

**The CIOB
Education
Framework
2007**

JUNE 2007

ABOUT CIOB

The Chartered Institute of Building (CIOB) is the leading international professional body for managers in construction. With over 43,000 individual members working in more than 94 countries worldwide, the CIOB sets the pace globally for the education and professionalism of those who work in the construction of the built environment.

In 1834 the CIOB was founded under the title 'The Builders Society', with the same ideals of establishing, promoting and maintaining standards of excellence in construction that drive it forward today. In 1980 the CIOB was granted a Royal Charter to promote the science and practice of building for public benefit.

The CIOB draws its membership from a wide range of professional disciplines working within construction supply chains. The membership includes clients, consultants, and contractors as well as specialists in regulation, research and education.

Wherever members are in their education or career, they are offered a membership grade that reflects their achievements, starting from Student through to the highest accolade of Fellow of the Institute, FCIOB.

In the complex and challenging world of construction, clients and employers are increasingly demanding proof of competence and experience to ensure the delivery of a high performance. Qualification as a Chartered Builder through the combination and assessment of practical experience and academic achievements is proof of this ability. It is not until prescribed professional standards have been met and assessed that the use of the prestigious designations of MCIOB and FCIOB can be used.

The CIOB is committed to serving the learning and development needs of its members to ensure that their professional aspirations are met. Through collaboration and consultation with government and industry the CIOB continually reviews and develops its qualifying routes and service provision to ensure that its members remain up to date.

Membership of the CIOB is highly regarded throughout the construction industry and provides its holder with many professional advantages. Members also have access to a wide range of products and services designed to complement their qualification.

TABLE OF CONTENTS

Introduction	4
Indicative Core Learning Outcomes	8
Level of Achievement	16
Methods of Assessment	18
Qualification Levels	20
Routes to CIOB Membership	21
Masters Accreditation Process	22

Appendix A

Draft Student Learning Outcomes for First Degree Course in Commercial Management	33
Draft Student Learning Outcomes for First Degree Course in Construction Management	40
Draft Student Learning Outcomes for First Degree Course in Design Management	47
Draft Student Learning Outcomes for First Degree Course in Property Management	56

Appendix B

Draft Student Learning Outcomes for Masters Degree Course in Commercial Management	64
Draft Student Learning Outcomes for Masters Degree Course in Construction Management	68
Draft Student Learning Outcomes for Masters Degree Course in Design Management	71

INTRODUCTION

1. A review of the Chartered Institute of Building Education Framework was initiated during 2005/06 by the Education and Membership Board through the Accreditation Panel and subsequently authorised by Council.
2. The review builds on the previous editions of the Education Framework, issued in 1994 and 2003. The objective, in response to membership demands, is to update the existing framework document which enables the ability of the CIOB to recognise the increasingly broad range of built environment disciplines. The review process has included the following processes: a joint consultative working review conducted by accreditation advisors, the establishment and reporting by 4 working groups, review and feedback by on line questionnaire to all members and a final consolidation of the framework document. This draft edition is now presented for final feedback and review to all accredited providers prior to approval. It is planned to roll out the revised framework in June 2007.
3. The review includes reference to recent drivers of change with regard to the output standards of construction education. These are namely:
 - i) to map closely to the CIC Common Graduate Learning Outcomes,
 - ii) National Occupational Standards,
 - iii) to incorporate feedback and view points concerning the review of health and safety for education by the HSE and the CIOB Health & Safety Caucus and
 - iv) the increasing emphasis upon the reduction of carbon emissions arising from the construction process arising from the Kyoto agreement on climate change, the Stern Report and recent changes in regulatory and design criteria for buildings.
4. The review takes note of the need to increase the focus upon health and safety and the approaches

to sustainable development and technology as these areas relate to the construction process.

5. Importantly, the framework is designed to ensure the relevance of the framework to an increasingly international market place whereby CIOB standards are applicable to the training and education of professional construction professionals across the globe. In this respect the terminology included and concepts developed are intended to meet the needs of international users. The Education Framework defines the core standards required of construction management education and establishes a framework, against which providers may measure their courses for professional body accreditation.

PRIMARY AIMS

6. To define professional level educational underpinning for those wishing to engage confidently, proficiently and successfully in the general or specialist management of building, construction, production and design management, adaptation, conservation or removal of buildings.
7. To support a code of professional conduct and ethical behaviour by developing an enhanced range of personal skills within the framework.
8. To meet the expectations of the Quality Assurance Agency National Benchmark statements for "Building and Surveying", and the Construction Industry Council's Memorandum of Understanding and Education Manifesto.
9. To establish the learning experience within the context of construction application, thus enabling the integration of theoretical knowledge and understanding with best industrial practice, including health, safety and welfare and environmental sustainability.
10. To enable the development of critical, analytical, transferable and study skills, which are of practical benefit in the workplace, which promote and enable continued professional development and which lead to the achievement of Chartered status.

THE FRAMEWORK

11. This framework requires:

- The acquisition of a core of common knowledge.
- The inclusion of a diverse range of specialisms.
- The creation of a multi-disciplinary practice base, built on the development of a body of knowledge, research and practice.
- The reflection of current cultural and social values in producing and managing the built environment.
- The development of an awareness of ethical responsibilities and professional conduct.
- The development of key learning skills and the development of personal attributes which are central to the role of the chartered builder.

12. The framework focuses upon learning outcomes. The outcomes are structured in three levels, which are progressively encountered.

- Level 1: Principles and context
- Level 2: Analysis and application
- Level 3: Synthesis and evaluation

The learning outcomes follow the phrase: “The student should (at the point of assessment) be able to...” The learning outcomes will be assessed through a diverse range of assessment regimes as indicated below.

13. At each level there are four components to the programme of study:

- Construction Technology
- The Construction Environment
- Specialism
- Skills

14. The diagram shown below provides an expectation of how these four components might be structured through the three levels of the learning programme.

Figure 1 - Indication of balance of components during learning programmes

(Note: the representation is diagrammatic and not prescriptive.)

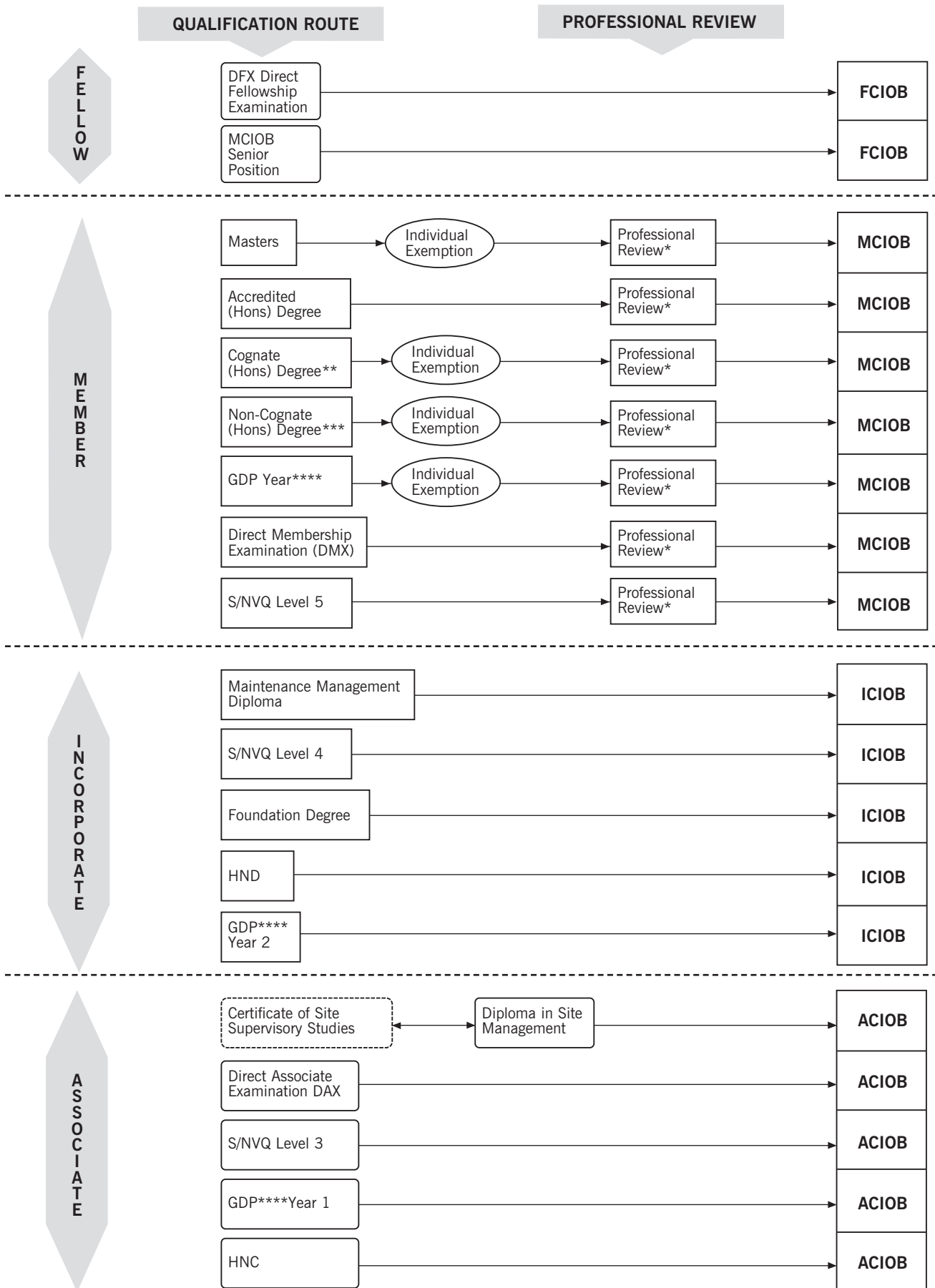
This diagram indicates the balance between the four components - construction technology, the construction environment, specialism and skills - as the learning programme progresses through its three levels.

Level 3: Synthesis and evaluation by the integration of subject themes	Construction Technology 3	Construction Environment & Management 3	Specialism 3	Skills 3
Level 2: Analysis and application	Construction Technology 2	Construction Environment 2	Specialism 2	Skills 2
Level 1: Principles and context	Construction Technology 1	Construction Environment 1	Specialism 1	Skills 1

15. It is expected that the integration of the components of the framework will be developed progressively through the three levels of learning to enable the application of construction technology, within the construction environment, highlighting the specialism and demonstrating the breadth of skills. It is to be expected at level 3 that this may be assessed through a group project, dissertation, project evaluation and development, or assessed experiential learning.
16. It is important to note that the boundaries between these levels and components are designed to be sufficiently flexible to enable programmes to be developed with appropriate justifications, which will meet the demands of a range of functions within the built environment. Courses developed within this framework will encourage the coherent integration of disciplines and progression of students to achieve the required learning outcomes.
17. There is an expectation of a progression of knowledge and its application throughout the learning programmes, this should be evident through the definition of the learning aims and outcomes and by the various means employed by which to demonstrate these outcomes.
18. Courses formed within the framework should satisfy the academic requirements of the accreditation process. This process is defined and detailed in a separate document. The learning outcomes are therefore not intended to be a set of prescriptive module titles, but to frame a base of learning and assessment. The quality of assessment is viewed as a balance between the academic assessment of knowledge, application and innovation and the demonstration of practice in an appropriate context.
19. Providers should design courses that exploit the strengths of their organisations, whilst meeting the outcomes defined in the framework. The programmes should demonstrate a balance of syllabus content, clear student progression, and an integration of student achievement.
20. Despite the emphasis on outcomes, courses will also be dependent on input and process elements. Such inputs will focus upon the entry profile of candidates, the resources employed to achieve the learning outcomes, the processes adopted to assure the quality of provision, the quality of the candidate's learning experience and the demonstration of that process to the CIOB and other external stakeholders.
21. The challenge for course providers is therefore to achieve:
- A balance of inputs, processes and outcomes.
 - A balance of technological and management knowledge, understanding and skills.
 - A balance between academic and practice based learning.
- The education framework also needs to accommodate entrants of different ages and experience into different points in the learning programmes.

RELATION TO THE CIOB ROUTES TO PROFESSIONAL QUALIFICATION

22. The following diagram sets out the relationship between accredited BSc (Hons.) learning programmes and the wider system of CIOB's routes to professional qualification. Further and fuller details of these routes are published.



* 3 years experience at professional level/PDP/S/NVQ4 and assessment of occupational competence.
 ** Non-accredited centres.
 *** Mature Non-Cognate with considerable industrial experience.
 **** GDP: CIOB Graduate Diploma Programme for new non-cognate graduates in employment.
 Holders of CIOB Accredited Degree courses may apply for incorporate membership pending completion of the Professional Review.

INDICATIVE CORE LEARNING OUTCOMES

23. The schedule which follows sets out indicative learning outcomes which might be expected to figure in all accredited learning programmes. These outcomes are significantly revised upon the previous version of the educational framework. Against each learning outcome is set an indication of the range, which the learning outcome might cover.

Level 1 - Principles and Context

Construction Technology 1

Learning Outcome	Indicative Range
To appreciate the key factors affecting foundation design.	Soil and rock types, S.I. techniques, H&S issues including temporary support to excavations, contaminated land, ground improvement, foundation design, detailing and placement.
To demonstrate an understanding of the performance ratings, interaction and placement of structural and non-structural components of buildings.	Structural elements: Foundations, floors, walls, columns, beams, slabs, roofs including the use of traditional and modern construction systems including awareness of heritage and sustainable construction methods. Non structural elements: cladding, doors windows, partitions and ceilings.
To understand and interpret the fundamentals of structural behaviour.	Loads, stresses, tension, compression, bending, shear, torsion, deflection including simple design processes.
To describe the properties of building materials and understand their performance characteristics with regard to the natural environment and their impact upon it.	Typical construction materials, including manufacture and use of: Natural and manmade stone, brick, cements, mortars and concrete, steel, other metals, timber and timber products, non-ferrous metal, glass, plastics and polymer products, plaster, paint, bituminous materials, recycled products and achieving sustainable buildings.
To describe the effects of natural and man made phenomena upon the life cycle of building materials.	Performance issues including: Chemical, electro-chemical, bio-chemical, radiation, heat loss and gain, movement, moisture loss and ingress including rising dampness, condensation and penetrating rain.
To integrate the basic scientific principles in the context of the built environment and understand their relevance to building design and performance.	Performance concepts such as: Thermal capacity and insulation, vapour and condensation, ventilation, natural and artificial lighting, smoke, fire, sound, weather. Building Regulation control including the conservation of energy, carbon emissions and performance control.
To appreciate the function and design of building services.	Building services, including water: cold and hot water supply and sewerage. Power including fossil and renewal resources. Communication. Human comfort including heating, cooling and ventilation. Fire and security protection.
To explain the basic principles of land surveying.	Linear, angular, tacheometric, geodetic.
To demonstrate a satisfactory competence in land surveying.	Tape, level, theodolite, use of total station. The capture, use and retrieval of data. Levelling, traverse and setting out.

