



College of Contract Management
United Kingdom

Professional Diploma in Building Information Modelling (BIM)

SYLLABUS

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College of Contract Management United Kingdom



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1. Programme Structure and Rules of Combination

1.1 Rationale

The Professional Diploma in Building Information Modelling (BIM) is for construction professionals who wish to advance their ability to plan, design and manage construction projects and infrastructure. Engineers, Architects, and other construction professionals make use of BIM. The BIM training course will give you a highly reputable qualification which will advance your career progression and employability. In addition, you will learn how to use multiple areas of BIM software and understand the BIM project lifecycle.

1.2 Autodesk Educational Suite

In addition to the expertly delivered live online lectures, enrolling in our BIM course provides you access to the Autodesk Educational Suite. We have teamed up with Autodesk to allow our students full access to AutoCAD, Revit, Autodesk, Fusion360 and Navisworks to help you understand the practical application of the software. Thanks to this you can not only watch highly experienced professionals use the software, but also have a go at applying what you have learnt in your own time. Please note, we do not offer access to BIM360 software.

1.3 Course Benefits

- ⇒ Improve collaboration with colleagues.
- ⇒ Improved budgeting and cost estimation.
- ⇒ Workflow efficiency.
- ⇒ Fit learning around full-time work.
- ⇒ Evening and weekend lectures.
- ⇒ Increases employability.
- ⇒ Become knowledgeable in BIM construction.
- ⇒ Mitigate risks.
- ⇒ Increase productivity.
- ⇒ Early detection of issues in a project.
- ⇒ Become knowledgeable in a demandable subject area.
- ⇒ Access to the Autodesk educational suite.

1.4 Programme Rules of Combination

The course duration is for 6 months including 3 core modules. Each learner's performance will be assessed by an open book online exam (assignments) at the end of each core module. To achieve the Professional Diploma, learners are required to complete all modules.

Modules:

- BIM 601: BIM Through the Design Stage
- BIM 602: BIM Applications in Facilities and Management
- BIM 603: BIM Through the Structural Design Stage

1.5 Entry Requirements

- Minimum of 18 years old and,
- Relevant industry experience.

1.6 Module and Assessment Grades

The tutor will award a grade to the achievement of each module including Fail, Pass, Merit or Distinction. Module grades apply to overall performance in modules including assignments and practical exercises.

Indicative marking descriptors for differentiating between levels of achievement when marking assignments are provided.

The overall grade for a qualification is calculated using a points system. Each module grade attracts points as follows:

Fail	0 Points
Pass	1 Point
Merit	2 Points
Distinction	3 Points
Module Exemption	1 Point

1.7 Assessment

The assessment process is set by the College of Contract Management, which defines the requirements learners are expected to meet to demonstrate that a learning outcome has been achieved. All learning outcomes must be achieved to gain attainment of credit for that unit.

All completed assessments are marked internally, internally verified, and subject to approval by our partner universities or institutions.

The assessment criteria are based on 3 areas:

- **Task Achievement:** This is a measure of how well the candidate answers the task question/questions and the identification of the important aspects of the task.
- **Technical Content:** This is a measure of how well the candidate identifies, describes, and evaluates the technical aspects of the task.
- **Presentation:** This is a measure of how well the candidate presents the assignment and includes the quality of the structure and paragraphing, the quality and relevance of visual or graphical content and the referencing used for quoted sources.

1.8 Assignment Policies

1. All submission of assignments must include:
 - a. A copy of the full brief given by the Examination Officer or Course Administrator.
 - b. All source material must be cited in the text and a full bibliography of source material (including author, title, publisher, edition, and page) listed at the end of the submission. Learners should use Harvard Referencing.
2. All submissions must be submitted into our system as instructed by the Examination Officer or Course Administrator.
3. All submissions under the student's name must only be the work of that student. All information sources must be acknowledged. There is the possibility of failing the units if the contents of the assignment are plagiarised as set out in the rules and regulations of the institution.
4. All submissions should be in pdf format and students must keep a copy of all submitted work for reference purposes. Receipt will be acknowledged by the College once the work is completed.
5. Whenever a candidate submits work after the approved deadline without an authorised extension, a maximum "Pass" grade will be awarded.
6. The Assessor will comment on the quality of the work for learning purposes.
7. Requests for extensions of submission deadlines must be made in writing prior to the submission deadline to the Examination Officer or Course Administrator and must be supported by documentary evidence if required.

