Programme Specification

Programme Titles:

MSc Building Information Modelling and Project Collaboration

PG Certificate in Building Information Modelling and Project Collaboration

Programme Code: MH2AC

Programme(s) valid from January 2016 - indefinite approval
JACS code: K130 / K100

Valid for delivery at:
University of Derby
Programme Title

1. Masters of Science in Building Information Modelling and Project Collaboration
2. Postgraduate Certificate in Building Information Modelling and Project Collaboration (September entry only)
Award title and interim awards

2 Final Award:
   MSc Building Information Modelling and Project Collaboration
   Postgraduate Certificate in Building Information Modelling and Project Collaboration

   Interim Awards:
   Postgraduate Diploma in Building Information Modelling and Project Collaboration
   Postgraduate Certificate in Building Information Modelling and Project Collaboration

Mode of Study

3 Full Time - 1 year / Part Time - 2 years

Programme start date and period of validation

4 Start Date: January 2016
   Period of Validation: Indefinite

Awarding Institution

5 University of Derby

College Managing the Programme

6 College of Engineering and Technology

Institution(s) Delivering the Programme

7 University of Derby

Relevant external subject benchmark statement(s)

8 The MSc Building Information Modelling and Project Collaboration programme has considered following in the curriculum design:
   • QAA Subject Benchmarks for Architectural Technology 2014
   • QAA Subject Benchmarks for Architecture 2010 – Part 2
   • CIOB Education Framework Masters Degree Programmes 2010
   • QAA Subject Benchmarks for Engineering 2015
   • QAA Master’s Degree Characteristics 2010
External Accreditation/Recognition

9 The accreditation/professional recognition will be sought from the Chartered Institute of Architectural Technologists (CIAT). The University has been granted CIAT Centre of Excellence status in AY 2013/14, one of only four in the UK. Furthermore, our existing MSc in Sustainable Architecture and Healthy Buildings has also gained CIAT Professional Recognition status.

Additional accreditations with the PSB’s below will be considered:

Chartered Institute of Building (CIOB)
Royal Institute of Chartered Surveyors (RICS)
Institution of Civil Engineers (ICE)

JACS Code(s)

10 K130/K100

Programme specification last updated

11 July 2016
SECTION TWO: OVERVIEW AND PROGRAMME AIMS

Overview

The programme aims to provide you with an academically rigorous, intellectually stimulating, research orientated and challenging programme of study, related to the theory and practice of Building Information Modelling (BIM) as the emerging industry standard approach to the design, analysis, and management of building life cycle. The programme content incorporates an innovative blend of design management, sustainable design analysis and advanced parametric design, customisation and visualisation, at the cutting edge of technology. It further aims to research approaches and technologies for an efficient design integration and project collaboration, understanding BIM impact on the design process and workflow requirements.

This programme content focuses on enabling you to gain knowledge and skills related to advanced aspects of BIM theory, practice and technologies required to deliver better value through integrated design and project collaboration. It is designed for architects, architectural technologists, design managers, project managers, civil/structural engineers, surveyors or other construction professionals with a keen interest in the BIM and its fast changing role in the whole lifecycle project procurement.

The programme curriculum is aligned to current needs of professional practice in the construction industry, complemented by the extensive industrial links and current staff expertise and research profile. In addition to its BIM curriculum that is comparable to that delivered on similar Masters programmes in the UK, this programme is distinct in its approach to delivery of BIM project collaboration and design management, method of sustainable design analysis integration, application of advanced parametric design/API customisation for design and visualisation, work related real life projects, learning and flexible modes of delivery.

Finally, in a broader context, the programme critically analyses current design principles and technologies, project planning, costing, contractual and value engineering approaches, government legislation, codes of practice and other professional, industrial and commercial drivers.

