

The Education Framework for Masters Degree Programmes

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SECTION 1: INFORMATION ABOUT THE CIOB

1.1 About the CIOB

The Chartered Institute of Building (CIOB) represents the most diverse set of professionals in the construction industry on behalf of the public. Having a wide and inclusive view of the construction management discipline, the CIOB sets the pace globally for high standards of professionalism in the built environment. This is accomplished through the sponsorship of leading research and through the accreditation of academic awards demonstrating the highest academic and vocational standards.

1.2 About the Education Framework

The Education Framework sets out the CIOB published standards for higher education awards in construction management in the UK and across the world. The framework is of interest to teaching institutions reviewing existing programme content, for CIOB accreditation purposes or as a reference document when designing a new programme. The Education Framework is based on external references such as the UK Quality Assurance Agency benchmarks and National Occupational Standards. QAA benchmarks can be accessed at <http://www.qaa.ac.uk/>

The references to construction management contained in The Education Framework are defined in the published document An Inclusive Definition of Construction Management. It is recommended that this document is referred to when applying for CIOB accreditation or using The Education Framework to inform programme design or review. This document contains definitions of cognate and non-cognate awards which can be referred to when considering admission criteria and curriculum design. An Inclusive Definition of Construction Management can be accessed through the web at <http://ciobdownloads.co.uk/Redefining-CM.pdf> or a hard copy of this document can be obtained by email request to educationadmin@ciob.org.uk or by telephoning +44 (0)1344 630745.

1.3 About CIOB Accreditation

CIOB Accreditation is a seal of approval for the teaching institute and for the programme signifying that the highest standards of quality are met in the teaching institute and the learning outcomes of the programme. The CIOB accredits a wide range of courses from sub degree programmes to degree and post graduate awards in the built environment in the UK and across the world. For further information on the accreditation process please contact the Accreditation Officer at educationadmin@ciob.org.uk or visit our web page at <http://www.ciob.org.uk/education/accreditation>

1.4 CIOB Routes to Membership

Graduates of accredited Masters Degree programmes are granted full exemption and may proceed to Chartered Membership through the Professional Development Programme or by demonstrating competence through their work experience. All candidates for Chartered Membership are required to pass the Professional Review. For further information on the Professional Development Programme please visit our website at the link below <http://www.ciob.org.uk/membership/routes/pdp>

SECTION 2 GENERAL INFORMATION ABOUT MASTERS DEGREE PROGRAMMES

2.1 The Definition of Construction Management

The CIOB embraces a range of Masters Degree programmes from those which have a broad coverage to those with a specialised focus. The breadth of any single programme can be assessed by a comparison with the publication *An Inclusive Definition of Construction Management* and this has been used to underpin the content of *The 2010 Education Framework for Masters Degree Programmes*. For all Masters Degree programmes in the built environment, the typical generic learning outcomes are shown in Section 3.1, the skills are shown in Section 3.2 and the requirements of the dissertation/work-based project are shown in Section 3.3. The CIOB does not see these requirements as prescriptive and welcomes the opportunity to accredit programmes with their own structure and content.

2.2 Specialist Masters Degree Programmes

The wide range of activities undertaken by construction professionals means that the CIOB accreditation process must accommodate programmes designed to address those wide range of activities. It is inappropriate to define all of these professional activities within *The Education Framework* but for guidance a range of additional learning outcomes for a Corporate & Commercial Management programme is shown in Section 4.1, Project Management 4.2, Design Management 4.3. and Facilities Management 4.4. The CIOB welcomes the opportunity to accredit other programmes designed to address other specialisms.

2.3 Entry to Masters Degree Programmes

It is recognised that Masters Degree programmes would have a range of entry requirements, including those appropriate for entrants without a first/bachelors Honours degree in a built environment subject. For these entrants a range of additional learning outcomes may be appropriate and for general guidance these are shown in Section 3.4.

