundain: OGL	☒
Hanfodol	Llywodraeth EF (2020) *United Kingdom of Great Britain and Northern Ireland's Adaptation Communication to the United Nations Framework Convention on Climate Change*, Llundain: OGL	☒
Hanfodol	Y Cenhedloedd Unedig (2015) *Cytundeb Paris*, Paris: CU	☒
Pellach	International Journal of Low Carbon Technologies	☒
Pellach	Gwefan Confensiwn Fframwaith y Cenhedloedd Unedig ar Newid yn yr Hinsawdd (www.unfccc.int)	☒
Pellach	Papurau polisi cyfredol yn ymwneud â newid yn yr hinsawdd ac ynni gan Lywodraeth EF	☒
Pellach	Papurau polisi cyfredol yn ymwneud â newid yn yr hinsawdd gan Lywodraeth Cymru	☒
Pellach	Cyfnodolyn Energy Policy	☒
Pellach	Cronfa ddata Science Direct (trwy lyfrgell ar-lein PCYDDS)	☒
Pellach	Adolygiad Ystadegol BP o ynni'r byd	☒

Module Code	**ACNA5004**
Title	**Water Resources and Environmental Monitoring**
Date	**05/05/2021**
Level	**5**
Credits	**20**
Pre-Requisites	**None**

AIM(S)

- To enable students to critically evaluate and appraise the conservation of water resources from a multidisciplinary point of view.

LEARNING OUTCOMES

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

- Appraise water resources and the physical, chemical, biological and human factors affecting them.
- Determine the quality of water resources and their surrounding environments through statistical analyses, and applying the principles and concepts of watershed management.
- Evaluate the possible contradictions arising from human activities, economic development and the current need to conserve a scarce resource.

INDICATIVE CONTENT

- Hydrology (scarcity, distribution & movement of water resources) and watershed analysis
- Water availability and political conflict
- Water pollution, wastewater, treatment & modelling
- Biological and chemical sampling & statistical analysis methods
- Waterborne diseases
- Water and flood management (including droughts, floods and reduction of environmental impacts)
- Watershed analysis
- Groundwater, abstraction & aquifers
- Water purification
- Ecosystem services and water resources (lakes, dams & resevoirs)
- The physical, chemical and biological parameters of water

- Assimilation of pollution in fresh water
- Ground and surface water pollution, and subsequent removal of pollutants
- Potable and wastewater treatment processes

Study Time Allocation

The study time for the module is divided as follows:

Activity type	Hours	Percentage
Scheduled learning	48	24%
Independent learning	152	76%
Placement learning		
TOTAL	**200**	**100%**

ASSESSMENT

Assessment Component 1
(Tick one)

☐ **Written exam** ☒ **Coursework** ☐ **Practical**

Mode of assessment	Volume	Weighting
Written Assignment	2500 words	50%

Assessment Component 2
(Tick one)

☐ **Written exam** ☒ **Coursework** ☐ **Practical**

Mode of assessment	Volume	Weighting
Assignment	2500 words	50%

Assessment Summary

Activity type	Percentage
Written exam	
Coursework	100%
Practical	
TOTAL	**100%**

INDICATIVE READING LIST

Module Code	**ACNA5004**	
Module Title	**Water Resources and Environmental Monitoring**	
Classification	**Reading List entry**	**Electronic***
Essential	Jocelyne M. R. Hughes (2019), *Freshwater Ecology and Conservation: Approaches & Techniques*. Oxford University Press	☐
Essential	Dodds, W. K. and Whiles, M. R. (2010) (2nd Edition) *Freshwater Ecology: Concepts and Environmental Applications of Limnology (Aquatic Ecology)*. Burlington: Academic Press	☐