You can choose to study the PGCert in Building Information Modelling and Project Collaboration as a standalone award, or the full Masters.
Programme Aims

The aims of the programme are designed to:

1. Provide an academically rigorous, intellectually stimulating, research orientated and challenging programme of study, nurturing sense of enthusiasm and passion for building information modelling and design collaboration;
2. Develop a vocationally focused course of study that meets externally prescribed requirements and enables engagement with continuing professional development and further advanced study in the discipline;
3. Enhance an ability to generate subject area proposals showing awareness of current issues and insights, originality and criticality in the application of subject knowledge and, where appropriate, proposing new hypotheses and speculations;
4. Enable a critical understanding of how the boundaries of knowledge are advanced through research in production of clear, logically argued and original written work relating to the building information modelling, its theories and facets of project collaboration;
5. Enhance abilities to critically evaluate the appropriate methods and techniques that apply to the building information modelling, and integrate these into design and project collaboration approaches;
6. Provide flexible learning opportunities making it accessible to part-time and full-time students, whether local, EU or international and enable ethos of independent and lifelong learning;
7. Ensure that opportunity is equally available to all who have the potential to benefit from it, regardless of race, nationality, gender or disability.

SECTION THREE: PROGRAMME LEARNING OUTCOMES

The Programme Learning Outcomes are articulated in terms of:

- Knowledge and understanding;
- Intellectual skills;
- Practical/subject specific skills;
- Transferable skills

Knowledge and understanding relates to acquisition of interrelated concepts, methodologies and theories related to the building information modelling and project collaboration.

Intellectual skills relates to the ability to process advanced knowledge and information, being able to make deductions, and forming conclusions in which you have confidence.

Practical skills cover a whole range of skills including ability to generate complex proposals, evaluate the appropriate methods, processes and techniques, advanced computer parametric design as well as ability to apply range of visual, oral and written communication methods.

Transferable skills are those which may be taken into other fields of activity. They are diverse, but include the ability to define objectives and methodology pertinent to the chosen research problem, work autonomously, work in a team, problem solving skills, professional judgment, ability to take initiative in complex and unpredictable circumstances, and to manage other people, processes or organisations.
Knowledge and understanding

Stage 1 – The Postgraduate Certificate

- Demonstrate the ability to make critically informed choices about the issues and constituencies which influence the process and delivery of project collaboration and the ways of showing and exposing innovation in design to wider social and ethical concerns.
- Research, analyse and critically appraise the building information modelling and project collaboration relationships and influences.

Stage 2 – The Postgraduate Diploma

- Acquire a critical awareness of the complexities and interdependencies of the building information modelling and project collaboration and the constraints involved in applying its theories and methods into practice, at a variety of building life cycle stages.
- Critically examine relationship of advanced parametric modelling, customisation and visualisation and the impact that may have upon the design integration, sustainable design analysis and project collaboration.

Stage 3 – The Master’s Degree

- Articulate in a critically informed manner development of complex building information modelling theories, methods and processes related to design integration and project collaboration, and in relation to advancements in built environment and wider socio-economical rapports.
- Undertake advanced and independent scholarship, developing your own critique and originality in the application of subject knowledge and, where appropriate, proposing new hypotheses and speculations.

Intellectual skills

Stage 1 – The Postgraduate Certificate

- Demonstrate an in-depth understanding of building information modelling and emergent technologies and ability to critically analyse and evaluate concepts using a wide range of information sources.
- Demonstrate original and complex thought on how building information modelling and project collaboration theory and principles can be applied to practical problems.

Stage 2 – The Postgraduate Diploma

- Critically reflect, evaluate and realise your practice and professional development through active research.
- Engage in intellectual and critical debate related to the design integration and project collaboration and impact of different approaches on the building user, built and natural environment.

Stage 3 – The Master’s Degree

- Critically evaluate the theoretical approaches and form considered judgements about spatial, aesthetic and contextual, technical and social qualities of a BIM enabled design within the scope and scale of a wider environment.
• Critically evaluate and apply advanced parametric computer modelling, customisation and application programming interface (API) to the analysis and solution of design and integration problems.

**Subject specific skills**

**Stage 1 – The Postgraduate Certificate**

• Critically evaluate the processes of procurement, planning, construction and health and safety legislation that apply to building information modelling and project collaboration.

**Stage 2 – The Postgraduate Diploma**

• Demonstrate an ability to evaluate the appropriate methods, processes, specifications and techniques that apply to design integration and project collaboration.
• Demonstrate an ability to evaluate and apply a comprehensive range of advanced visual, oral and written communication methods to test, analyse and critically appraise subject area proposals.