2.4 Validation and Approval of Masters Degree Programmes

The validation of Masters level programmes will be made through a detailed comparison with appropriate national requirements. The CIOB accreditation process fully acknowledges that there will be differences between national requirements for Masters Degree programmes and that these different requirements will be reflected in the course documentation. The alignment of the Masters Degree programme with national requirements is a routine part of the validation of programmes by the Higher Education Institution (HEI) and evidence of this validation will be provided as part of the accreditation application process to the CIOB.

SECTION 3 THE CIOB EDUCATION FRAMEWORK REQUIREMENTS

3.1 GENERIC LEARNING OUTCOMES – Developed from An Inclusive Definition of Construction Management

The generic learning outcomes apply to all Masters Degree programmes in the built environment. Quality Assurance Agency benchmarks and National Occupational Standards are implicit in the outcomes. The UK Quality Assurance Framework for Higher Education can be accessed at <http://www.qaa.ac.uk/academicinfrastructure/FHEQ/default.asp>

LEARNING OUTCOME	INDICATIVE RANGE OF SUBJECTS
To be able to examine the nature of the built environment and the construction industry and the interaction of professional disciplines in a national and international environment.	<p>The built environment as a response to social and economic need and its relationship to the natural environment.</p> <p>The evolving structure of the construction and property industries.</p> <p>Composition of the construction market.</p>
To be able to critically analyse the effective management of the construction process and the environmental, economic and social impacts within a global context.	<p>Concept, brief, feasibility, design, procurement, execution, operation, maintenance, disposal.</p>
To be able to examine the legal context of the construction and property industries.	<p>Professional responsibilities.</p> <p>Legal regulation of development.</p> <p>Statutory controls, contract and tort including health and safety.</p>
To be able to appraise construction and property organisations and the roles and responsibilities within and between them.	<p>Project/role definition, team selection, target setting.</p> <p>Operational/production control, feedback, and analysis.</p>
To be able to analyse organisational and management processes.	<p>Management and organisational theory, human resource management.</p> <p>Finance, economics, marketing.</p> <p>Benchmarking, identifying the need for change, strategic development, change management.</p>

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LEARNING OUTCOME	INDICATIVE RANGE OF SUBJECTS
<p>To be able to analyse, critically appraise and perform complex project decision-making and associated risk management in construction management.</p>	<p>Evaluating and managing risk - the use of models.</p> <p>Conceptual frameworks for rational decision-making in the construction/property industry.</p> <p>Integrating risk assessment into the decision-making process.</p>
<p>To be able to justify the relevance of construction management in the achievement of sustainable construction and low/zero carbon environments.</p>	<p>Sustainability. Origins, concept, definitions, and developments at national and international levels.</p> <p>Functions, operation and critical evaluation of environmental assessment.</p>
<p>To be able to appraise professional ethics and apply ethical values to situations and choices.</p>	<p>The nature of professionalism and evaluation of issues confronting practicing professionals.</p> <p>Professional integrity and the interaction of personal and corporate responsibility.</p> <p>Commercialism, liability, change, risk.</p>
<p>To be able to examine critical and current issues in construction management as informed by research and practice and their application to new situations.</p>	<p>Informed by epistemological issues and leading edge research and practice across all aspects of construction management, including health and safety, and sustainability.</p>

3.2 SKILLS OUTCOMES – Developed from An Inclusive Definition of Construction Management

The skills outcomes apply to all Masters Degree programmes in the built environment.

LEARNING OUTCOME	INDICATIVE RANGE OF SUBJECTS
To exhibit critical thinking and creativity.	<p>Managing creative processes in self and others, organising thoughts, analysis, synthesis and critical appraisal.</p> <p>Capability to identify assumptions, evaluate statements in terms of evidence, detect false logic or reasoning, identify implicit value, define terms adequately and generalise appropriately.</p>
To demonstrate complex problem solving and decision-making.	<p>Establishing criteria using appropriate decision techniques.</p> <p>Identifying, formulating and solving strategic problems, ability to create, identify and evaluate options, ability to implement and review decisions.</p>
To demonstrate numeracy and quantitative skills.	The application of mathematical and statistical skills, interpretation, presentation, dissemination and evaluation.
To demonstrate effective communication skills.	Oral, written and presentation.
To demonstrate competency in the use of ICT.	Textual/numerical documents, e-communication methods, web based data storage and project management systems.
To demonstrate leadership and performance management skills including those within a multidisciplinary context.	<p>Leadership, delegation, teamwork, negotiation, decision-making, problem solving, foster & promote working relationships, develop methods of conflict avoidance & resolution.</p> <p>The analytical approach to non-routine problems, application of judgement to provide solutions, integrated teamwork and benefits.</p>
To acquire and analyse construction management data and information.	The application of skills to obtain, analyse, interpret, evaluate and disseminate construction management data and information.