Essential	Hurford, C., Schneider, M. and Cowx, I. (2009) *Conservation monitoring in Freshwater Habitats: Practical Guide and Case Studies.* Doredrecht :Springer	☒
Essential	Baird, C. and Cann, M. (2012)(5th Edition) *Environmental Chemistry.* New York: W.H. Freeman & Co	☐
Essential	Crites, R.W., Middlebrooks, E.J., Bastian, R.K. and Reed, S.C. (2014) *Natural Wastewater Treatment Systems*. 2nd ed. Boca Ratan, FL: CRC Press,	☐
Further	Hauer, F.R. and Lamberti, G. (2007) (2nd Edition) Methods *in Stream Ecology*. Burlington, MA: Academic Press,	☐
Further	Mason, C. F (2001) *Biology of Fresh Water Pollution*. Harlow: Pearson Education Limited,	☐
Further	Croft, P. S. (1986) *Fresh Water Invertebrates*. Key to Major Groups. Shrewsbury: Field Studies Council..	☐
Further	Hulyer, D. and Shepherd, P. (2003) A Guide to *Wetland Birds*. Shrewsbury, Shropshire: Field Studies Council.	☐
Further	Fitts, C. R. (2012) (2nd Edition) *Groundwater Science*. Oxford: Academic Press	☐
Further	Gray, N. F. (2010) *Water Technology: An introduction for environmental scientists and engineers*. 3rd ed. London: IWA Publishing	☐
Further	Masters, G. M., Ela, W. P. (2013) *Environmental Engineering and Science*. 3rd ed. London: Pearson International	☐
Further	Environment International journal	☒

Module Code	**ACBA5028**
Title	**Sustainable Development**
Date	**20/05/2024**
Level	**5**
Credits	**10**
Pre-Requisites	**None**
DBS Check	**May be required ☐ Not required ☒**

AIM(S)

- To provide students with details of the Sustainable Development agenda related to construction, and its impact on practices moving into the future.

LEARNING OUTCOMES

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

- evaluate the development of the Sustainable Development agenda and its relationship to the construction sector;
- apply sustainability thinking to a simple project scenario.

INDICATIVE CONTENT

- The fundamentals of Sustainable Development (concept, principles, challenges).
- Policy and legislative context related to construction (UK, worldwide).
- Tools for decision making (BREEAM, LEED, etc).
- Urban environments, infrastructure and the need for change.
- Modern Methods of Construction and the links to Sustainable Development.
- Embodied carbon calculations.
- Circular Economy in construction.
- Sustainable Development as an agent for progress related to global climate change.

Study Time Allocation

The study time for the module is divided as follows:

Activity type	Hours	Percentage
Scheduled learning	24	24%
Independent learning	76	76%
Placement learning		
TOTAL	**100**	**100%**

ASSESSMENT

Assessment Component 1
(Tick one)

☐ **Written exam** ☒ **Coursework** ☐ **Practical**

Mode of assessment	Volume	Weighting
Report	2,500 words or equivalent	100%

Assessment Summary

Activity type	Percentage
Written exam	
Coursework	100%
Practical	
TOTAL	**100%**

INDICATIVE READING LIST

Module Code	ACBA5028	
Module Title	Sustainable Development	
Classification	Reading List entry	Electronic*
Essential	Della Torre, Cattaneo, S., Lenzi, C., & Zanelli, A. (2020). *Regeneration of the Built Environment from a Circular Economy Perspective* (Della Torre, S. Cattaneo, C. Lenzi, & A. Zanelli, Eds.; 1st ed. 2020.). Springer International Publishing. https://doi.org/10.1007/978-3-030-33256-3	☒
Essential	Sayed Hemeda (2019) *Sustainable Construction and Building Materials*. IntechOpen. doi:10.5772/intechopen.78713.	☒
Essential	Blewitt, J. (2015) *Understanding Sustainable Development*. Abingdon, Oxon : Routledge	☐
Essential	Wheeler, S.M. and Rosan, C.D. (2021). Reimagining Sustainable Cities: Strategies for Designing Greener, Healthier, More Equitable Communities University of California Press.	☐
Further	Wellbeing of Future Generations (Wales) Act 2015 and associated literature.	☒
Further	Sustainable Development Goals and associated literature.	☒
Further	Rowe, P.G. and Hee, L. (2019) *A City in Blue and Green The Singapore Story*. 1st ed. 2019. Singapore: Springer Singapore. doi:10.1007/978-981-13-9597-0.	☒
Further	Yepes, V & Navarro Martinez, I.J. (2021) Trends in *Sustainable Buildings and Infrastructure*. Basel, Switzerland: MDPI - Multidisciplinary Digital Publishing Institute. doi:10.3390/books978-3-0365-0915-0.	☒
Further	Journal of Cleaner Production.	☒
Further	International Journal of Construction Management.	☒
Further	Renewable and Sustainable Energy Reviews journal.	☒