**Stage 3 – The Master’s Degree**

• Generate complex building information modelling and project collaboration proposals showing awareness of current issues and insights.
• Demonstrate an ability to plan, realise and exhibit high quality building information modelling based architectural material produced through advanced communication techniques of ideas and designs to a variety of audiences.

**Transferable skills**

**Stage 1 – The Postgraduate Certificate**

• Define objectives pertinent to the chosen research problem, critically evaluate and apply established techniques of research and enquiry in pursuing those research objectives.
• Work autonomously in a self-directed manner, thereby developing the practices of reflection and lifelong learning.

**Stage 2 – The Postgraduate Diploma**

• Demonstrate strong understanding of the problem solving skills, professional judgment, and ability to take initiative in complex and unpredictable circumstances.

**Stage 3 – The Master’s Degree**

• Critically evaluate overall strategy and present the outcomes from work in a professional way, including reflecting on further improvement in personal development and skills required to work within contemporary interdisciplinary environments.
• Systematically apply professional and research skills to remain at the forefront of practice in the field.

Please refer to Appendix 1 for full mapping of learning outcomes versus individual modules.
SECTION FOUR: PROGRAMME STRUCTURE

Structure and Curriculum

You can study PGCert in MSc Building Information Modelling and Project Collaboration as a standalone award, or full Masters programme. PGCert standalone award can only be entered in September and studied on either a full-time or part-time basis (see Figures 1-2 and 3-4). Masters programme can be entered in September or January and studied on either a full-time or part-time basis (see Figures 1-2 and 3-4). The PGCert is structured as a taught course with one stage, whilst the full Masters is structured of three stages. Each stage carries 60 credits at HE Level 7 and corresponds to appropriate postgraduate exit awards, as per Figure 1 below.

As all MSc modules are credited as Level 7, there is flexibility in configuring an individual programme of study. Different choices of optional modules exist, depending on the September or January entry to the programme.

Postgraduate Certificate and Diploma Stage

Postgraduate Certificate stage is comprised from two 10 credits core module ‘Research Methods, Application and Evaluation’ and Environmental Risk and Responsibility and two prescribed modules, order of which depends on whether you start in September or January. Postgraduate Diploma stage is then attained when another two prescribed modules plus one option are completed (see Figures 1-2 and 3-4).

Core Module:
Research Methods, Application and Evaluation; Environmental Risk and Responsibility
It is expected that you take this module in the first semester. This is a College based on-line module that provides you with the necessary knowledge, methods and skills required for the research expected at postgraduate level.

Prescribed modules:
BIM and Integrated Project Collaboration and nD BIM – Costing, Project Planning and Design Management - 20 credits each).
These modules integrate both theory and practice of BIM at the postgraduate level, encouraging critical examination of its relationship to project collaboration; including means of advanced integration of costing, project planning, design management and life cycle analysis. Whilst above dimensions are recognised in the 6D BIM concept, the title nD BIM refers to its multidimensional nature and potential of future dimensions of the BIM being developed, and the impact they might have upon the more effective ways of project procurement and utilisation of construction resources.

Advanced Parametric Design, Customisation and Visualisation and BIM and Sustainable Design Analysis (20 credits each)
In the first of two prescribed modules you expand on knowledge of advanced parametric design modelling, customisation and visualisation using advanced methods, software and hardware. The second of two prescribed modules is dedicated to BIM integrated, holistic approach to sustainable design analysis, one that encourages you to engage in intellectual and critical study related not only to the environmental performance and low energy aspects of design but also the health in buildings.

Options: CPD and Strategic Management; Project Planning, Value Engineering and Risk Management, Negotiated Module, Construction Contracts and Dispute Resolution and Sustainable Architecture and Low Energy Design
The choice of option enables you to further tailor your interests towards design, contractual, project planning or negotiated aspects of your study.