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LEARNING OUTCOME	INDICATIVE RANGE OF SUBJECTS
To demonstrate ethical, professional and corporate social responsibility and evaluate plans for addressing these.	Application of skills to obtain, analyse, interpret, evaluate and disseminate ethical, professional and corporate social responsibility issues.
To demonstrate advanced research skills.	Define project or research question, identify, gather and analyse information needed to address the question, formulate conclusions, prepare and present a report.
To be able to organise and manage a personal learning plan and monitor progress.	To cover the topics contained within the indicative core learning outcomes.

3.3 DISSERTATION/WORK-BASED PROJECT – Developed from An Inclusive Definition of Construction Management

The skills outcomes apply to all Masters Degree programmes in the built environment.

LEARNING OUTCOME	INDICATIVE RANGE OF SUBJECTS
To be able to research construction management issues.	Definition of research question(s) from literature review and the application of research methods to produce a coherent argument in support of a hypothesis.
To demonstrate the ability to select and apply appropriate ethical research methodologies.	Assessment and review of research methods, selection criteria, ethical approval, application and analysis techniques.
To be able to analyse, synthesise and evaluate key issues affecting the built environment.	Informed by epistemological issues and leading edge research and practice.

3.4 NON-COGNATE ENTRANTS (ADDITIONAL LEARNING OUTCOMES) – Developed from An Inclusive Definition of Construction Management. Please note: the CIOB defines non-cognate as a qualification with no relevance to any aspect of the built environment discipline.

The generic learning outcomes in 3.1, 3.2 and 3.3 apply to all Masters Degree programmes in the built environment. However, the additional learning outcomes below are for guidance only and not strict requirements for accreditation. The CIOB Accreditation Panel will consider for accreditation specialist Masters Degrees that may differ to the suggested learning outcomes in this section of The Education Framework.

THE CONSTRUCTION ENVIRONMENT

LEARNING OUTCOME	INDICATIVE RANGE OF SUBJECTS
To be able to display a comprehensive understanding of the nature, economic, financial and legal processes of the construction and property industries.	Output, history and scope, market structure, land, materials, supply and demand and finance.
To be able to critically compare the roles and responsibilities of professionals within the built environment.	A broad understanding of the scope of the roles of professionals working in the built environment. Multidisciplinary approaches to projects.
To be able to demonstrate a critical awareness of health, safety, welfare and environmental issues in the context of building production and use.	Construction design and management procedures and/or equivalent, hazard and risk management, health and safety procedures, waste, pollution, recycling and carbon reduction methods.

CONSTRUCTION TECHNOLOGY

LEARNING OUTCOME	INDICATIVE RANGE OF SUBJECTS
To be able to discuss the key factors affecting the construction of buildings and critically review the environmental, structural and materials aspects of those factors.	Awareness of the physical, structural and environmental features of materials and construction techniques.
To be able to appraise the key factors which influence the provision of a sustainable built environment.	Awareness of the features and energy implications of providing comfortable and sustainable conditions within the built environment.

SECTION 4 GUIDELINES FOR MASTERS DEGREE PROGRAMMES IN SPECIALIST SUBJECTS

4.1 ADDITIONAL GUIDELINES FOR MASTERS DEGREES IN CORPORATE AND COMMERCIAL MANAGEMENT

The generic learning outcomes in 3.1, 3.2 and 3.3 apply to all Masters Degree programmes in the built environment. However, the additional learning outcomes below are for guidance only and not strict requirements for accreditation. The CIOB Accreditation Panel will consider for accreditation specialist Masters Degree programmes that may differ to the suggested learning outcomes in this section of The Education Framework.