The Construction Environment 1

Learning Outcome	Indicative Range
To describe the nature and extent of the national and international construction industry.	Output, scope, history.
To describe and apply the social and economic performance requirements of the construction process.	Social, political and cultural issues and their implications and significance to planning, design, development and use of the built environment. The impact of developments upon the environment and society at large.
To demonstrate an understanding of the legal system in application to the construction process in terms of contract performance, obligations, tort and statutory requirements.	To include the national legal system including civil and criminal law, tort, contract, property, H&S, environment, statutory control and constraints on action and interaction.
To include the national legal system including civil and criminal law, tort, contract, property, H&S, environment, statutory control and constraints on action and interaction.	Macro and micro economic principles including supply/demand and their relevance to the construction industry. Market, structure and dynamics, land, materials, plant, labour, finance.
To describe the economic principles of the construction industry. Their application and significance to the sector and the principles of management, business operation and commercial risk as they apply to the construction industry.	The principles of business management including the development of management science, human relations and HRM, business operation, commercial risk.
To describe the elements of the design and construction processes.	Concept, brief, feasibility, design, current procurement methods, planning, execution, operation, maintenance, disposal, re-use of property. The make up on the construction professions and their roles. The input of the construction professions to the design process through integrated teams.

Specialism 1

This will depend on the chosen discipline. The following titles are intended to define the expected range of issues included in the development of that discipline. Further examples of specialisms are provided in Appendix A

Learning Outcome	Indicative Range
Principles	
Contextualisation	
Application to the Construction Process	
Key issues.	
The use of best practice.	

Skills 1

Learning Outcome	Indicative Range
To acquire, develop and use communication skills.	To demonstrate the ability to produce original, clear and lucid written reports. Complete an oral presentation to a peer group. Demonstrate an ability to prepare a curriculum vitae and undertake a mock interview.
To demonstrate an ability to process, use and present analytical information. Including the use of the necessary range of numerical methods for calculating, checking, presenting and communicating solutions to problems.	Process and manipulate numerical information, conduct basic mathematical operations. Evaluate, interpret and present graphical and tabulated data.
To demonstrate an ability to research and use textual source information.	The use of the library, accessing textual information including texts and journals. Referencing and using references in report writing.
To demonstrate the ability to use basic ICT skills.	Use of hardware and peripherals. Management of files. Ability to use office software including word processing, spreadsheets and presentations. Use of the internet and email. Ability to write to html and create simple web sites. Understanding of the use of construction applications including: programming and cost information as examples.
To demonstrate the ability to work with others.	Group discussions, project work, preparing & presenting information, effective teamwork, developing group dynamics, produce goals, review and evaluate progress.
To agree a personal learning plan and record progress against that plan.	The planning, undertaking and recording of achievement, review and identify learning needs and resources, the demonstration of personal development through the process. For example, using the CIOB RAPID programme for recording achievement will provide a suitable vehicle for the demonstration of personal development.
To demonstrate an understanding and use of health and safety as it applies to the working environment.	Awareness of personal and the managerial responsibility for H&S. Awareness of safe working practices in the learning environment for self, others and environment. To prepare for site visits and communicate that process to others. Ability to conduct a risk assessment in a real or simulated working environment. Use of PPE.

Level 2 - Analysis and Application

24. At this level the knowledge base which is developed at level 1 is extended and applied to the context of the construction industry and its operations. The syllabus is characterised by an increasing integration of the various learning themes.

Construction Technology 2

Learning Outcome	Indicative Range
To understand and apply further concepts in ground technology and engineering techniques.	Site investigation, ground water, ground stabilisation, soil mechanics, adjacent structures, the design of deep foundations and basements, dewatering and stabilisation. Complex foundations and piling. The impact of structure solutions upon superstructure. Ground movement and design solutions.
To evaluate the characteristics of various construction techniques and materials and their effect on building production.	Excavations and associated safety issues, roads & services, formwork, reinforcement, materials selection component installation. Off site manufacture and modern methods of construction.
To analyse the design of the superstructure for commercial and multi-storey buildings.	Frames, stability and movement considerations. The use of in situ concrete, steel and timber frame erection, precast concrete. Building systems and processes.
To appraise the provision of non structural cladding and internal partitions.	The selection, design and installation of building cladding, fixing, performance and detailing.
To gain an understanding of the design and installation of building services.	The review of the selection and operation of building services systems for commercial and multi-storey structures. Heating and cooling. Fire, safety and security. Movement and circulation. Ventilation and conditioning. Energy and carbon management and intelligent buildings.
To critically review the design process and integrate the various technology-related issues to the development of the built environment.	Architecture/aesthetics, integrated design, industrialised building, refurbishment, change of use, environmental sustainability & legislation, clients & user requirements, design factors including safe design methods, fitness for purpose, design information, modification, communication, environmental, social political & cultural issues in design & development.
To apply construction knowledge to the use and operation of buildings.	Performance and service life issues. The principles of the life time operation. Building maintenance, management and the reuse of property, structures and services. Asset management.
To understand the design and use of sustainable construction including the environmental impact of buildings.	The integration of sustainable technologies and systems in the building design and production processes. Waste minimisation, control, sorting, closed loop recycling and disposal options.

The Construction Environment 2

Learning Outcome	Indicative Range
To describe the concepts and obligations set by construction law.	Contracts, liabilities, negligence, trespass, nuisance, breach of contract, damages, third parties, risks, insurance, warranties, covenants, employment law. The impact upon the construction management process. Corporate responsibility for safe working practices.
To apply knowledge to the management of the procurement process.	Procurement methods. The review of contract law and its management, Problem resolution and the use of innovative solutions.
To demonstrate an appreciation of the various aspects of property development.	Project scope, planning and development. Commercial risk factors. Markets, property finance, investment, land building purchase, partnerships, sale and rental strategy, bespoke and speculative development, letting, disposal.
To understand, interpret and apply health, safety and welfare issues in the context of building production	CDM procedures (or equivalent relating safe design and safe management): the safety plan and safety file or equivalent documentation controls to aid safe design and safe processes on site. Hazard identification and risk management. The construction site and H&S procedures.

Specialism 2

This will depend on the chosen discipline.

Learning Outcome	Indicative Range
Principles	
Contextualisation	
Application to the Construction Process	
Key issues.	
The use of best practice.	

Skills 2

Learning Outcome	Indicative Range
To demonstrate applied communication and analytical skills.	Oral and written presentation. The use of numerical information and graphical techniques. Presentation skills. The demonstration of uses in the construction environment.
To apply ICT skills to the construction process.	Information handling, reports, spreadsheets, preparing & presenting information for construction projects. Using construction applications. Using CAD to create drawings and / or the management and manipulation of data. Appreciate the opportunities arising and the use of multidimensional information. The management and presentation of digital project information
To acquire and apply research skills including the definition, investigation and analysis of problems	Non routine and unfamiliar problem solution. The solution of practical and creative solutions. Definition of the project, hypothesis design, identification, gathering and analysis of information needs, formulate conclusions, referencing. Preparation and presentation of a report.
To demonstrate the understanding and application of project management skills to construction projects.	Leadership, delegation, teamwork, negotiation, decision making. Project definition, design, planning and programming. Quality and risk management systems and issues. Project review and continuous improvement cycles.
To develop and apply project leadership to the construction process.	Understanding the needs of clients, customers, users and society. Appreciation of the wider project team and other professional needs. Working in integrated teams. The importance of design information, its development and communication to other parties.
To develop, maintain and encourage constructive working relationships which seek to avoid or resolve conflicts and differences.	Problem solving, foster & promote working relationships, develop methods of avoiding and resolving conflict. Analytical approach to non-routine problems, application of judgement to provide solutions, integrated teamwork & benefits.
To understand and appreciate the use of professional ethics in the construction process.	The principles of professional ethics and values across the industry, professional judgement and duty of care.
To manage a personal learning plan, reflect upon practice and provide improvements and to demonstrate the results by appropriate means.	The planning, undertaking and recording of achievement, review and identify learning needs and resources, the demonstration of personal development through the process. The CIOB RAPID programme for recording achievement will provide a suitable vehicle for the demonstration of personal development.
To apply and use health and safety management skills in the workplace.	Hold a recognised health and safety qualification. Awareness of site and process based risks. Understand safety management processes and hazard mitigation measures.

Level 3 - Analysis and Application

25. At this level the learning outcomes bring the four components together in an integrated way, as the student aims to achieve outcomes through the demonstration of skill as well as understanding.

Learning Outcome	Indicative Range
Construction Technology	
To demonstrate an integration of knowledge and skills of construction technology within a construction environment.	This outcome could be achieved via a project based scenario or applied study that demonstrates integration, current issues, future challenges and environmental awareness.
Construction Environment & Management	
To demonstrate a critical approach to project and site management skills through team work and continuous improvement.	This outcome could be achieved in the context of a real or simulated group project. Project and role definition, team selection, target setting, operational and production control, decision making, problem solving, feedback, analysis, subsequent action. Management factors include planning and programme, resource, production, health & safety, quality systems and defect control, cost and value, HR, environment.
To apply and review health and safety management systems.	Review health and safety, risk management and contingency approaches to the management of projects.
Specialism	
To develop an evaluative approach to the study of the chosen specialism and to show its integration within the total building process.	This will depend on the functional specialism and will be assessed accordingly.
Skills	
To demonstrate the management and control of the personal learning plan, the record of its achievement, the reflective evaluation of its success and to update this plan for future uses.	The further demonstration of control over career development, the review and identification of learning needs and resources, the use of planned Continuing Professional Development (CPD) and the use of the recording of achievement as a development of life long learning will satisfy this outcome.
To plan, implement and conduct a programme of research and to demonstrate an understanding and development of innovation in practice in this study.	Research skills. Research project and/or in depth project or study in an applied area.

26. Indicative learning outcomes have been drafted for programmes in construction management, property management, design management and commercial management. These subject specialisms are available for use by the Institute and by programme designers. They indicate the range of expectations of the Institute in each of the named subject areas. They should, however, be used as indicative examples and not treated as exemplars to copy. These subject definitions may be helpful to HE institutions as part of a programme to develop subject future specialisms, as per the following table:

Discipline Area		Indicative Degree Titles
Commercial Management	<	Commercial Management Quantity Surveying
Construction Management	<	Construction Management Project Management
Design Management	<	Architectural Technology Civil Engineering
Property Management	<	Facilities Management Building Surveying

A copy of indicative programme learning outcomes for each discipline area for each of the three levels of the education framework can be found in appendix A of this document. :

LEVEL OF ACHIEVEMENT

27 The draft learning outcomes shown in Figure 2, together with the QAA benchmark standards, provide guidance on the level of achievement expected from the learning programmes. The QAA benchmark standards are shown below:

QAA Benchmark Standards

Threshold standard	Modal standard	
All students graduating with a single honours degree within the subject of building and surveying will be able to:	The modal standard represents the typical level of achievement over and above that of the threshold standard. Students will be able to:	
Subject knowledge and understanding recognise the nature of the relevant specific discipline and its relationships within the context of the subject;	Subject knowledge and understanding recognise and anticipate the need for change in the relevant discipline and perceive future trends leading to the formation of informed questions;	Benchmark reference Distinctive character of the subject
describe and apply a range of relevant key concepts, theories and principles;	describe and examine a range of key concepts and theoretical approaches and evaluate their effective application;	Key concepts, theories and principles
identify and recognise relevant issues and why they are important;	analyse the relative importance of relevant issues and their future application;	Issues in building and surveying
recognise and apply all relevant aspects of management and other specialisms within the context of regulatory requirements, the needs of society and ethical correctness;	evaluate and make judgements about all relevant aspects of management and other specialisms within the context of regulatory requirements, the needs of society and ethical correctness;	Specialisms and ethical conduct
select and apply appropriate IT;	select and evaluate appropriate IT applications and evaluate strategies to a particular task;	Information technology
identify and explain the nature of the various interactions and relationships.	analyse relationships and interactions and evaluate their strengths and weaknesses.	Relationships, interactions and linkages

Benchmark Standards

Threshold standard	Modal standard	
All students graduating with a single honours degree within the subject of building and surveying will be able to:	The modal standard represents the typical level of achievement over and above that of the threshold standard. Students will be able to:	
<p>Subject and cognitive skills</p> <p>investigate questions and problems of a routine nature and devise solutions;</p>	<p>Subject and cognitive skills</p> <p>investigate questions and problems of a non routine and unfamiliar nature and devise solutions;</p>	<p>Benchmark reference</p> <p>Investigation of informed questions and problems and the implementation of solutions</p>
<p>use methods for acquiring knowledge and apply appropriate research strategies and methods;</p>	<p>evaluate the appropriateness of various methods of knowledge acquisition and select appropriate research methods;</p>	<p>Knowledge acquisition, research strategies and methods</p>
<p>gather and summarise information, cite evidence and make judgements about merits, contrast point of view and develop ensuing discussion making judgements of a routine nature;</p>	<p>evaluate a range of sources including current research, draw on evidence to reflect and evaluate competing explanations to draw appropriate conclusions;</p>	<p>Information synthesis</p>
<p>understand and apply interpersonal relationships leadership, teamwork and self development;</p>	<p>select and evaluate strategies to encourage and improve leadership, interpersonal relations, group dynamics and self development;</p>	<p>Interpersonal relationships and leadership</p>
<p>summarise and use a range of appropriate means of communication, including information technology for a particular topic or audience;</p>	<p>select and use effectively a range of appropriate means of communication including information technology;</p>	<p>Communication</p>
<p>make judgements of a routine nature.</p>	<p>make judgements of a non routine nature which are unfamiliar.</p>	<p>Decision-making</p>

METHODS OF ASSESSMENT

28. Assessment of students on these learning programmes will use an appropriate combination of methods. These will include:

Unseen examinations	Timed and invigilated written examinations under quality controlled conditions.
“Open book” examinations	Individual reports based upon personal research within defined parameters of subject and time or unseen exams with the support of allowable written materials.
Continuously assessed coursework	Periodic reports, artefacts, meetings, presentations, etc, assessed on a regular basis and including feedback on progress.
Marked reports of assignments and projects	This may include assessment of project planning, feasibility studies, research, team working and team leading, problem identification, selection and implementation of solutions, and final report.
Skills tests	Personal tests set and taken under quality controlled conditions.
Presentations and interviews	These may follow and be based upon assignments and projects.
Assessed experiential learning	Assessment through reports and interviews of knowledge and skills gained through unstructured workplace experience
Workbased learning	Knowledge and skills gained through structured workplace experience, and assessed through reports and interviews.