1.9 Indicative Marking Descriptors

Task Achievement: The relevance of the response

Technical Knowledge: Inclusive of the relevant technical knowledge in content

Presentation: Coherence

Grade	Task Achievement:	Technical Knowledge	Presentation
Distinction			
70% +	The work demonstrates a comprehensive understanding of the task. All relevant information is included. The main issues are effectively identified and analysed. There is evaluation and some analysis of solutions to issues relevant to the task. The response shows control of content within the word count.	The work demonstrates a strong understanding of a wide range of technical issues relevant to the task. There is analysis of the advantages/disadvantages of possible choices, risks and potential outcomes.	The work is appropriately structured, and the argument is developed coherently. There is a recognised form of source referencing which supports the points in the task. Paragraphing and titling are used effectively to assist the reader. The use of visual/graphical information is clear and effective in assisting the reader. The graphical information is relevant to the task and is accurate.
Merit			
60-69%	The work demonstrates a clear understanding of the main issues relevant to the task. The issues are explained effectively, and potential solutions identified. There is some attempt to analyse the merits of the solutions to the task. The task is broadly achieved within the word count, if relevant to assignment.	The work demonstrates an understanding of the key technical issues of the task. There is clear description of relevant technical aspects with some attempt to evaluate the merits of these as appropriate to the task.	Demonstrates an awareness of presentation and an attempt to present the information with clarity and coherence. There is referencing of sources and use of paragraphing and titling to assist the reader. There is use of clear graphical information to support the assignment which has broad relevance to the task. There may be some limited inaccuracies/omissions in these.
Pass			
40-59%	The work demonstrates an understanding of the task. The main points are identified, and the task is achieved. There is no attempt to evaluate or analyse the solutions. There may be some inaccuracies, omissions, and irrelevant content. There may be lack of control in relation to the word count.	The work demonstrates an understanding of the main technical issues which are identified. This may be limited to description with little evidence of evaluation. There may be some omissions and inaccuracies in the detail. There may be some irrelevant details.	There is an attempt to structure the information. There is evidence of paragraphing and titling which is not always appropriate. Some basic graphical information may be included which is of some assistance to the reader. There may be some omissions or inaccuracies. The work is generally coherent but there may be occasional lapses in coherence and structure.
Fail			
0-39%	The work shows a poor understanding of the task. Frequent inaccuracies. Failure to identify important aspects of the task. Much of the information is irrelevant to the task. There may be evidence of copy and paste from external sources. The response may be limited to lists of words with no attempt to explain the relevance/merits of these to the task. The assignment falls short of the word count.	The work demonstrates a lack of understanding of the technical aspects. There are omissions of important technical information. Errors are evident in the technical content. There is no attempt to explain the relevance of the technical content to the task.	Lacks structure and may be limited to lists of points which are not developed. Disorganised in structure causing difficulty for the reader to understand the points. The response is illegible or incoherent in places. No referencing of external sources. The graphical illustrations are of poor quality or absent. They may be irrelevant. There may be errors and a lack of clarity causing difficulty for the reader to understand.

1.10 Calculating the Overall Qualification Grade

To calculate the overall qualification grade, the individual module grades should be added together and compared to the table below. Candidates must pass all 3 modules of the programme.

Total Points for all 3 Modules	Overall Grade
9	Distinction
8	
7	Merit
6	
5	Pass
4	
3	
2 or fewer	Fail
Candidates must achieve at least a Pass in (or hold exemption from) all 3 modules to be awarded the Professional Diploma.	

2. Course Modules

Please refer to the pages below for the course modules.

2.1 BIM 601: BIM Through the Design Stage

Unit Title	BIM Through the Design Stage
Unit Code	BIM 601

Summary

Status	Core
Learning Hours	80 hrs including lectures and exercises
Credits Value	8
Period of Study	8 weeks

Summary of Learning Outcomes

Learning outcomes are results of learning that students will have achieved on successfully completing a course. The following reference points were used in designing the learning outcomes;

- QAA Subject Benchmark Statements to ensure: that appropriate and effective teaching, support, assessment and learning resources are provided for students; that the learning opportunities provided are monitored; and that the provider considers how to improve them.