LEARNING OUTCOME	INDICATIVE RANGE OF SUBJECTS
To be able to critically assess the technical aspects of corporate and commercial management.	<p>Complex issues of legal and financial management both for an organisation and a project.</p> <p>Financial accounting, objective setting, business growth, bidding strategy, market intelligence, strategic development and management of change.</p>
To be able to appraise and apply the legal aspects of corporate and commercial procedures within a complex global construction context.	<p>Company and partnership law in joint ventures, PFI and other special purpose vehicles.</p> <p>Critical appraisal of contract and client relationships.</p> <p>Contract operation/completion/determination, settlement of accounts, claims, dispute resolution and case law.</p>
To be able to design and evaluate a property development strategy.	<p>Owner/user/community/environmental considerations.</p> <p>Development, acquisition, disposal; the capital and property asset market; design evaluation, value engineering/risk management/planning gain.</p> <p>Building life/ use/change of use.</p>
To be able to perform advanced corporate management skills.	<p>This outcome could be achieved in the context of a real or simulated project, based on a case study of an organisation. It could include the technical and financial aspects of corporate strategy.</p> <p>Market intelligence, resource and business planning, strategic procurement decisions, feedback and analysis.</p> <p>Contingency planning and corporate sustainability.</p>

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LEARNING OUTCOME	INDICATIVE RANGE OF SUBJECTS
<p>To be able to perform advanced commercial management skills.</p>	<p>This outcome could be achieved in the context of a real or simulated project, based on a case study of a development. It could include project financial management, cost planning, tendering and estimating strategies, and final account reconciliation.</p> <p>Project factors will include stakeholder negotiations, time/cost value, plan/programme, resource, production, health and safety, quality, human resources, environment and sustainability.</p>

4.2 ADDITIONAL LEARNING OUTCOMES FOR MASTERS DEGREES IN PROJECT MANAGEMENT

The role of the project manager has been defined in the CIOB Code of Practice for Project Management for Construction and Development, 4th Ed., Wiley-Blackwell 2010. The principles of the CIOB Code of Practice for Project Management are implicit in The Education Framework outcomes below.

The generic learning outcomes in 3.1, 3.2 and 3.3 apply to all Masters Degree programmes in the built environment. However, the additional learning outcomes below are for guidance only and not strict requirements for accreditation. The CIOB Accreditation Panel will consider specialist Masters Degree programmes that may differ to the suggested learning outcomes in this section of The Education Framework.

LEARNING OUTCOME	INDICATIVE RANGE OF SUBJECTS
To be able to critically assess the technical aspects of project management.	<p>Complex issues of project management both for an organisation and a project.</p> <p>Complex issues of operational management, human resources management and time/cost optimisation.</p> <p>Whole life considerations including sustainability, building commissioning, handover, building in use and reuse.</p>
To be able to appraise and apply the legal aspects of project management procedures within a complex built environment context.	<p>Company and partnership law in joint ventures, PFI and other special purpose vehicles.</p> <p>Critical appraisal of contract and client relationships.</p> <p>Contract operation/completion/determination, settlement of accounts, claims, dispute resolution and case law.</p>
To be able to perform advanced project management skills.	<p>This outcome could be achieved in the context of a real or simulated project, based on a case study of a development. It could 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.</p> <p>Project factors will include stakeholder negotiations, time/cost value, plan/programme, resource, production, health and safety, quality, human resources, environment and sustainability.</p>
To be able to perform high level planning and programming skills.	For a complex project/multiple project scenario, project scope and definition, assembly of data, use of method statements, programme, resource levelling, contingencies, updating; bar charts, critical path networks; and information technology techniques.