29. A judicious balance of these methods will provide both formative and summative assessment. This will enable judgements to be made about the students’ knowledge and conceptual skills, cognitive ability, personal skills, and technical and non-technical capability.

Degrees and Masters/Postgraduate courses

30. The framework sets out the criteria against which applications for accreditation will be judged. Graduates with degrees accredited by reference to the framework will proceed to Chartered Membership through the Professional Development Programme, the CIOB's graduate training programme.
31. There will, however, be graduates with semi or non-cognate degrees from a variety of academic backgrounds wishing to become members of the Institute and achieve Chartered status. The following structure defines the appropriate pathway for graduates to achieve corporate membership of the CIOB.
32. There are four categories:

32.1 Cognate Degrees

These degrees contain the core level of construction knowledge equivalent to the requirements of the framework criteria and subject to application and acceptance may be granted accreditation.

Graduates from these courses will proceed via the Professional Development Programme to the professional interview.

They include for example, degrees in construction management, building, civil engineering, structural engineering, building services engineering, quantity surveying, architecture, architectural technology, building surveying and facilities management.

32.2 Semi-Cognate Degrees

These degrees have a strong affinity with the built environment, but match only parts of the complete framework requirements.

Graduates from such courses will be required to demonstrate, by appropriate testing, additional academic achievement, competence or experiential learning.

These degrees could include for example, architecture and town planning.

32.3 Non-cognate degrees

Such degrees will have little or no direct relationship to the built environment, but will contain learning relevant to business, financial or management outcomes.

Graduates from these courses will be required to achieve an appropriate cognate top-up or conversion award/s, together with the demonstration of relevant experiential learning to establish competence to an appropriate standard to meet the needs of the institute.

Such non-cognate degrees could include for example, economics, business studies, accountancy, finance and management.

32.4 Masters courses

The Institute embraces a wide range of Masters degree level courses and postgraduate programmes. Holders of such higher qualifications will be expected to demonstrate a thorough understanding of core concepts of the learning outcomes. Where such is not included within the Masters programme, this may need to be an additional programme of study. Additional requirements include advanced knowledge of research, analytical methods, project management, application of ethical considerations and sustainability issues.

A generic skills assessment will be applied against the criteria set out within the QAA Benchmark statement for masters awards in business and management.

QUALIFICATION LEVELS

33. The following is a comparative table showing NQF levels (Qualifications & Curriculum Authority) with broad indications of FHEQ levels (Quality Assurance Agency):

National Qualifications Framework (NQF) Qualifications & Curriculum Authority (QCA)		Framework for Higher Education Qualification levels (FHEQ) Quality Assurance Agency (QAA)
Levels		Levels
8 Specialist awards		D (doctoral) doctorates
7 Level 7 Diploma in Translation		M (masters) masters degrees, postgraduate certificates and diplomas
6 Level 6 Diploma in Management		H (honours) bachelors degrees, graduate certificates and diplomas
5 Level 5 BTEC Higher National Diploma in 3D Design		I (intermediate) diplomas of higher education and further education, foundation degrees, higher national diplomas
4 Level 4 Certificate in Early Years Practice		C (certificate) certificates of higher education
3 Level 3 NVQ/A Levels		
2 Level 2 NVQ/GCSEs Grades A*-C		
1 Level 1 NVQ/GCSEs Grades D-G		
Entry		

The CIOB academic threshold for Corporate Membership is established at **H** level. Although masters degrees are at **M** level, when used as top-up to non-cognate degrees, they must complement the earlier achievement; the total academic package will be taken into account.

Graduates applying for membership with semi or non-cognate degrees will apply through the Graduate Diploma Programme or the Individual Exemption procedure to enable their academic achievement and experience reviewed and an appropriate pathway to membership defined.

SPECIAL ROUTES TO MEMBERSHIP OF THE CIOB

34. The following descriptors present routes to membership offered by the CIOB.

34.1 Direct Membership Examination (DMX)

The Direct Membership Examination route is a pathway to corporate membership for mature candidates who can typically demonstrate five years of relevant management experience at a senior level and is currently being reviewed.

More information on the DMX route can be found on the CIOB website - www.ciob.org.uk

34.2 Direct Fellowship Examination (DFX)

The Direct Fellowship Examination requires the demonstration of twenty years of experience at a professional level and the approval of the Fellowship Committee to entitle entry to the Fellowship grade of membership. This route is for Directors or Director Designates in senior positions with senior management responsibilities.

The examination is through a series of management exercises and the production of a project based report of nine assessed areas related to the development of a major project.

34.3 Special Fellowship Examination (SFX)

The Special Fellowship Examination is a route to Fellowship by nomination only.

Candidates for this route will demonstrate through the examination that they will have made a significant contribution to the industry/education/society outside the boundaries of their appointment.

MASTERS ACCREDITATION PROCESS

CIOB ACCREDITED MASTERS LEVEL LEARNING OUTCOMES

35. CIOB embraces a wide range of master’s courses. However, it is expected that, in addition to an understanding of the core concepts of the CIOB Education Framework, students on a CIOB accredited masters course will have at least demonstrated:
- a. critical awareness of current issues in construction/property informed by epistemological issues and leading edge research and practice.
 - b. A high level capacity to undertake and reflect upon complex project decision-making and associated risk management.
 - c. An in-depth knowledge of health and safety issues.
 - d. An advanced ability to evaluate the rigour and validity of published research.
 - e. An understanding of professional ethics with an ability to apply ethical values to situations and choices.
 - f. A thorough understanding of issues of sustainability and other environmental considerations.
 - g. A high level ability to conduct research using appropriate data sources and methodologies, to analyse results and to articulate findings.

Pre-Masters Level Requirements

Construction Technology

Learning Outcome	Range
Appreciate the key factors affecting foundation design and understand ground engineering techniques.	Soil/rock types, S.I techniques, H&S issues, contaminated land, ground improvement.
Understand the functions of basic structural and non-structural members in buildings.	Foundations, floors, walls, columns, beams, slabs, partitions, ceilings, roofs.
Understand the nature and properties of building materials.	Stone, brick, concrete, steel, timber, non-ferrous metal, glass, plastic, plaster, paint.
Appreciate the design and functions of building services.	Water, gas, electricity, phone, cable and satellite, sewerage, heating, ventilation, air conditioning, energy and carbon emissions management.

The Construction Environment

Learning Outcome	Range
Understand the nature of the construction and property industry.	Output, scope, history.
Understand the economics of the construction and property industry.	Market, structure, land, materials, plant, labour, finance, supply and demand, management, business operation, commercial risk.
Understand and apply a knowledge of the legal process in as much as it affects the construction and property industry.	Civil and criminal law, tort, contract, property, H&S, environment, statutory control and constraints on action and interaction.
Understand the concepts and constraints imposed by construction and property law.	Planning, social, material, technological, environmental.
Understand and interpret health, safety, welfare and environmental issues in the context of building production and use	Safety plan, CDM procedures or equivalent, hazard and risk management, site H&S procedures, waste, pollution, recycling.

Level M (Masters Level Requirements)

Synthesis and Evaluation

Specialism

Learning Outcome	Indicative Range
Principles	
Contextualisation	
Application to the Construction Process	
Key issues.	

Skills - Level M

Learning Outcome	Indicative Range
Exhibit critical thinking and creativity.	Managing creative processes in self and others, organising thoughts, analysis, synthesis and critical appraisal. Capability to identify assumptions, evaluate statements in terms of evidence, detect false logic or reasoning, identify implicit value, define terms adequately, generalise appropriately
Demonstrate complex problem solving and decision making.	Establishing criteria using appropriate decision techniques. Identifying, formulating and solving strategic problems, ability to create, identify and evaluate options, ability to implement and review decisions
Demonstrate numeracy and quantitative skills.	Application of mathematical skills, interpretation, dissemination and evaluation, as
Demonstrate effective communication skills.	Oral, written, presentation
Demonstrate competency in the use of ICT.	Verbal/numerical documents, e-mail, website
Demonstrate high level management skills	Leadership, delegation, teamwork, negotiation, decision making, problem solving, foster & promote working relationships, develop methods of conflict, avoiding & resolving conflict, analytical approach to non-routine problems, application of judgement to provide solutions, integrated teamwork & benefits.
Demonstrate advanced research skills	Define project, identify, gather and analyse information needed, formulate conclusions, prepare and present report.
Agree personal learning plan and record progress	As noted within indicative core learning outcomes.

Dissertation/Project - Level M

Learning Outcome	Range

INDICATIVE LEARNING REQUIREMENTS FOR MASTERS LEVEL STUDY

Preliminary Learning Outcomes

36. Candidates must demonstrate a high level of knowledge and understanding of the use and application of technology in the context of the construction environment, including the following areas:

Construction Technology - Level M

Learning Outcome	Indicative Range
Appreciate the key factors affecting foundation design and understand ground engineering techniques	Generalised knowledge of soil and rock types, Site Investigation techniques, contaminated land, ground improvement, deep foundations and basements
Understand the functions of basic structural and non-structural members in buildings	Generalised knowledge of foundations, floors, walls, columns, beams, slabs, partitions, ceilings, roofs; building types
Understand the nature and properties of building materials	Uses and functions of brick, stone, concrete (in situ and precast), steel, timber, non-ferrous metal, glass, plastic, plaster, paint
Appreciate of the functions of building services and demonstrate an understanding of building services design.	Water, gas, electricity, telephone, cable/satellite, lifts/escalators, fibre optics, sewerage, heating, ventilation, air conditioning. Usage, needs, cost and maintenance

The Construction Environment - Level M

Learning Outcome	Indicative Range
Understand the nature of the construction and property industry	Output, scope, history
Understand the economics of the construction and property industry	Market, structure, land, materials, plant, labour, finance, supply and demand
Understand and apply a knowledge of the legal process in as much as it affects the construction and property industry	Civil and criminal law, tort, contract, property, H&S, environment
Understand the concepts and constraints imposed by construction and property law	Contracts, liabilities, negligence, trespass, nuisance, breach of contract, damages, third parties, risks, insurance, warranties, covenants, employment law
Understand and interpret health, safety, welfare and environmental issues in the context of building production and use	CDM procedures or equivalent, hazard and risk management, site H&S procedures, waste, pollution, recycling

Level M - Advanced Synthesis and Evaluation

Professional Context

Learning Outcome	Indicative Range
Demonstrate a critical awareness of current issues in construction/property	Informed by epistemological issues and leading edge research and practice.
Demonstrate an ability to undertake and reflect upon complex project decision making and associated risk management	Strategic approaches and techniques used to manage the implementation of projects. Evaluating and managing risk - use of models. Conceptual framework for rational decision-making in the construction and property industry. Integrating risk assessment into the decision making process.
Demonstrate an in-depth knowledge of health and safety issues.	Recognise safety and health hazards present in the workplace and the types of control measures needed to manage them. Understand the main legal responsibilities of employers and managers, including COSHH, CDM and / or equivalents concerning safe management of design, process and materials and risk management.
Demonstrate an understanding of professional ethics with an ability to apply ethical values to situations and choices.	Nature of Professionalism. Morality, negligence, integrity, responsibility. Commercialism, liability, change, risk. Evaluation of issues confronting practicing professionals. Understanding of the “hidden costs” of ethical decisions.
Demonstrate a thorough understanding of issues of sustainability and other environmental considerations	Sustainability: origins/concept/definitions, recent developments at national and international levels. Functions, operation and critical evaluation of environmental assessment.
Demonstrate an in-depth knowledge of management theory in the construction/property fields.	Management theory, HRM procedures, organisational theory, finance, economics, marketing. Benchmarking, identifying the need for change, strategic development, change management.

Skills - Level M

Learning Outcome	Indicative Range
Exhibit critical thinking and creativity.	Managing creative processes in self and others; organising thoughts, analysis, synthesis, critical appraisal.
Demonstrate complex problem solving and decision making.	Establishing criteria using appropriate decision techniques, including identifying, formulating and solving strategic problems; the ability to create, identify and evaluate options; the ability to implement, review and reflect upon decisions.
Demonstrate numeracy and quantitative skills.	Appropriate statistical techniques, manipulation and presentation of data.
Demonstrate effective communication skills	Listening, negotiating and persuading or influencing others; oral and written communication, using an appropriate range of media.
Demonstrate competency in the use of Information and Communication Technology (ICT).	Computer literacy and effective use of appropriate technology, particularly Architectural CAD.
Demonstrate high level management skills	Leading and developing high performance teams, coaching, mentoring and monitoring performance. Delegation.
Demonstrate advanced research skills	Quantitative and qualitative techniques using appropriate data sources, analysis of results and articulation of findings. Evaluation of the rigour and validity of published research.
Agree personal learning plan and record progress	Personal effectiveness: self-awareness and self-management; time management; sensitivity to diversity in people and different situations. Learning through reflection on practice and experience

Specialism

This will depend on the chosen discipline.