Learning outcomes are expressed under three broad headings of achievement in both threshold and typical standards:

- U: Understanding (a general awareness of the activity)
- K: Knowledge (a more detailed level of understanding of the activity)
- S: Skills (to be able, without supervision, to perform relevant functions)

Module Aim

This module provides the learner with an understanding of how BIM is implemented during the Design stage. Which are the documents and software involved and how to maintain and manage the information created during this stage using audit tools to check the health state of the project.

Learning Outcomes and Assessment Criteria

To pass this module, the evidence that the learner presents for assessment needs to demonstrate that they can meet all the learning outcomes for the unit. The assessment criteria determine the standard required to achieve the unit.

On completion of this module, learners should:

Learning Outcomes	Assessment Criteria
Understand the BIM process during the Design stage	<ul style="list-style-type: none"> • Alignment and integration of ISO 19650. • BIM Standards and the implementation process. • Industry BIM requirements and uses.
Prepare and maintain the documents involved in the BIM process	<ul style="list-style-type: none"> • Create, implement, and maintain necessary documentation. • Evaluate the best practice for BIM use in a project. • Demonstrate good knowledge of the process and the documents. • Align the BIM process to contractual documents.
Manage, maintain, and extract relevant information from the models	<ul style="list-style-type: none"> • Open and navigate Revit models. • Use BIM interoperability tools and other plugins to audit models. • Create and extract schedules from Revit. • Understanding of COBie models.
Model coordination using clash detection in federated modules	<ul style="list-style-type: none"> • Export NWC files from Revit. • Create a Federated Model using Navisworks. • Create clash sets and visual check. • Extract reports from Navisworks.
Case Studies	<ul style="list-style-type: none"> • Case A: BIM & Revit applied to a D&B fit out for co-working company. • Case B: BIM implementation in an architectural practice – where could it go wrong?

2.2 BIM 602: BIM Applications in Facilities & Management

Unit Title	BIM Applications in Facilities & Management
Unit Code	BIM 602

Summary

Status	Core
Learning Hours	80 hrs including lectures and exercises
Credits Value	8
Period of Study	8 weeks

Summary of Learning Outcomes

Learning outcomes are results of learning that students will have achieved on successfully completing a course. The following reference points were used in designing the learning outcomes;

- QAA Subject Benchmark Statements to ensure: that appropriate and effective teaching, support, assessment and learning resources are provided for students; that the learning opportunities provided are monitored; and that the provider considers how to improve them.

Learning outcomes are expressed under three broad headings of achievement in both threshold and typical standards:

- U: Understanding (a general awareness of the activity)
- K: Knowledge (a more detailed level of understanding of the activity)
- S: Skills (to be able, without supervision, to perform relevant functions)

Module Aim

This module provides the learner with the ability to critically appraise the different asset management software and their applications in practice.

Learning Outcomes and Assessment Criteria

To pass this module, the evidence that the learner presents for assessment needs to demonstrate that they can meet all the learning outcomes for the unit. The assessment criteria determine the standard required to achieve the unit.

On completion of this module, learners should:

Learning Outcomes	Assessment Criteria
Identify and develop asset/facility management database	<ul style="list-style-type: none"> • Explain facilities management and its related concepts. • Outline asset management standards e, g. ISO 55000 and ISO 41001: 2018. • Demonstrate the ability to identify and classify different assets and their attributes. • Develop an asset management database.
Smart/asset management (information)	<ul style="list-style-type: none"> • Explain asset management approaches and practices. • Outline methodology applicable to smart approach.
Comprehend the concepts of interoperability especially with regards to Industry Foundation Classes, COBie, gbXML for exchanging construction information	<ul style="list-style-type: none"> • Demonstrate good knowledge of BIM and its related concepts. • Demonstrate BIM applications in practice (use Revit to generate COBie files) • Outline information and integration and interoperability concepts. • Ability to apply interoperability standards in information management.
Identify and apply relevant technologies in managing asset/facilities management information.	<ul style="list-style-type: none"> • Evaluate the rationale/role of BIM for asset/facilities management. • Develop a BIM-based asset management workflow. • Demonstrate general software skills used in creating drawings and managing assets (eg, Revit, BIM360 – Document Management and Asset Modules) • Ability to critically appraise the different asset management software and their applications in practice (Exo Ecodomus, ArchiBus, Maximo, BIM 360 Asset Module)
Ability to establish and develop asset information requirements using information standards e.g, ISO 19650-3	<ul style="list-style-type: none"> • Identity information management cycle. • Explain BIM standard for construction and asset management. • Identify the differences between information requirements (OIR, EIR, PIR, AIR)