4.3 ADDITIONAL LEARNING OUTCOMES FOR MASTERS DEGREE IN DESIGN MANAGEMENT

The generic learning outcomes in 3.1, 3.2 and 3.3 apply to all Masters Degree programmes in the built environment. However, the additional learning outcomes below are for guidance only and not strict requirements for accreditation. The CIOB Accreditation Panel will consider for accreditation specialist Masters Degree programmes that may differ to the suggested learning outcomes in this section of The Education Framework

LEARNING OUTCOME	INDICATIVE RANGE OF SUBJECTS
<p>To be able to critically assess the technical aspects of design and management in construction.</p>	<p>Complex issues of design and management within the environment and the role of building information modelling.</p> <p>The management of design processes to include client brief analysis, evolution of design, the development of drawings and other production information; to achieve buildability, affordability and sustainability.</p>
<p>To be able to critically appraise contractual procedures and construction law within the context of design management.</p>	<p>Critical appraisal of client contracts, procurement, assurance, contract operation/completion/determination, settlement of accounts, claims and disputes.</p> <p>Statutory and regulatory considerations in a design context including health and safety, and sustainability.</p> <p>Human resources management, industrial relations law, equal opportunities law, and health and safety law.</p>
<p>To be able to perform high level planning and programming skills.</p>	<p>For a complex project scenario, define the scope and the management aspects of drawings, production information and resources.</p> <p>The use of manual and information technology techniques within the design process.</p>
<p>To be able to perform advanced design management skills.</p>	<p>This outcome could be achieved in the context of a real or simulated project, based on a complex design management scenario and address pre-contract and post contract design management issues. It could include a critical appraisal of: the project, team selection, operational/production control, feedback, and analysis.</p> <p>Project factors will include client negotiation, quality, plan/programme, human and other resources, health and safety, design economics, cost planning and sustainability.</p>

4.4 ADDITIONAL LEARNING OUTCOMES FOR A MASTERS DEGREE IN FACILITIES MANAGEMENT

The generic learning outcomes in 3.1, 3.2 and 3.3 apply to all Masters Degree programmes in the built environment. However, the additional learning outcomes below are for guidance only and not strict requirements for accreditation. The CIOB Accreditation Panel will consider for accreditation specialist Masters Degree programmes that may differ to the suggested learning outcomes in this section of The Education Framework.

LEARNING OUTCOME	INDICATIVE RANGE OF SUBJECTS
<p>To be able to critically evaluate technical aspects in the design, management and effective operation of built assets.</p>	<p>Complex issues of facilities management considered from the organisation, building user and project perspectives. It is anticipated that reference is made to building information modelling, space planning and CAFM systems to balance time cost and value challenges.</p> <p>The management of facilities design and operational processes including briefing and design development, utilising models, drawings and production information to address buildability, affordability and maintenance issues.</p> <p>Whole life considerations: sustainability, building commissioning, handover, management, care and repair of the building during use, refurbishment and any potential future re-use/replacement of the asset/facility.</p>
<p>To be able to appraise and apply premises, construction and employment law to the safe and effective management of complex built assets.</p>	<p>Critical appraisal of client and contract supplier relationships. Company law, joint ventures, partnering, PFI and other appropriate special purpose vehicles.</p> <p>Contract operation, completion, determination and settlement of accounts, claims, dispute resolution and case law applicable.</p> <p>Statutory and regulatory considerations of design and operational use of facilities; fully embracing health and safety management, and environmental sustainability considerations.</p> <p>Human resource management, including: industrial relations, equal opportunity / employment law, and health and safety legislation.</p>

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LEARNING OUTCOME	INDICATIVE RANGE OF SUBJECTS
<p>To be able to perform high level planning and programming skills.</p>	<p>Use of manual and information technology techniques to support effective asset management processes for achieving best value delivery of strategic and operational services.</p>
<p>To be able to perform advanced facilities management skills.</p>	<p>This outcome could be achieved in the context of a real or simulated project, based on a case study of a development or existing facility. It could include project/role definitions, feasibility studies and appraisals, market research and locational factors, strategic procurement decisions, team selection, target setting, operational/production control, decision-making, problem solving, feedback, analysis and action.</p> <p>Factors will include: stakeholder negotiations, time/cost value, plan/programme, resource, production, health and safety, quality, human resources, maintenance planning, environmental sustainability.</p>