STUDENT LEARNING OUTCOMES FOR A MASTERS LEVEL COURSE IN PROPERTY MANAGEMENT

Preliminary Learning Outcomes

Candidates must demonstrate a high level of knowledge and understanding of the use and application of technology in the context of the construction environment, including the following areas:

Construction Technology

Learning Outcome	Indicative Range
Appreciate the key factors affecting foundation design and understand ground engineering techniques	Generalised knowledge of soil/rock types, Site Investigation techniques, contaminated land, ground improvement, deep foundations and basements
Understand the functions of basic structural and non-structural members in buildings	Generalised knowledge of foundations, floors, walls, columns, beams, slabs, partitions, ceilings, roofs; building types
Understand the nature and properties of building materials	Uses and functions of brick, stone, concrete (insitu and precast), steel, timber, non-ferrous metal, glass, plastic, plaster, paint
Appreciate of the functions of building services and demonstrate an understanding of building services design.	Water, gas, electricity, telephone, cable/satellite, lifts/escalators, fibre optics, sewerage, heating, ventilation, air conditioning. Usage, needs, cost and maintenance

The Construction Environment

Learning Outcome	Indicative Range
Understand the nature of the construction and property industry	Output, scope, history
Understand the economics of the construction and property industry	Market, structure, land, materials, plant, labour, finance, supply and demand
Understand and apply a knowledge of the legal process in as much as it affects the construction and property industry	Civil and criminal law, tort, contract, property, H&S, environment
Understand the concepts and constraints imposed by construction and property law	Contracts, liabilities, negligence, trespass, nuisance, breach of contract, damages, third parties, risks, insurance, warranties, covenants, employment law
Understand and interpret health, safety, welfare and environmental issues in the context of building production and use	CDM procedures or equivalent, hazard and risk management, site H&S procedures, waste, pollution, recycling
Basic understanding of property valuation	Market cost and value; investment/yield/rate of return; DCF and NPV; industrial, commercial, retail and residential buildings ; rents, rates, tax, allowances
Demonstrate competency in planning and programming.	From a given set of data; develop and use method statement, programme, resource levelling, contingencies, updating; bar charts, critical path networks; manual and IT techniques

Level M - Advanced Synthesis and Evaluation

Professional Context

Learning Outcome	Indicative Range
Demonstrate a critical awareness of current issues in construction/property	Informed by epistemological issues and leading edge research and practice.
Demonstrate an ability to undertake and reflect upon complex project decision making and associated risk management	Strategic approaches and techniques used to manage the implementation of projects. Evaluating and managing risk - use of models. Conceptual framework for rational decision-making in the construction and property industry. Integrating risk assessment into the decision making process.
Demonstrate an in-depth knowledge of health and safety issues.	Recognise safety and health hazards present in the workplace and the types of control measures needed to manage them. Understand the main legal responsibilities of employers and managers, including COSHH, CDM and / or equivalents concerning safe design, processes and risk management.
Demonstrate an understanding of professional ethics with an ability to apply ethical values to situations and choices	Nature of Professionalism. Morality, negligence, integrity, responsibility. Commercialism, liability, change, risk. Evaluation of issues confronting practicing professionals. Understanding of the "hidden costs" of ethical decisions.
Demonstrate a thorough understanding of issues of sustainability and other environmental considerations	Sustainability: origins, concept, definitions, recent developments at national and international levels. Functions, operation and critical evaluation of environmental assessment.
Demonstrate an in-depth knowledge of management theory and practice in the construction and property fields.	Management theory, HRM procedures, organisational theory, finance, economics, marketing. Benchmarking, identifying the need for change, strategic development, change management.
Demonstrate detailed understanding of built asset management.	Portfolio management; maintenance, refurbishment policy; condition survey, design, plan, procurement, execution and analysis; occupancy, life cycle, whole life costing

Skills

Learning Outcome	Indicative Range
Exhibit critical thinking and creativity.	Managing creative processes in self and others; organising thoughts, analysis, synthesis, critical appraisal.
Demonstrate complex problem solving and decision making. Demonstrate numeracy and quantitative skills.	Establishing criteria using appropriate decision techniques, including identifying, formulating and solving strategic problems; the ability to create, identify and evaluate options; the ability to implement, review and reflect upon decisions. Appropriate statistical techniques, manipulation and presentation of data.
Demonstrate effective communication skills	Listening, negotiating and persuading or influencing others; oral and written communication, using an appropriate range of media.
Demonstrate competency in the use of Information and Communication Technology (ICT).	Computer literacy and effective use of appropriate technology, particularly Architectural CAD.
Demonstrate high level management skills	Leading and developing high performance teams, coaching, mentoring and monitoring performance. Delegation.
Demonstrate advanced research skills	Quantitative and qualitative techniques using appropriate data sources, analysis of results and articulation of findings. Evaluation of the rigour and validity of published research.
Agree personal learning plan and record progress	Personal effectiveness: self-awareness and self-management; time management; sensitivity to diversity in people and different situations. Learning through reflection on practice and experience
Demonstrate an ability to undertake and reflect upon complex project decision making and associated risk management	Strategic approaches and techniques used to manage the implementation of projects. Evaluating and managing risk - use of models. Conceptual framework for rational decision-making in the construction and property industry. Integrating risk assessment into the decision making process.

Specialism

Learning Outcome	Indicative Range
Demonstrate an advanced understanding of the technical aspects of property management	Complex issues of facilities management; quality of internal environment, cleaning, H&S, maintenance; user standards, space, heat, light, air, furniture, fittings, aesthetics, welfare; design, procurement, operation, costs, records and audits; business growth, strategic development and management of change.
Demonstrate a comprehensive understanding of contractual procedures and construction law	Critical appraisal of contracts with clients, procurement, subcontractors selection, contract operation, completion, determination, settlement of accounts, claims, dispute resolution, case law
Demonstrate a detailed understanding of property development strategy	Development, acquisition, disposal; the capital and property asset market; value engineering, risk management and planning gain; building life and building use and change of use; owner, user, community and environmental considerations.
Demonstrate advanced property management skills	This outcome could be achieved in the context of a real or simulated project, based on a case study of a development. It would include project/role definition, feasibility studies and appraisals, market research and location factors, strategic and portfolio management decisions, team selection, target setting, operational and production control, decision making, problem solving, feedback, analysis, subsequent action. Project factors will include stakeholder negotiations, planning and programming, resource, production, health & safety, quality, cost and value, HR, environment, future planning.
Demonstrate control of personal learning plan, the record of its achievement and the reflective evaluation of its usefulness.	

APPENDIX A

**DRAFT STUDENT LEARNING OUTCOMES FOR A FIRST DEGREE COURSE
IN COMMERCIAL MANAGEMENT**

Level 1 - Principles and Context

Construction Technology 1

Learning Outcome	Indicative Range
To appreciate the key factors affecting foundation design.	Soil and rock types, S.I. techniques, H&S issues including temporary support to excavations, contaminated land, ground improvement, foundation design, detailing and placement.
To demonstrate an understanding of the performance ratings, interaction and placement of structural and non-structural components of buildings.	Structural elements: Foundations, floors, walls, columns, beams, slabs, roofs including the use of traditional and modern construction systems including awareness of heritage and sustainable construction methods. Non structural elements: cladding, doors windows, partitions and ceilings.
To understand and interpret the fundamentals of structural behaviour.	Loads, stresses, tension, compression, bending, shear, torsion, deflection including simple design processes.
To describe the properties of building materials and understand their performance characteristics with regard to the natural environment and their impact upon it.	Typical construction materials, including manufacture and use of: Natural and manmade stone, brick, cements, mortars and concrete, steel, other metals, timber and timber products, non-ferrous metal, glass, plastics and polymer products, plaster, paint, bituminous materials, recycled products and achieving sustainable buildings.
To describe the effects of natural and man made phenomena upon the life cycle of building materials.	Performance issues including: Chemical, electro-chemical, bio-chemical, radiation, heat loss and gain, movement, moisture loss and ingress including rising dampness, condensation and penetrating rain.
To integrate the basic scientific principles in the context of the built environment and understand their relevance to building design and performance.	Performance concepts such as: Thermal capacity and insulation, vapour and condensation, ventilation, natural and artificial lighting, smoke, fire, sound, weather. Building Regulation control including the conservation of energy, carbon emissions and performance control.
To appreciate the function and design of building services.	Building services, including water: cold and hot water supply and sewerage. Power including fossil and renewal resources. Communication. Human comfort including heating, cooling and ventilation. Fire and security protection. To explain the basic principles of land surveying.
To explain the basic principles of land surveying.	Linear, angular, tacheometric, geodetic.
To demonstrate a satisfactory competence in land surveying.	To demonstrate a satisfactory competence in land surveying. Tape, level, theodolite, use of total station. The capture, use and retrieval of data. Levelling, traverse and setting out.

The Construction Environment 1

Learning Outcome	Indicative Range
To describe the nature and extent of the national and international construction industry.	Output, scope, history.
To describe and apply the social and economic performance requirements of the construction process.	Social, political and cultural issues and their implications and significance to planning, design, development and use of the built environment. The impact of developments upon the environment and society at large.
To demonstrate an understanding of the legal system in application to the construction process in terms of contract performance, obligations, tort and statutory requirements.	To include the national legal system including civil and criminal law, tort, contract, property, H&S, environment, statutory control and constraints on action and interaction.
To describe the economic principles of the construction industry. Their application and significance to the sector and the principles of management, business operation and commercial risk as they apply to the construction industry.	Macro and micro economic principles including supply/demand and their relevance to the construction industry. Market, structure and dynamics, land, materials, plant, labour, finance. The principles of business management including the development of management science, human relations and HRM, business operation, commercial risk.
To describe the elements of the design and construction processes.	Concept, brief, feasibility, design, current procurement methods, planning, execution, operation, maintenance, disposal, re-use of property. The make up on the construction professions and their roles. The input of the construction professions to the design process through integrated teams.

Specialism 1

Learning Outcome	Indicative Range
To understand the principles of measurement and cost planning.	Measurement techniques. Basic principles of cost planning including cost/value;
To place the cost management in the context of the construction process.	Project costing, including reference to feasibility, design, procurement, construction, operation, disposal. Planning for safe construction.
To apply cost studies to case studies.	To complete a project based study.
To be aware of the developments and changes in project procurement.	Innovative procurement methods including finance initiatives, alliances, partnering, frameworks in both public and private sectors.
To be aware of best practice and how this influences costing and procurement methods.	To complete a number of best practice case studies demonstrating the knowledge areas listed above.

Skills 1

Learning Outcome	Indicative Range
To acquire, develop and use communication skills.	To demonstrate the ability to produce original, clear and lucid written reports. Complete an oral presentation to a peer group. Demonstrate an ability to prepare a curriculum vitae and undertake a mock interview.
To demonstrate an ability to process, use and present analytical information. Including the use of the necessary range of numerical methods for calculating, checking, presenting and communicating solutions to problems.	Process and manipulate numerical information, conduct basic mathematical operations. Evaluate, interpret and present graphical and tabulated data.
To demonstrate an ability to research and use textual source information.	The use of the library, accessing textual information including texts and journals. Referencing and using references in report writing.
To demonstrate the ability to use basic ICT skills.	Use of hardware and peripherals. Management of files. Ability to use office software including word processing, spreadsheets and presentations. Use of the internet and email. Ability to write to html and create simple web sites. Understanding of the use of construction applications including: programming and cost information as examples.
To demonstrate the ability to work with others.	Group discussions, project work, preparing & presenting information, effective teamwork, developing group dynamics, produce goals, review and evaluate progress.
To agree a personal learning plan and record progress against that plan.	The planning, undertaking and recording of achievement, review and identify learning needs and resources, the demonstration of personal development through the process. For example, using the CIOB RAPID programme for recording achievement will provide a suitable vehicle for the demonstration of personal development.
To demonstrate an understanding and use of health and safety as it applies to the working environment.	Awareness of personal and the managerial responsibility for H&S. Awareness of safe working practices in the learning environment for self, others and environment. To prepare for site visits and communicate that process to others. Ability to conduct a risk assessment in a real or simulated working environment. Use of PPE.

Level 2 - Analysis and Application

Construction Technology 2

Learning Outcome	Indicative Range
To understand and apply further concepts in ground technology and engineering techniques.	Site investigation, ground water, ground stabilisation, soil mechanics, adjacent structures, the design of deep foundations and basements, dewatering and stabilisation. Complex foundations and piling. The impact of structure solutions upon superstructure. Ground movement and design solutions.
To evaluate the characteristics of various construction techniques and materials and their effect on building production.	Excavations and associated safety issues, roads & services, formwork, reinforcement, materials selection component installation. Off site manufacture and modern methods of construction.
To analyse the design of the superstructure for commercial and multi-storey buildings.	Frames, stability and movement considerations. The use of in situ concrete, steel and timber frame erection, precast concrete. Building systems and processes.
To appraise the provision of non structural cladding and internal partitions.	The selection, design and installation of building cladding, fixing, performance and detailing.
To gain an understanding of the design and installation of building services.	The review of the selection and operation of building services systems for commercial and multi-storey structures. Heating and cooling. Fire, safety and security. Movement and circulation. Ventilation and conditioning. Energy and carbon management and intelligent buildings.
To critically review the design process and integrate the various technology-related issues to the development of the built environment.	Architecture/aesthetics, integrated design, industrialised building, refurbishment, change of use, environmental sustainability & legislation, clients & user requirements, design factors including safe design methods, fitness for purpose, design information, modification, communication, environmental, social political & cultural issues in design & development.
To apply construction knowledge to the use and operation of buildings.	Performance and service life issues. The principles of the life time operation. Building maintenance, management and the reuse of property, structures and services. Asset management.
To understand the design and use of sustainable construction including the environmental impact of buildings.	The integration of sustainable technologies and systems in the building design and production processes. Waste minimisation, control, sorting, closed loop recycling and disposal options.

The Construction Environment 2

Learning Outcome	Indicative Range
To describe the concepts and obligations set by construction law.	Contracts, liabilities, negligence, trespass, nuisance, breach of contract, damages, third parties, risks, insurance, warranties, covenants, employment law. The impact upon the construction management process. Corporate responsibility for safe working practices.
To apply knowledge to the management of the procurement process.	Procurement methods. The review of contract law and its management, Problem resolution and the use of innovative solutions.
To demonstrate an appreciation of the various aspects of property development.	Project scope, planning and development. Commercial risk factors. Markets, property finance, investment, land building purchase, partnerships, sale and rental strategy, bespoke and speculative development, letting, disposal.
To understand, interpret and apply health, safety and welfare issues in the context of building production	CDM procedures (or equivalent relating safe design and safe management): the safety plan and safety file or equivalent documentation controls to aid safe design and safe processes on site. Hazard identification and risk management. The construction site and H&S procedures.

Specialism 2

Learning Outcome	Range
To apply cost planning techniques to the construction process and to identify the key issues that influence project performance.	Project finance, design, estimating/tendering, current procurement methods, programming, site management, subcontract management, quality and safe management, project auditing & monitoring.
To demonstrate an understanding of construction finance and to evaluate project options.	Capital, balance sheets, profit & loss, cash flow, budgets, overheads, fixed/variable costs, dividends, tax, An appraisal of design for buildability and compliance with a fixed budget expressed as an elemental cost plan.
To appraise a range of accounting techniques as applied to commercial management in construction.	Accounting techniques (including financial/management/budgets); pricing (preliminaries/net rates/PC sums/overheads/variations); cost management/cost control; valuations/claims/final accounts.
To demonstrate an understanding of the management of people and other stakeholders and apply that knowledge to the construction process.	Management theory, HR procedures, organisational theory, ethics, values, culture, motivation, leadership, delegation, teamwork, behaviour, attitude.