	<ul style="list-style-type: none">• Use standards to develop asset information requirements.
Ability to manage asset/facility management data in BIM software systems on case study projects	<ul style="list-style-type: none">• Ability to develop and explore a BIM model for use in asset management software (Revit, BIM 360 Asset Module)• Ability to export and manage BIM data in an asset management platform.• Demonstrate the application of BIM and asset management systems for managing asset information of a case study project.

2.3 BIM 603: BIM and Structural Engineering

Unit Title	BIM and Structural Engineering
Unit Code	BIM 603

Summary

Status	Core
Learning Hours	80 hrs including lectures and exercises
Credits Value	8
Period of Study	8 weeks

Summary of Learning Outcomes

Learning outcomes are results of learning that students will have achieved on successfully completing a course. The following reference points were used in designing the learning outcomes;

- QAA Subject Benchmark Statements to ensure: that appropriate and effective teaching, support, assessment and learning resources are provided for students; that the learning opportunities provided are monitored; and that the provider considers how to improve them.

Learning outcomes are expressed under three broad headings of achievement in both threshold and typical standards:

- U: Understanding (a general awareness of the activity)
- K: Knowledge (a more detailed level of understanding of the activity)
- S: Skills (to be able, without supervision, to perform relevant functions)

Module Aim

The module is designed to equip students with the necessary knowledge and skills to work on BIM projects, and to become proficient in the use of BIM software such as Revit and Navisworks and relevant add-ins to deliver Structural BIM projects.

Learning Outcomes and Assessment Criteria

To pass this module, the evidence that the learner presents for assessment needs to demonstrate that they can meet all the learning outcomes for the unit. The assessment criteria determine the standard required to achieve the unit.

On completion of this module, learners should:

Learning Outcomes	Assessment Criteria
BIM Standards and Management	<ul style="list-style-type: none"> • Understanding of the ISO 19650 suite of documents, BS 1192-6, BS EN17412-1, BS 8536 and the role of other standards that are relevant to the BIM management of a structural BIM project. • Understand BS8644-1 in relation to fire safety and structural BIM deliverables. • The ability to read a BIM Execution Plan and understand how the deliverables relate to this project. • Understand Level of Information Need (LOIN) • Understanding of the Model Production Delivery Table (MPDT) and Task Information Delivery Plan (TIDP) and Master Information Delivery Plan (MIDP). • An understanding of BIM classification process and naming conventions. • Understanding of the relevant selection of BEP and the needs of the client.
BIM Modelling	<ul style="list-style-type: none"> • An understanding of Revit Structural Families, proper structuring and naming of them, and how to use/modify them for use in the BIM context. • The ability to use Revit 2023 with associated Revit Add-ins, including BIM interoperability Tools and Di-Roots (external provider, free download). • The ability to extract quantities and volumes from the structural model using schedules in Revit and associated Revit Add-ins, including Di-Roots (external provider, free download) • An understanding of COBie deliverables and the ability to generate them using the BIM interoperability tools. • An understanding of how to use Uniclass and the BIM Interoperability Tools to support modelling of data.

BIM Coordination and Collaboration	<ul style="list-style-type: none"> • The ability to manage information exchange with other design disciplines and sub-consultants using Revit and Navisworks. • The ability to manage and track changes to the BIM module using Revit and Navisworks. • A look at what features to track in Navisworks clashes between Structures and other disciplines and how to do this.
BIM Data Management	<ul style="list-style-type: none"> • An understanding of the various data formats used in BIM, including IFC, and COBie. • The ability to manage and organise BIM data effectively using Revit and Navisworks. • The ability to produce reports and visualisations of BIM data using Revit and Navisworks. • Understanding of an introduction of the use of Twinmotion to produce visualisations (free download with Revit)
Data Review and Checking	<ul style="list-style-type: none"> • Use of Model checker to review the model settings. • Use of Power BI to Dashboard this information. • Review of Warnings and typical issues to overcome and those that can be allowed.