Skills 2

Learning Outcome	Indicative Range
To demonstrate applied communication and analytical skills.	Oral and written presentation. The use of numerical information and graphical techniques. Presentation skills. The demonstration of uses in the construction environment.
To apply ICT skills to the construction process.	Information handling, reports, spreadsheets, preparing & presenting information for construction projects. Using construction applications. Using CAD to create drawings and / or the management and manipulation of data. Appreciate the opportunities arising and the use of multidimensional information. The management and presentation of digital project information
To acquire and apply research skills including the definition, investigation and analysis of problems	Non routine and unfamiliar problem solution. The solution of practical and creative solutions. Definition of the project, hypothesis design, identification, gathering and analysis of information needs, formulate conclusions, referencing. Preparation and presentation of a report.
To demonstrate the understanding and application of project management skills to construction projects.	Leadership, delegation, teamwork, negotiation, decision making. Project definition, design, planning and programming. Quality and risk management systems and issues. Project review and continuous improvement cycles.
To develop and apply project leadership to the construction process.	Understanding the needs of clients, customers, users and society. Appreciation of the wider project team and other professional needs. Working in integrated teams. The importance of design information, its development and communication to other parties.
To develop, maintain and encourage constructive working relationships which seek to avoid or resolve conflicts and differences.	Problem solving, foster & promote working relationships, develop methods of avoiding and resolving conflict. Analytical approach to non-routine problems, application of judgement to provide solutions, integrated teamwork & benefits.
To understand and appreciate the use of professional ethics in the construction process.	The principles of professional ethics and values across the industry, professional judgement and duty of care.
To manage a personal learning plan, reflect upon practice and provide improvements and to demonstrate the results mean appropriate means.	The planning, undertaking and recording of achievement, review and identify learning needs and resources, the demonstration of personal development through the process. The CIOB RAPID programme for recording achievement will provide a suitable vehicle for the demonstration of personal development.
To apply and use health and safety management skills in the workplace.	Hold a recognised health and safety qualification. Awareness of site and process based risks. Understand safety management processes and hazard mitigation measures.

Level 3 - Synthesis and Evaluation

At this level the learning outcomes bring the four components together in an integrated way, as the student aims to achieve outcomes through the demonstration of skill as well as understanding.

Learning Outcome	Indicative Range
Specialism	
To demonstrate an integration of knowledge and skills of commercial management and the legal aspects of project control	Operational management, HR management, I.R. law, E.O. law, H&S law.
Demonstrate further understanding of contractual procedures	Contracts with clients, procurement, subcontractor selection, contract operation/completion/determination, settlement of accounts, claims, disputes, arbitration.
Demonstrate an understanding of the details of procurement	Estimating/tendering; build-up of a bid; negotiating a contract with a client; inviting and evaluating tenders; placing a contract with a tenderer. Performance management.
Demonstrate commercial management skills	This outcome could be achieved in the context of a real or simulated group project, based on a commercial management scenario. It would include project/role definition, team selection, target setting, operational/production control, decision making, problem solving, feedback, analysis, subsequent action. Project factors will include client negotiation, securing a contract, resource, production, cost/recovery control, production and settlement of accounts.
Construction Environment & Management	
To demonstrate a critical approach to project and site management skills through team work and continuous improvement	This outcome could be achieved in the context of a real or simulated group project. Project/role definition, team selection, target setting, operational/production control, decision making, problem solving, feedback, analysis, subsequent action. Management factors include plan/programme, resource, production, health & safety, quality systems and defect control, cost/value, HR, environment. Collaborative techniques, non adversarial relationships, integrated teams
To apply and review health and safety management systems	Review health and safety, risk management and contingency approaches to the management of projects.
Skills	
To demonstrate the management and control of the personal learning plan, the record of its achievement, the reflective evaluation of its success and to update this plan for future uses.	The further demonstration of control over career development, the review and identification of learning needs and resources, the use of planned Continuing Professional Development (CPD) and the use of the recording of achievement as a development of life long learning will satisfy this outcome.
To plan, implement and conduct a programme of research and to demonstrate an understanding and development of innovation in practice in this study.	Research skills. Research project / in depth project or study in an applied area

**DRAFT STUDENT LEARNING OUTCOMES FOR A FIRST DEGREE COURSE
IN CONSTRUCTION MANAGEMENT**

Level 1 - Principles and Context

Construction Technology 1

Learning Outcome	Indicative Range
To appreciate the key factors affecting foundation design.	Soil and rock types, S.I. techniques, H&S issues including temporary support to excavations, contaminated land, ground improvement, foundation design, detailing and placement.
To demonstrate an understanding of the performance ratings, interaction and placement of structural and non-structural components of buildings.	Structural elements: Foundations, floors, walls, columns, beams, slabs, roofs including the use of traditional and modern construction systems including awareness of heritage and sustainable construction methods. Non structural elements: cladding, doors windows, partitions and ceilings.
To understand and interpret the fundamentals of structural behaviour.	Loads, stresses, tension, compression, bending, shear, torsion, deflection including simple design processes.
To describe the properties of building materials and understand their performance characteristics with regard to the natural environment and their impact upon it.	Typical construction materials, including manufacture and use of: Natural and manmade stone, brick, cements, mortars and concrete, steel, other metals, timber and timber products, non-ferrous metal, glass, plastics and polymer products, plaster, paint, bituminous materials, recycled products and achieving sustainable buildings.
To describe the effects of natural and man made phenomena upon the life cycle of building materials.	Performance issues including: Chemical, electro-chemical, bio-chemical, radiation, heat loss and gain, movement, moisture loss and ingress including rising dampness, condensation and penetrating rain.
To integrate the basic scientific principles in the context of the built environment and understand their relevance to building design and performance.	Performance concepts such as: Thermal capacity and insulation, vapour and condensation, ventilation, natural and artificial lighting, smoke, fire, sound, weather. Building Regulation control including the conservation of energy, carbon emissions and performance control.
To appreciate the function and design of building services.	Building services, including water: cold and hot water supply and sewerage. Power including fossil and renewal resources. Communication. Human comfort including heating, cooling and ventilation. Fire and security protection.
To explain the basic principles of land surveying.	Linear, angular, tacheometric, geodetic.
To demonstrate a satisfactory competence in land surveying.	Tape, level, theodolite, use of total station. The capture, use and retrieval of data. Levelling, traverse and setting out.

The Construction Environment 1

Learning Outcome	Indicative Range
To describe the nature and extent of the national and international construction industry.	Output, scope, history
To describe and apply the social and economic performance requirements of the construction process	Social, political and cultural issues and their implications and significance to planning, design, development and use of the built environment. The impact of developments upon the environment and society at large.
To demonstrate an understanding of the legal system in application to the construction process in terms of contract performance, obligations, tort and statutory requirements.	To include the national legal system including civil/criminal law, tort, contract, property, H&S, environment, statutory control and constraints on action and interaction
To describe the economic principles of the construction industry. Their application and significance to the sector and the principles of management, business operation and commercial risk as they apply to the construction industry.	Macro and micro economic principles including supply/demand and their relevance to the construction industry. Market, structure and dynamics, land, materials, plant, labour, finance. , The principles of business management including the development of management science, human relations and HRM, business operation, commercial risk
To describe the elements of the design and construction processes	Concept, brief, feasibility, design, current procurement methods, planning, execution, operation, maintenance, disposal, re-use of property. The make up on the construction professions and their roles. The input of the construction professions to the design process through integrated teams.

Specialism 1

Learning Outcome	Range
To demonstrate an understanding of the operation of a construction company	Objectives, market, resources, finance, HR, operations.
To understand and use project planning techniques.	Use of bar charts, network scheduling methods including activity schedules. Communication of plans. Awareness of integrated programme design, procurement, construction.
To demonstrate an understanding of what are safe sites and to be able to review the site planning process	Understanding how safe sites are planned, communication methods, safe working, and interaction with the community.
To demonstrate an understanding of human resource management.	The principles of human resource management. Historical background, understanding cultures, the individual and groups. The concept of motivation. The fundamentals of leadership. Behavioural science.
To review the selection and utilisation of site plant and equipment.	The various items of plant for use in construction operations. Safety issues. Performance. Acquisition.

Skills 1

Learning Outcome	Indicative Range
To acquire, develop and use communication skills.	To demonstrate the ability to produce original, clear and lucid written reports. Complete an oral presentation to a peer group. Demonstrate an ability to prepare a curriculum vitae and undertake a mock interview.
To demonstrate an ability to process, use and present analytical information. Including the use of the necessary range of numerical methods for calculating, checking, presenting and communicating solutions to problems.	Process and manipulate numerical information, conduct basic mathematical operations. Evaluate, interpret and present graphical and tabulated data.
To demonstrate an ability to research and use textual source information.	The use of the library, accessing textual information including texts and journals. Referencing and using references in report writing.
To demonstrate the ability to use basic ICT skills.	Use of hardware and peripherals. Management of files. Ability to use office software including word processing, spreadsheets and presentations. Use of the internet and email. Ability to write to html and create simple web sites. Understanding of the use of construction applications including: programming and cost information as examples.
To demonstrate the ability to work with others.	Group discussions, project work, preparing & presenting information, effective teamwork, developing group dynamics, produce goals, review and evaluate progress.
To agree a personal learning plan and record progress against that plan.	The planning, undertaking and recording of achievement, review and identify learning needs and resources, the demonstration of personal development through the process. For example, using the CIOB RAPID programme for recording achievement will provide a suitable vehicle for the demonstration of personal development.
To demonstrate an understanding and use of health and safety as it applies to the working environment.	Awareness of personal and the managerial responsibility for H&S. Awareness of safe working practices in the learning environment for self, others and environment. To prepare for site visits and communicate that process to others. Ability to conduct a risk assessment in a real or simulated working environment. Use of PPE.

Level 2 - Analysis and Application

Construction Technology 2

Learning Outcome	Indicative Range
To understand and apply further concepts in ground technology and engineering techniques	Site investigation, ground water, ground stabilisation, soil mechanics, adjacent structures, the design of deep foundations and basements, dewatering and stabilisation. Complex foundations and piling. The impact of structure solutions upon superstructure. Ground movement and design solutions.
To evaluate the characteristics of various construction techniques and materials and their effect on building production	Excavations and associated safety issues, roads & services, formwork, reinforcement, materials selection component installation. Off site manufacture and modern methods of construction.
The design and review of building superstructure for commercial and multi-storey buildings.	Frames, stability and movement considerations. The use of insitu concrete, steel/timber frame erection, precast concrete. Building systems and processes.
Non structural cladding and internal partitions.	The selection, design and installation of building cladding, fixing, performance and detailing
The design and installation of building services for complex buildings	The review of the selection and operation of building services systems for complex buildings. Heating and cooling. Fire, safety and security. Movement and circulation. Ventilation and conditioning. Energy management and intelligent buildings.
To critically review the design process and integrate the various technology related issues to the development of the built environment	To appreciate the range of issues as they pertain to the design process, including: Architecture/aesthetics, integrated design, industrialised building, refurbishment, change of use, environmental sustainability & legislation, clients & user requirements, design factors including safe design methods, fitness for purpose, design information, modification, communication, environmental, social political & cultural issues in design & development
Apply construction knowledge to the use and operation of buildings.	Performance and service life issues. The principles of the life time operation. Building maintenance, management and reuse of property, structures and services. Asset management.
Design and use of sustainable construction. The environmental impact of buildings.	The integration of sustainable technologies and systems in the building design and production processes. Waste minimization, control, sorting, closed loop recycling and disposal options.

The Construction Environment 2

Learning Outcome	Indicative Range
To describe the concepts and obligations set by construction law	Contracts, liabilities, negligence, trespass, nuisance, breach of contract, damages, third parties, risks, insurance, warranties, covenants, employment law. The impact upon the construction management process. Corporate responsibility for safe working practices.
To apply knowledge to the management of the procurement process.	Procurement methods. The review of contract law and its management, Problem resolution and the use of innovative solutions.
To demonstrate an appreciation of the various aspects of property development.	Project scope, planning and development. Commercial risk factors. Markets, property finance, investment, land building purchase, partnerships, sale and rental strategy, bespoke and speculative development, letting, disposal.
To understand, interpret and apply health, safety and welfare issues in the context of building production	CDM procedures (or equivalent relating safe design and safe management): the safety plan and safety file or equivalent documentation controls to aid safe design and safe processes on site. Hazard identification and risk management. The construction site and H&S procedures.

Specialism 2

Learning Outcome	Range
Demonstrate an ability to analyse and apply the key elements of the construction process to project needs and case studies	Project finance, design, estimating/tendering, taking off and scheduling, procurement, programming, site management, subcontract management, quality management, project auditing & monitoring.
Demonstrate an ability to analyse and apply construction finance management	Capital, balance sheets, profit & loss, cash flow, budgets, overheads, fixed/variable costs, dividends, tax.
Demonstrate an understanding of management in construction	Management theory, HR procedures, organisational theory, ethics, values, motivation, leadership, delegation, teamwork, behaviour, attitude.
Demonstrate an understanding and use of site costs and measurement	Documentation, cost control procedures, indents/invoices/payments, methods of measurement, valuations, variations, pricing, subcontract finance.

Skills 2

Learning Outcome	Indicative Range
To demonstrate applied communication and analytical skills	Oral and written presentation. The use of numerical information and graphical techniques. Presentation skills. The demonstration of uses in the construction environment.
To demonstrate the use of applied ICT skills for construction uses	Information handling, reports, spreadsheets, preparing & presenting information for construction projects. Using construction applications. Using CAD and appreciating the opportunities and use of 2D and 3D information. The management and presentation of digital project information
To demonstrate the use of research skills including the definition, investigation and analysis of problems	Non routine and unfamiliar problem solution. The solution of practical and creative solutions. Definition of the project, hypothesis design, identification, gathering and analysis of information needs, formulate conclusions, referencing. Preparation and presentation of a report.
To demonstrate the understanding and application of project management skills to construction projects	Leadership, delegation, teamwork, negotiation, decision making. Project definition, design, planning and programming. Quality and risk management systems and issues. Project review and continuous improvement cycles.
To develop and apply project leadership to the construction process	Understanding the needs of clients, customers, users and society. Appreciation of the wider project team and other professional needs. Working in integrated teams. The importance of design information, its development and communication to other parties.

Level 3 - Synthesis and Evaluation

At this level the learning outcomes bring the four components together in an integrated way, as the student aims to achieve outcomes through the demonstration of skill as well as understanding.

Learning Outcome	Indicative Range
Specialism	
Demonstrate further understanding of management in construction	Operational management, HR management, I.R. law, E.O. law, H&S law.
Demonstrate further understanding of contractual procedures	Contracts with clients, procurement, subcontractor selection, contract operation/completion/determination, settlement of accounts, claims, disputes, arbitration.
Demonstrate and apply project planning and programming skills	Define project, assemble data (quantities/resources/outputs), method statement, draft programme, resource forecasting and levelling, contingencies, updating; using charts and networks; sequencing and milestones, manual and IT techniques, workflow studies.
Demonstrate site management skills	This outcome could be achieved in the context of a real or simulated group project, based on a site management scenario. It would include project/role definition, team selection, target setting, operational/production control, decision making, problem solving, feedback, analysis, subsequent action. Project factors will include plan/programme, resource, production, health & safety, quality, cost/value, HR, environment.
Construction Environment & Management	
To demonstrate a critical approach to project and site management skills through team work and continuous improvement	This outcome could be achieved in the context of a real or simulated group project. Project/role definition, team selection, target setting, operational/production control, decision making, problem solving, feedback, analysis, subsequent action. Management factors include plan/programme, resource, production, health & safety, quality systems and defect control, cost/value, HR, environment.
To apply and review health and safety management systems	Review health and safety, risk management and contingency approaches to the management of projects.
Skills	
To demonstrate the management and control of the personal learning plan, the record of its achievement, the reflective evaluation of its success and to update this plan for future uses.	The further demonstration of control over career development, the review and identification of learning needs and resources, the use of planned Continuing Professional Development (CPD) and the use of the recording of achievement as a development of life long learning will satisfy this outcome.
To plan, implement and conduct a programme of research and to demonstrate an understanding and development of innovation in practice in this study.	Research skills. Research project / in depth project or study in an applied area.

**STUDENT LEARNING OUTCOMES FOR A FIRST DEGREE COURSE
IN DESIGN MANAGEMENT**

Level 1 - Principles and Context

Construction Technology 1

Learning Outcome	Indicative Range
To appreciate the key factors affecting foundation design	Soil/rock types, S.I. techniques, H&S issues, contaminated land, ground improvement, foundation design, detailing and placement
To demonstrate an understanding of the performance ratings, interaction and placement of structural and non-structural components of buildings To understand and interpret the fundamentals of structural behaviour and to demonstrate this in an appropriate manner	Structural elements: Foundations, floors, walls, columns, beams, slabs, roofs. Non structural elements: cladding, doors windows, partitions and ceilings Loads, stresses, tension, compression, bending, shear, torsion, deflection, including simple design processes.
To describe the properties of building materials and understand their performance characteristics with regard to the natural environment and their impact upon it	Typical construction materials, including the manufacture and use of: Natural and manmade stone, brick, cements, mortars and concrete, steel, other metals, timber and timber products, non-ferrous metal, glass, plastics and polymer products, plaster, paint, bituminous materials, recycled products.
To describe the effects of natural and man made phenomena upon the life cycle of building materials	Performance issues including: Chemical, electro-chemical, bio-chemical, radiation, heat loss and gain, movement, moisture loss and ingress including rising dampness, condensation and penetrating rain
To integrate the basic scientific principles in the context of the built environment and understand their relevance to building design and performance.	Performance concepts such as: Thermal capacity/insulation, vapour/condensation, ventilation, natural/artificial lighting, smoke, fire, sound, weather. Building Regulation control including the conservation of energy.
To explain the basic principles of land surveying	Linear, angular, tacheometric, geodetic.
Linear, angular, tacheometric, geodetic. To demonstrate a satisfactory competence in land surveying	Tape, level, theodolite, use of total station. The capture, use and retrieval of data. Levelling, traverse and setting out.
Appreciate of the function and design of building services	Utilities services, including water: cold and hot water supply, sewerage, gas, electricity, phone, cable/satellite, heating and ventilation, refrigeration and air conditioning. Fire and security protection.

The Construction Environment 1

Learning Outcome	Indicative Range
To describe the nature and extent of the national and international construction industry.	Output, scope, history.
To describe and apply the social and economic performance requirements of the construction process	Social, political and cultural issues and their implications and significance to planning, design, development and use of the built environment. The impact of developments upon the environment and society at large.
To demonstrate an understanding of the legal system in application to the construction process in terms of contract performance, obligations, tort and statutory requirements.	To include the national legal system including civil/criminal law, tort, contract, property, H&S, environment, statutory control and constraints on action and interaction.
To describe the economic principles of the construction industry. Their application and significance to the sector and the principles of management, business operation and commercial risk as they apply to the construction industry.	Macro and micro economic principles including supply/demand and their relevance to the construction industry. Market, structure and dynamics, land, materials, plant, labour, finance. , The principles of business management including the development of management science, human relations and HRM, business operation, commercial risk.
To describe the elements of the design and construction processes	Concept, brief, feasibility, design, current procurement methods, planning, execution, operation, maintenance, disposal, re-use of property. The make up on the construction professions and their roles. The input of the construction professions to the design process through integrated teams.

Specialism 1

Learning Outcome	Range
Describe the roles and actions involved in producing a building with specific reference to the design and production interfaces	Concept, client brief, design programme, surveys/inspections/tests. Research factors affecting design (historical/ conservation/ social/legal/ aesthetic/ usage/ cost), develop design solutions, recommend and agree outline design, produce detailed design, prepare drawings/ schedules/ specifications.
Demonstrate an understanding of the role of people in the design and construction process	The principles of human resource management. Historical background and development, understanding cultures, the individual and groups. The concept of motivation. The fundamentals of leadership.
Application to the Construction Process: To be able to explain the linkages of design to the building production process by means of a design exercise.	Design exercise. Design process. Presentation of drawn information, using electronic media. Understanding the use of 3D software.
To demonstrate an awareness of the interactions with the wider construction team.	Using teams to achieve a solution. Understanding how others influence design. Consultation processes.
To understand the use of best practice and how this informs design.	Using case study examples. Triple bottom line sustainability. Examples of innovation and learning.

Skills 1

Learning Outcome	Indicative Range
To acquire, develop and use communication skills.	To demonstrate the ability to produce original, clear and lucid written reports. Complete an oral presentation to a peer group. Demonstrate an ability to prepare a curriculum vitae and undertake a mock interview.
To demonstrate an ability to process, use and present analytical information. Including the use of the necessary range of numerical methods for calculating, checking, presenting and communicating solutions to problems.	Process and manipulate numerical information, conduct basic mathematical operations. Evaluate, interpret and present graphical and tabulated data.
To demonstrate an ability to research and use textual source information.	The use of the library, accessing textual information including texts and journals. Referencing and using references in report writing.
To demonstrate the ability to use basic ICT skills.	Use of hardware and peripherals. Management of files. Ability to use office software including word processing, spreadsheets and presentations. Use of the internet and email. Ability to write to html and create simple web sites. Understanding of the use of construction applications including: programming and cost information as examples.
To demonstrate the ability to work with others.	Group discussions, project work, preparing & presenting information, effective teamwork, developing group dynamics, produce goals, review and evaluate progress.
To agree a personal learning plan and record progress against that plan.	The planning, undertaking and recording of achievement, review and identify learning needs and resources, the demonstration of personal development through the process. For example, using the CIOB RAPID programme for recording achievement will provide a suitable vehicle for the demonstration of personal development.
To demonstrate an understanding and use of health and safety as it applies to the working environment.	Awareness of personal and the managerial responsibility for H&S. Awareness of safe working practices in the learning environment for self, others and environment. To prepare for site visits and communicate that process to others. Ability to conduct a risk assessment in a real or simulated working environment. Use of PPE.

Level 2 - Analysis and Application

Construction Technology 2

Learning Outcome	Indicative Range
To understand and apply further concepts in ground technology and engineering techniques	Site investigation, ground water, ground stabilisation, soil mechanics, adjacent structures, the design of deep foundations and basements, dewatering and stabilisation. Complex foundations and piling. The impact of structure solutions upon superstructure. Ground movement and design solutions.
To evaluate the characteristics of various construction techniques and materials and their effect on building production	Excavations and associated safety issues, roads & services, formwork, reinforcement, materials selection component installation. Off site manufacture and modern methods of construction.
The design and review of building superstructure for commercial and multi-storey buildings.	Frames, stability and movement considerations. The use of insitu concrete, steel/timber frame erection, precast concrete. Building systems and processes.
Non structural cladding and internal partitions.	The selection, design and installation of building cladding, fixing, performance and detailing.
The design and installation of building services for complex buildings	The review of the selection and operation of building services systems for complex buildings. Heating and cooling. Fire, safety and security. Movement and circulation. Ventilation and conditioning. Energy management and intelligent buildings.
To critically review the design process and integrate the various technology related issues to the development of the built environment	To appreciate the range of issues as they pertain to the design process, including: Architecture/aesthetics, integrated design, industrialised building, refurbishment, change of use, environmental sustainability & legislation, clients & user requirements, design factors including safe design methods, fitness for purpose, design information, modification, communication, environmental, social political & cultural issues in design & development.
Apply construction knowledge to the use and operation of buildings.	Performance and service life issues. The principles of the life time operation. Building maintenance, management and reuse of property, structures and services. Asset management.
Design and use of sustainable construction. The environmental impact of buildings.	The integration of sustainable technologies and systems in the building design and production processes. Waste minimization, control, sorting, closed loop recycling and disposal options.

The Construction Environment 2

Learning Outcome	Indicative Range
To describe the concepts and obligations set by construction law	Contracts, liabilities, negligence, trespass, nuisance, breach of contract, damages, third parties, risks, insurance, warranties, covenants, employment law. The impact upon the construction management process. Corporate responsibility for safe working practices.
To apply knowledge to the management of the procurement process.	Procurement methods. The review of contract law and its management, Problem resolution and the use of innovative solutions.
To demonstrate an appreciation of the various aspects of property development.	Project scope, planning and development. Commercial risk factors. Markets, property finance/investment, land/building purchase, partnerships, sale/rental strategy, bespoke/speculative development, letting, disposal...Performance and service life issues. The principles of the life time operation. Building maintenance, management and reuse of property, structures and services. Asset management.
Design and use of sustainable construction. The environmental impact of buildings.	The integration of sustainable technologies and systems in the building design and production processes. Waste minimization, control, sorting, closed loop recycling and disposal options.

Specialism 2

Learning Outcome	Range
Demonstrate a critical appraisal of structural design and its impact upon design	Structure elements including: Foundations, floors, walls, columns, beams, slabs, roofs; using materials including concrete, steel and timber; buildability, design for health and safety H&S, linkages to cost and time
Demonstrate an understanding of design & technology and an ability to apply it to case studies	An awareness of the following issues: aesthetic, historical, context, usage, cost; geo-physical factors including geographic, climatic, topographic; physical needs and constraints imposed by materials, access, buildability; coverage of control issues including: planning, statutory, legal, social and environmental
Demonstrate an understanding of building services design as it impacts upon the design of buildings	Parameters (usage, needs, cost and maintenance); technology (including water, electricity, gas, sewerage, electronic, digital, moisture, insulation, light, sound and fire). Energy and carbon emissions minimisation. Eco-homes, BREEAM and SAP carbon off setting.
Demonstrate an understanding of the processes involved in building design through applying them to simulated or real problems	Concept, client brief, design programme, surveys, inspections, tests. Research factors affecting design (to include environmental, historical, conservation, social, legal, aesthetic, usage, cost), to develop design solutions, recommend and agree outline design, produce detailed design, prepare documentation including drawings, schedules and specifications.
Demonstrate an understanding of human resource management and its application to the design process	Management theory, HR procedures, organisational theory, ethics, values, motivation, leadership, delegation, teamwork, behaviour, attitude.

Skills 2

Learning Outcome	Indicative Range
To demonstrate applied communication and analytical skills	Oral and written presentation. The use of numerical information and graphical techniques. Presentation skills. The demonstration of uses in the construction environment.
To demonstrate the use of applied ICT skills for construction uses	Information handling, reports, spreadsheets, preparing & presenting information for construction projects. Using construction applications. Using CAD and appreciating the opportunities and use of 2D and 3D information. The management and presentation of digital project information
To demonstrate the use of research skills including the definition, investigation and analysis of problems	Non routine and unfamiliar problem solution. The solution of practical and creative solutions. Definition of the project, hypothesis design, identification, gathering and analysis of information needs, formulate conclusions, referencing. Preparation and presentation of a report.
To demonstrate the understanding and application of project management skills to construction projects	Leadership, delegation, teamwork, negotiation, decision making. Project definition, design, planning and programming. Quality and risk management systems and issues. Project review and continuous improvement cycles.
To develop and apply project leadership to the construction process	Understanding the needs of clients, customers, users and society. Appreciation of the wider project team and other professional needs. Working in integrated teams. The importance of design information, its development and communication to other parties.

Level 3 - Synthesis and Evaluation

At this level the learning outcomes bring the four components together in an integrated way, as the student aims to achieve outcomes through the demonstration of skill as well as understanding.

Learning Outcome	Indicative Range
Specialism	
Demonstrate a critical evaluation of the use of management skills in construction	Strategic and operational management processes, developing quality and sustainability, human resource management, I.R. law, E.O. law, H&S law.
To develop and exhibit an understanding of contractual procedures and apply them to project based situations.	Contracts with clients, procurement, subcontractor selection, contract operation/completion/determination, settlement of accounts, claims, disputes and arbitration.
To demonstrate project skills in design based, cost decision making	The effect of procurement methods on traditional costing, Cost Planning and information availability, Value Management & Engineering.
To demonstrate the use of planning and programming skills for design	Project definition and programme development, Design methodologies & iteration & their effects on planning. Resource allocation problems, Communication & decision making, Uncertainty & trade-offs. Planning & programming tools for design.
Demonstrate design management skills	This outcome could be achieved in the context of a real or simulated group project, based on a design management scenario. It would include project/role definition, team selection, target setting, operational/production control, decision making, problem solving, feedback, analysis, subsequent action. Project factors will include client negotiation, briefing and requirements capture, plan/programme, resource, production, health & safety, quality, design cost/value, HR, environment, uncertainty & waste in the process.
Construction Environment & Management	
To demonstrate a critical approach to project and site management skills through team work and continuous improvement	This outcome could be achieved in the context of a real or simulated group project. Project/role definition, team selection, target setting, operational/production control, decision making, problem solving, feedback, analysis, subsequent action. Management factors include plan/programme, resource, production, health & safety, quality systems and defect control, cost/value, HR, environment, uncertainty & waste.
To apply and review health and safety management systems	Review health and safety, risk management and contingency approaches to the management of projects.

Skills	
To demonstrate the management and control of the personal learning plan, the record of its achievement, the reflective evaluation of its success and to update this plan for future uses.	The further demonstration of control over career development, the review and identification of learning needs and resources, the use of planned Continuing Professional Development (CPD) and the use of the recording of achievement as a development of life long learning will satisfy this outcome.
To plan, implement and conduct a programme of research and to demonstrate an understanding and development of innovation in practice in this study.	Research skills. Research project / in depth project or study in an applied area

**DRAFT STUDENT LEARNING OUTCOMES FOR A FIRST DEGREE COURSE
IN PROPERTY MANAGEMENT**

Level 1 - Principles and Context

Construction Technology 1

Learning Outcome	Indicative Range
To appreciate the key factors affecting foundation design	Soil/rock types, S.I. techniques, H&S issues, contaminated land, ground improvement, foundation design, detailing and placement
<p>To demonstrate an understanding of the performance ratings, interaction and placement of structural and non-structural components of buildings</p> <p>To understand and interpret the fundamentals of structural behaviour and to demonstrate this in an appropriate manner</p>	<p>Structural elements: Foundations, floors, walls, columns, beams, slabs, roofs.</p> <p>Non structural elements: cladding, doors windows, partitions and ceilings</p> <p>Loads, stresses, tension, compression, bending, shear, torsion, deflection, including simple design processes.</p>
To describe the properties of building materials and understand their performance characteristics with regard to the natural environment and their impact upon it	Typical construction materials, including the manufacture and use of: Natural and manmade stone, brick, cements, mortars and concrete, steel, other metals, timber and timber products, non-ferrous metal, glass, plastics and polymer products, plaster, paint, bituminous materials, recycled products.
To describe the effects of natural and man made phenomena upon the life cycle of building materials	Performance issues including: Chemical, electro-chemical, bio-chemical, radiation, heat loss and gain, movement, moisture loss and ingress including rising dampness, condensation and penetrating rain
To integrate the basic scientific principles in the context of the built environment and understand their relevance to building design and performance.	Performance concepts such as: Thermal capacity/insulation, vapour/condensation, ventilation, natural/artificial lighting, smoke, fire, sound, weather. Building Regulation control including the conservation of energy.
To explain the basic principles of land surveying	Linear, angular, tacheometric, geodetic.
To demonstrate a satisfactory competence in land surveying	Tape, level, theodolite, use of total station. The capture, use and retrieval of data. Levelling, traverse and setting out.
Appreciate of the function and design of building services	Utilities services, including water: cold and hot water supply, sewerage, gas, electricity, phone, cable/satellite, heating and ventilation, refrigeration and air conditioning. Fire and security protection.

The Construction Environment 1

Learning Outcome	Indicative Range
To describe the nature and extent of the national and international construction industry.	Output, scope, history
To describe and apply the social and economic performance requirements of the construction process	Social, political and cultural issues and their implications and significance to planning, design, development and use of the built environment. The impact of developments upon the environment and society at large.
To demonstrate an understanding of the legal system in application to the construction process in terms of contract performance, obligations, tort and statutory requirements.	To include the national legal system including civil/criminal law, tort, contract, property, H&S, environment, statutory control and constraints on action and interaction.
To describe the economic principles of the construction industry. Their application and significance to the sector and the principles of management, business operation and commercial risk as they apply to the construction industry.	Macro and micro economic principles including supply/demand and their relevance to the construction industry. Market, structure and dynamics, land, materials, plant, labour, finance. , The principles of business management including the development of management science, human relations and HRM, business operation, commercial risk.
To describe the elements of the design and construction processes	Concept, brief, feasibility, design, current procurement methods, planning, execution, operation, maintenance, disposal, re-use of property. The make up on the construction professions and their roles. The input of the construction professions to the design process through integrated teams.

Specialism 1

Learning Outcome	Range
Describe the key parameters affecting property management	The market sector; the stakeholders; statutory, planning and relevant H&S law; facilities management and achieving sustainability.
Demonstrate an awareness of the process of facilities management	The building and user requirements, service level standards, building use and life span issues including an awareness of energy and carbon emission management.
Demonstrate an awareness of property and property management in the context of the market economy	The market economy including macro and micro factors as they impact upon the property market.
Demonstrate an awareness of the role of the property management professional in the context of the construction process as a whole.	To be achieved through integration across the other subject areas via project work and other modes of assessment.

Skills 1

Learning Outcome	Indicative Range
To acquire, develop and use communication skills.	To demonstrate the ability to produce original, clear and lucid written reports. Complete an oral presentation to a peer group. Demonstrate an ability to prepare a curriculum vitae and undertake a mock interview.
To demonstrate an ability to process, use and present analytical information. Including the use of the necessary range of numerical methods for calculating, checking, presenting and communicating solutions to problems.	Process and manipulate numerical information, conduct basic mathematical operations. Evaluate, interpret and present graphical and tabulated data.
To demonstrate an ability to research and use textual source information.	The use of the library, accessing textual information including texts and journals. Referencing and using references in report writing.
To demonstrate the ability to use basic ICT skills.	Use of hardware and peripherals. Management of files. Ability to use office software including word processing, spreadsheets and presentations. Use of the internet and email. Ability to write to html and create simple web sites. Understanding of the use of construction applications including: programming and cost information as examples.
To demonstrate the ability to work with others.	Group discussions, project work, preparing & presenting information, effective teamwork, developing group dynamics, produce goals, review and evaluate progress.
To agree a personal learning plan and record progress against that plan.	The planning, undertaking and recording of achievement, review and identify learning needs and resources, the demonstration of personal development through the process. For example, using the CIOB RAPID programme for recording achievement will provide a suitable vehicle for the demonstration of personal development.
To demonstrate an understanding and use of health and safety as it applies to the working environment.	Awareness of personal and the managerial responsibility for H&S. Awareness of safe working practices in the learning environment for self, others and environment. To prepare for site visits and communicate that process to others. Ability to conduct a risk assessment in a real or simulated working environment. Use of PPE.

Level 2 - Analysis and Application

Construction Technology 2

Learning Outcome	Indicative Range
To understand and apply further concepts in ground technology and engineering techniques	Site investigation, ground water, ground stabilisation, soil mechanics, adjacent structures, the design of deep foundations and basements, dewatering and stabilisation. Complex foundations and piling. The impact of structure solutions upon superstructure. Ground movement and design solutions.
To evaluate the characteristics of various construction techniques and materials and their effect on building production	Excavations and associated safety issues, roads & services, formwork, reinforcement, materials selection component installation. Off site manufacture and modern methods of construction.
The design and review of building superstructure for commercial and multi-storey buildings.	Frames, stability and movement considerations. The use of insitu concrete, steel/timber frame erection, precast concrete. Building systems and processes.
Non structural cladding and internal partitions.	The selection, design and installation of building cladding, fixing, performance and detailing.
The design and installation of building services for complex buildings	The review of the selection and operation of building services systems for complex buildings. Heating and cooling. Fire, safety and security. Movement and circulation. Ventilation and conditioning. Energy management and intelligent buildings.
To critically review the design process and integrate the various technology related issues to the development of the built environment	To appreciate the range of issues as they pertain to the design process, including: Architecture/aesthetics, integrated design, industrialised building, refurbishment, change of use, environmental sustainability & legislation, clients & user requirements, design factors including safe design methods, fitness for purpose, design information, modification, communication, environmental, social political & cultural issues in design & development.
Apply construction knowledge to the use and operation of buildings.	Performance and service life issues. The principles of the life time operation. Building maintenance, management and reuse of property, structures and services. Asset management.
Design and use of sustainable construction. The environmental impact of buildings.	The integration of sustainable technologies and systems in the building design and production processes. Waste minimization, control, sorting, closed loop recycling and disposal options.

The Construction Environment 2

Learning Outcome	Indicative Range
To describe the concepts and obligations set by construction law	Contracts, liabilities, negligence, trespass, nuisance, breach of contract, damages, third parties, risks, insurance, warranties, covenants, employment law. The impact upon the construction management process. Corporate responsibility for safe working practices.
To apply knowledge to the management of the procurement process.	Procurement methods. The review of contract law and its management, Problem resolution and the use of innovative solutions.
To demonstrate an appreciation of the various aspects of property development.	Project scope, planning and development. Commercial risk factors. Markets, property finance/investment, land/building purchase, partnerships, sale/rental strategy, bespoke/speculative development, letting, disposal
To understand, interpret and apply health, safety and welfare issues in the context of building production	CDM procedures (or equivalent): the safety plan and file or equivalent documentation controls to aid safe design and safe processes on site. Hazard identification and risk management. The construction site and H&S procedures..

Specialism 2

Learning Outcome	Range
Demonstrate a understanding of property management strategy	Development, acquisition, disposal; the capital and property asset market; value engineering, risk management, planning gain; building life, building use, change of use; owner, user, community, sustainability and environmental considerations.
Demonstrate an understanding of property valuation	Market cost and value; investment, yield, rate of return; DCF and NPV; the relative impact of industrial, commercial, retail and residential sectors; rents, rates, tax and allowances.
Demonstrate and use planning and programming skills for project management.	Define project, assemble data (quantities, resources, outputs), method statement, draft programme, resource levelling, contingencies, updating; bar charts, critical path networks; manual and IT techniques.
Demonstrate an understanding of the key principles of property law	Landlord and tenant; Form and contents of a lease; Express and Implied covenants; privity of contract and privity of estate; assignment and sub-letting; Remedies.
Demonstrate an understanding and use of built asset management	Portfolio management; maintenance, refurbishment policy; condition surveys, design, plan, procurement, execution and analysis; occupancy and life cycle costing.
Demonstrate an understanding of management in the property sector	Management theory, organisational theory, ethics, values, negotiation, leadership, delegation, teamwork and behavioural science.

Skills 2

Learning Outcome	Indicative Range
To demonstrate applied communication and analytical skills	Oral and written presentation. The use of numerical information and graphical techniques. Presentation skills. The demonstration of uses in the construction environment.
To demonstrate the use of applied ICT skills for construction uses	Information handling, reports, spreadsheets, preparing & presenting information for construction projects. Using construction applications. Using CAD and appreciating the opportunities and use of 2D and 3D information. The management and presentation of digital project information
To demonstrate the use of research skills including the definition, investigation and analysis of problems	Non routine and unfamiliar problem solution. The solution of practical and creative solutions. Definition of the project, hypothesis design, identification, gathering and analysis of information needs, formulate conclusions, referencing. Preparation and presentation of a report.
To demonstrate the understanding and application of project management skills to construction projects	Leadership, delegation, teamwork, negotiation, decision making. Project definition, design, planning and programming. Quality and risk management systems and issues. Project review and continuous improvement cycles.
To develop and apply project leadership to the construction process	Understanding the needs of clients, customers, users and society. Appreciation of the wider project team and other professional needs. Working in integrated teams. The importance of design information, its development and communication to other parties.
To develop, maintain and encourage constructive working relationships which seek to avoid or resolve conflicts and differences	Problem solving, foster & promote working relationships, develop methods of avoiding and resolving conflict. Analytical approach to non-routine problems, application of judgement to provide solutions, integrated teamwork & benefits...
To understand and appreciate the use of professional ethics in the construction process.	The principles of professional ethics and values across the industry, professional judgement and duty of care.
To manage a personal learning plan, reflect upon practice and provide improvements and to demonstrate the results mean appropriate means	The planning, undertaking and recording of achievement review and identify learning needs and resources, the demonstration of personal development through the process. The CIOB RAPID programme for recording achievement will provide a suitable vehicle for the demonstration of personal development.
To apply and use health and safety management skills in the workplace	Hold a recognised health and safety qualification. Awareness of site and process based risks. Understand safety management processes and hazard mitigation measures

Level 3 - Synthesis and Evaluation

At this level the learning outcomes bring the four components together in an integrated way, as the student aims to achieve outcomes through the demonstration of skill as well as understanding.

Learning Outcome	Indicative Range
Specialism	
Demonstrate an ability to critically evaluate the performance of the building with respect to quality, safety and energy management.	Facilities management; quality of internal environment including cleaning, H&S and risk assessment, maintenance; user standards including user consultations and physical factors such as space usage, Energy management including heating, ventilation and cooling, light, air quality, carbon emissions management and intelligent controls.
Demonstrate an ability to critically evaluate the design, management and use of space.	The internal environment, including furniture, fittings, aesthetics, welfare; the design process including procurement, operation, costs, records and audits.
Demonstrate an ability to critically evaluate the various contractual procedures	Contracts with clients, procurement, subcontractor selection, contract operation, completion and determination, settlement of accounts, claims, disputes, arbitration and other means of resolving disputes.
Demonstrate a critical awareness of urban regeneration	Social, demographic and economic change; communities and planning including decent homes; development economics; neighbourhood renewal; urban renaissance; defining and achieving sustainable communities. Achieving social inclusion.
Demonstrate property management skills in a practice environment	This outcome could be achieved in the context of a real or simulated group project, based on a property management scenario. It would include project and role definition, team selection, target setting, operational and production control, decision making, problem solving, feedback, analysis, subsequent action. Project factors will include stakeholder negotiations, planning and programming, resource, production, health & safety, quality, cost and value, environment, future planning.
Demonstrate the awareness and control of learning and objective setting	To include the personal learning plan, the record of its achievement, the reflective evaluation of its success and its updating for the post-graduate period ahead
Construction Environment & Management	
To demonstrate a critical approach to project and site management skills through team work and continuous improvement	This outcome could be achieved in the context of a real or simulated group project. Project/role definition, team selection, target setting, operational/production control, decision making, problem solving, feedback, analysis, subsequent action. Management factors include plan/programme, resource, production, health & safety, quality systems and defect control, cost/value, HR, environment.
To apply and review health and safety management systems	Review health and safety, risk management and contingency approaches to the management of projects.

Skills	
To demonstrate the management and control of the personal learning plan, the record of its achievement, the reflective evaluation of its success and to update this plan for future uses.	The further demonstration of control over career development, the review and identification of learning needs and resources, the use of planned Continuing Professional Development (CPD) and the use of the recording of achievement as a development of life long learning will satisfy this outcome.
To plan, implement and conduct a programme of research and to demonstrate an understanding and development of innovation in practice in this study.	Research skills. Research project / in depth project or study in an applied area

APPENDIX B

DRAFT STUDENT LEARNING OUTCOMES FOR A MASTERS COURSE IN COMMERCIAL MANAGEMENT

Preliminary Learning Outcomes

Candidates must demonstrate a high level of knowledge and understanding of the use and application of technology in the context of the construction environment, including the following areas:

Construction Technology

Learning Outcome	Indicative Range
Appreciate the key factors affecting foundation design and understand ground engineering techniques	Generalised knowledge of soil/rock types, Site Investigation techniques, contaminated land, ground improvement, deep foundations and basements
Understand the functions of basic structural and non-structural members in buildings	Generalised knowledge of foundations, floors, walls, columns, beams, slabs, partitions, ceilings, roofs; building types
Understand the nature and properties of building materials	Uses and functions of brick, stone, concrete (insitu and precast), steel, timber, non-ferrous metal, glass, plastic, plaster, paint
Appreciate of the functions of building services and demonstrate an understanding of building services design.	Water, gas, electricity, telephone, cable/satellite, lifts/escalators, fibre optics, sewerage, heating, ventilation, air conditioning. Usage/ needs/ cost/ maintenance

The Construction Environment

Learning Outcome	Indicative Range
Understand the nature of the construction/property industry	Output, scope, history
Understand the economics of the construction/property industry	Market, structure, land, materials, plant, labour, finance, supply/demand
Understand and apply a knowledge of the legal process in as much as it affects the construction/property industry	Civil/criminal law, tort, contract, property, H&S, environment
Understand the concepts and constraints imposed by construction/property law	Contracts, liabilities, negligence, trespass, nuisance, breach of contract, damages, third parties, risks, insurance, warranties, covenants, employment law
Understand and interpret health, safety, welfare and environmental issues in the context of building production and use	CDM procedures and / or equivalent, hazard and risk management, site H&S procedures, waste, pollution, recycling
Basic understanding of property valuation	Market cost and value; investment/yield/rate of return; DCF/NPV; industrial/commercial/retail/residential; rents/rates/tax/allowances
Demonstrate competency in planning and programming.	From a given set of data; develop and use method statement, programme, resource levelling, contingencies, updating; bar charts, critical path networks; manual and IT techniques

Level M - Advanced Synthesis and Evaluation

Professional Context

Learning Outcome	Indicative Range
Demonstrate a critical awareness of current issues in construction/property	Informed by epistemological issues and leading edge research and practice.
Demonstrate an ability to undertake and reflect upon complex project decision making and associated risk management	Strategic approaches and techniques used to manage the implementation of projects. Evaluating and managing risk - use of models. Conceptual framework for rational decision-making in the construction/ property industry. Integrating risk assessment into the decision making process.
Demonstrate an in-depth knowledge of health and safety issues.	Recognise safety and health hazards present in the workplace and the types of control measures needed to manage them. Understand the main legal responsibilities of employers and managers, including COSHH, CDM and or equivalent process to management safe design, process and risk management.
Demonstrate an understanding of professional ethics with an ability to apply ethical values to situations and choices	Nature of Professionalism. Morality, negligence, integrity, responsibility. Commercialism, liability, change, risk. Evaluation of issues confronting practicing professionals. Understanding of the “hidden costs” of ethical decisions.
Demonstrate a thorough understanding of issues of sustainability and other environmental considerations	Sustainability: origins/ concept/ definitions, recent developments at national and international levels. Functions, operation and critical evaluation of environmental assessment.
Demonstrate an in-depth knowledge of management theory and practice in the construction/property fields.	Management theory, HRM procedures, organisational theory, finance, economics, marketing. Benchmarking, identifying the need for change, strategic development, change management.
Demonstrate ability to prepare and evaluate tender documentation.	Different formats and functions of contract documentation, measurement and pricing construction work, bidding strategies for a variety of procurement options.

Skills

Learning Outcome	Indicative Range
Exhibit critical thinking and creativity.	Managing creative processes in self and others; organising thoughts, analysis, synthesis, critical appraisal.
Demonstrate complex problem solving and decision making.	Establishing criteria using appropriate decision techniques, including identifying, formulating and solving strategic problems; the ability to create, identify and evaluate options; the ability to implement, review and reflect upon decisions.
Demonstrate numeracy and quantitative skills.	Appropriate statistical techniques, manipulation and presentation of data.
Demonstrate effective communication skills	Listening, negotiating and persuading or influencing others; oral and written communication, using an appropriate range of media.
Demonstrate competency in the use of Information and Communication Technology (ICT).	Computer literacy and effective use of appropriate technology, particularly Architectural CAD.
Demonstrate high level management skills	Leading and developing high performance teams, coaching, mentoring and monitoring performance. Delegation.
Demonstrate advanced research skills	Quantitative and qualitative techniques using appropriate data sources, analysis of results and articulation of findings. Evaluation of the rigour and validity of published research.
Agree personal learning plan and record progress	Personal effectiveness: self-awareness and self-management; time management; sensitivity to diversity in people and different situations. Learning through reflection on practice and experience
Demonstrate an ability to undertake and reflect upon complex project decision making and associated risk management	Strategic approaches and techniques used to manage the implementation of projects. Evaluating and managing risk - use of models. Conceptual framework for rational decision-making in the construction/property industry. Integrating risk assessment into the decision making process.

Specialism

Learning Outcome	Indicative Range
Demonstrate an advanced understanding of the technical aspects of commercial management	Complex issues of legal and financial management both for an organisation and a project. Company and partnership law, financial accounting, business growth, objective setting, market segmentation, strategic development and management of change.
Demonstrate a comprehensive understanding of contractual procedures and construction law	Critical appraisal of contracts with clients, procurement, subcontractors selection, contract operation/completion/determination, settlement of accounts, claims, dispute resolution, case law
Demonstrate a detailed understanding of property development strategy	Development, acquisition, disposal; the capital and property asset market; value engineering/risk management/planning gain; building life/building use/change of use; owner/user/community/environmental considerations.
Demonstrate advanced commercial management skills	This outcome could be achieved in the context of a real or simulated project, based on a case study of a development. It would include project/role definition, feasibility studies and appraisals market research and location factors, strategic procurement decisions, team selection, target setting, operational/production control, decision making, problem solving, feedback, analysis, subsequent action. Project factors will include stakeholder negotiations, plan/programme, resource, production, health & safety, quality, cost/value, HR, environment, future planning
Demonstrate control of personal learning plan, the record of its achievement and the reflective evaluation of its usefulness.	

**STUDENT LEARNING OUTCOMES FOR A MASTERS LEVEL COURSE
IN CONSTRUCTION MANAGEMENT**

Preliminary Learning Outcomes

Candidates must demonstrate a high level of knowledge and understanding of the use and application of technology in the context of the construction environment, including the following areas:

Construction Technology

Learning Outcome	Indicative Range
Appreciate the key factors affecting foundation design and understand ground engineering techniques	Generalised knowledge of soil/rock types, Site Investigation techniques, contaminated land, ground improvement, deep foundations and basements
Understand the functions of basic structural and non-structural members in buildings	Generalised knowledge of foundations, floors, walls, columns, beams, slabs, partitions, ceilings, and roofs; building types.
Understand the nature and properties of building materials	Uses and functions of brick, stone, concrete (insitu and precast), steel, timber, non-ferrous metal, glass, plastic, plaster, paint
Appreciate of the functions of building services and demonstrate an understanding of building services design.	Water, gas, electricity, telephone, cable/satellite, lifts/escalators, fibre optics, sewerage, heating, ventilation, air conditioning. Usage/needs/cost/maintenance

The Construction Environment

Learning Outcome	Indicative Range
Understand the nature of the construction/property industry	Output, scope, history
Understanding the economics of the construction/property industry	Market, structure, land, materials, plant, labour, finance, supply/demand
Understand & apply a knowledge of the legal process in as much as it affects the construction/property industry	Civil/criminal law, tort, contract, property, H&S, environment
Understand the concepts and constraints imposed by construction/property law	Contracts, liabilities, negligence, trespass, nuisance, breach of contract, damages, third parties, risks, insurance, warranties, covenants, employment law
Understand and interpret health, safety, welfare and environmental issues in the context of building production and use	CDM procedures or equivalent, hazard and risk management, site H&S procedures, waste, pollution, recycling

Level M - Advanced Synthesis and Evaluation

Professional Context

Learning Outcome	Indicative Range
Demonstrate a critical awareness of current issues in construction/property	Informed by epistemological issues and leading edge research and practice.
Demonstrate an ability to undertake and reflect upon complex project decision making and associated risk management	Strategic approaches and techniques used to manage the implementation of projects. Evaluating and managing risk - use of models. Conceptual framework for rational decision-making in the construction/property industry. Integrating risk assessment into the decision making process.
Demonstrate an in-depth knowledge of health and safety issues.	Recognise safety and health hazards present in the workplace and the types of control measures needed to manage them. Understand the main legal responsibilities of employers and managers, including COSHH, CDM and / or equivalent concerning safe design and processes and risk management.
Demonstrate an understanding of professional ethics with an ability to apply ethical values to situations and choices	Nature of Professionalism. Morality, negligence, integrity, responsibility. Commercialism, liability, change, risk. Evaluation of issues confronting practicing professionals. Understanding of the “hidden costs” of ethical decisions.
Demonstrate a thorough understanding of issues of sustainability and other environmental considerations	Sustainability: origins/concept/definitions, recent developments at national and international levels. Functions, operation and critical evaluation of environmental assessment.
Demonstrate an in-depth understanding of management of the design process/ construction/ operation	Management theory, HRM procedures, organisational theory, finance, economics, marketing. Benchmarking, identifying the need for change, strategic development, change management.
Understand the elements of the construction process	Concept, brief, feasibility, design, procurement, execution, operation, maintenance, disposal

Specialism

Learning Outcome	Indicative Range
Demonstrate an advanced understanding of management in construction	Complex issues of operational management, HR management, I.R. law, E.O. law, H&S law
Demonstrate an advanced understanding of contractual procedures	Critical appraisal of client contracts, procurement, subcontractor selection, contract operation/completion/determination, settlement of accounts, claims, disputes, arbitration
Demonstrate advanced construction management skills	This outcome could be achieved in the context of a real or simulated group project, based on a complex project management scenario. It would include a critical appraisal of project/role definition, team selection, target setting, operational/production control, decision making, problem solving, feedback, analysis, subsequent action. Project factors will include client negotiation, plan/programme, resource, production, health & safety, quality, cost/value, HR, environment
Demonstrate high level planning and programming skills	For a complex project scenario, project scope and definition, assembly of data, use of: method statements, programme, resource levelling, contingencies, updating; bar charts, critical path networks; manual and IT techniques
Demonstrate control of personal learning plan, the record of its achievement and the reflective evaluation of its usefulness.	

**STUDENT LEARNING OUTCOMES FOR A MASTERS LEVEL COURSE
IN DESIGN MANAGEMENT**

Preliminary Learning Outcomes

Candidates must demonstrate a high level of knowledge and understanding of the use and application of technology in the context of the construction environment, including the following areas:

Construction Technology

Learning Outcome	Indicative Range
Appreciate the key factors affecting foundation design and understand ground engineering techniques	Generalised knowledge of soil/rock types, Site Investigation techniques, contaminated land, ground improvement, deep foundations and basements
Understand the functions of basic structural and non-structural members in buildings	Generalised knowledge of foundations, floors, walls, columns, beams, slabs, partitions, ceilings, and roofs; building types.
Understand the nature and properties of building materials	Uses and functions of brick, stone, concrete (insitu and precast), steel, timber, non-ferrous metal, glass, plastic, plaster, paint
Appreciate of the functions of building services and demonstrate an understanding of building services design.	Water, gas, electricity, telephone, cable/satellite, lifts/escalators, fibre optics, sewerage, heating, ventilation, air conditioning. Usage/needs/cost/maintenance

The Construction Environment

Learning Outcome	Indicative Range
Understand the nature of the construction/property industry	Output, scope, history
Understand the economics of the construction/property industry	Market, structure, land, materials, plant, labour, finance, supply/demand
Understand and apply a knowledge of the legal process in as much as it affects the construction/property industry	Civil/criminal law, tort, contract, property, H&S, environment
Understand the concepts and constraints imposed by construction/property law	Contracts, liabilities, negligence, trespass, nuisance, breach of contract, damages, third parties, risks, insurance, warranties, covenants, employment law
Understand and interpret health, safety, welfare and environmental issues in the context of building production and use	CDM procedures or equivalent, hazard and risk management, site H&S procedures, waste, pollution, recycling
Understand and apply a knowledge of the functions of architectural technology.	Aesthetic/context/usage; materials/ access/ buildability; planning/ statutory/ legal/ social/ environmental

Level M - Advanced Synthesis and Evaluation

Professional Context

Learning Outcome	Indicative Range
Demonstrate a critical awareness of current issues in construction/property	Informed by epistemological issues and leading edge research and practice.
Demonstrate an ability to undertake and reflect upon complex project decision making and associated risk management	Strategic approaches and techniques used to manage the implementation of projects. Evaluating and managing risk - use of models. Conceptual framework for rational decision-making in the construction/property industry. Integrating risk assessment into the decision making process.
Demonstrate an in-depth knowledge of management theory and practice.	Management theory, HRM procedures, organisational theory, finance, economics, marketing. Benchmarking, identifying the need for change, strategic development, change management. Web based systems
Demonstrate an in-depth understanding of management of the design process	Identifying needs, client's brief, innovation, reporting and meetings management, cost benefit/value management, review, quality management
Demonstrate an in-depth knowledge of health and safety issues.	Recognise safety and health hazards present in the workplace and the types of control measures needed to manage them. Understand the main legal responsibilities of employers and managers, including COSHH, CDM and/or equivalent including safe design and processes and risk management.
Demonstrate an understanding of professional ethics with an ability to apply ethical values to situations and choices	Nature of Professionalism. Morality, negligence, integrity, responsibility. Commercialism, liability, change, risk. Evaluation of issues confronting practicing professionals. Understanding of the "hidden costs" of ethical decisions.
Demonstrate a thorough understanding of issues of sustainability and other environmental considerations	Sustainability: origins/concept/definitions, recent developments at national and international levels. Functions, operation and critical evaluation of environmental assessment.

Skills

Learning Outcome	Indicative Range
Exhibit critical thinking and creativity.	Managing creative processes in self and others; organising thoughts, analysis, synthesis, critical appraisal.
Demonstrate complex problem solving and decision making.	Establishing criteria using appropriate decision techniques, including identifying, formulating and solving strategic problems; the ability to create, identify and evaluate options; the ability to implement, review and reflect upon decisions.
Demonstrate numeracy and quantitative skills.	Appropriate statistical techniques, manipulation and presentation of data.
Demonstrate effective communication skills	Listening, negotiating and persuading or influencing others; oral and written communication, using an appropriate range of media.
Demonstrate competency in the use of Information and Communication Technology (ICT).	Computer literacy and effective use of appropriate technology, particularly Architectural CAD.
Demonstrate high level management skills	Leading and developing high performance teams, coaching, mentoring and monitoring performance. Delegation.
Demonstrate advanced research skills	Quantitative and qualitative techniques using appropriate data sources, analysis of results and articulation of findings. Evaluation of the rigour and validity of published research.
Agree personal learning plan and record progress	Personal effectiveness: self-awareness and self-management; time management; sensitivity to diversity in people and different situations. Learning through reflection on practice and experience

Specialism

Learning Outcome	Indicative Range
Demonstrate an advanced understanding of management in construction	Complex issues of operational management, HR management, I.R. law, E.O. law, H&S law
Demonstrate an advanced understanding of contractual procedures	Critical appraisal of client contracts, procurement, subcontractor selection, contract operation/completion/determination, settlement of accounts, claims, disputes, arbitration
Demonstrate high level planning and programming skills	For a complex project scenario, project scope and definition, assembly of data, use of: method statements, programme, resource levelling, contingencies, updating; bar charts, critical path networks; manual and IT techniques
Demonstrate advanced design management skills	This outcome could be achieved in the context of a real or simulated project, based on a complex design management scenario. It would include a critical appraisal of project/role definition, team selection, target setting, operational/production control, decision making, problem solving, feedback, analysis, subsequent action. Project factors will include client negotiation, plan/programme, resource, production, health & safety, quality, cost/value, HR, environment
Demonstrate control of personal learning plan, the record of its achievement and the reflective evaluation of its usefulness.	

Notes



The Chartered Institute of Building
Englemere, Kings Ride
Ascot
Berkshire SL5 7TB
United Kingdom

Tel: +44 (0)1344 630700
www.ciob.org.uk