Master’s Stage
Culminates with a single 60 credits module, *Independent Scholarship*, requiring production of a comprehensive research based integrated design project or dissertation. In the case of former, generation of complex design proposals with awareness of current issues and insights, and originality in the application of subject knowledge is required. In the case of latter, a critical understanding of how the boundaries of knowledge are advanced through research in production of clear, logically argued and original written work related to the field of building information modelling is required.

In order to achieve MSc in Building Information Modelling and Project Collaboration you need to gain 180 credits at Level 7. Students who do not progress to the final stage may receive a Postgraduate Certificate in Building Information Modelling and Project Collaboration (with 60 credits) or a Postgraduate Diploma in Building Information Modelling and Project Collaboration (with 120 credits).

To attain PGCert in Building Information Modelling and Project Collaboration as a standalone award you must undertake Research Methods, Application and Evaluation, BIM and Integrated Project Collaboration and nD BIM – Costing, Project Planning and Design Management modules.

The relationship between the programme outcomes and the modules is mapped on the ‘Curriculum Map’ which is appended to this Programme Specification so you can see how the programme and modules learning outcomes interrelate.
## MSc Building Information Modelling and Project Collaboration - September Full Time

<table>
<thead>
<tr>
<th>Level</th>
<th>Course Name</th>
<th>Autumn</th>
<th>Spring</th>
<th>Summer</th>
<th>Core</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Level 5 Diploma</td>
<td>UK1AA University Diploma in BIM (Arch)</td>
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</tr>
<tr>
<td>PGCert</td>
<td>Research Methods, Application and Evaluation</td>
<td>Core</td>
<td></td>
<td></td>
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<td>10 Credits</td>
</tr>
<tr>
<td></td>
<td>BIM and Integrated Project Collaboration</td>
<td>Prescribed</td>
<td></td>
<td></td>
<td></td>
<td>20 Credits</td>
</tr>
<tr>
<td></td>
<td>nD BIM – Costing, Project Planning and Design Management</td>
<td>Prescribed</td>
<td></td>
<td></td>
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<td>20 Credits</td>
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<tr>
<td></td>
<td>Environmental Risk and Responsibility</td>
<td>Core</td>
<td></td>
<td></td>
<td></td>
<td>10 Credits</td>
</tr>
<tr>
<td>PGDip</td>
<td>Advanced Parametric Design, Customisation and Visualisation</td>
<td>Prescribed</td>
<td></td>
<td></td>
<td></td>
<td>20 Credits</td>
</tr>
<tr>
<td></td>
<td>BIM and Sustainable Design Analysis</td>
<td>Prescribed</td>
<td></td>
<td></td>
<td></td>
<td>20 Credits</td>
</tr>
<tr>
<td></td>
<td>Project Planning, Value Engineering and Risk Management</td>
<td>Optional</td>
<td></td>
<td></td>
<td></td>
<td>20 Credits</td>
</tr>
<tr>
<td></td>
<td>CPD and Strategic Management</td>
<td>Optional</td>
<td></td>
<td></td>
<td></td>
<td>20 Credits</td>
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<tr>
<td></td>
<td>Negotiated Module</td>
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<tr>
<td>MSc</td>
<td>Independent Scholarship (Technology)</td>
<td></td>
<td></td>
<td></td>
<td>Core</td>
<td>60 Credits</td>
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</table>

1 Available to be studied alongside Masters
# MSc Building Information Modelling and Project Collaboration - January Full Time

<table>
<thead>
<tr>
<th>Level 5 Diploma for students with non-standard entry qualifications</th>
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<tbody>
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<tr>
<th>PGCert</th>
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<th>MSc</th>
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<tbody>
<tr>
<td>Research Methods, Application and Evaluation</td>
<td>BIM and Sustainable Design Analysis</td>
<td>Independent Scholarship (Technology)</td>
</tr>
<tr>
<td>Spring Core 10 Credits</td>
<td>Spring Prescribed 20 Credits</td>
<td>Spring Core 60 Credits</td>
</tr>
<tr>
<td>Advanced Parametric Design, Customisation and Visualisation</td>
<td>Environmental Risk and Responsibility</td>
<td>E-learning Core 10 Credits</td>
</tr>
<tr>
<td>Spring Prescribed 20 credits</td>
<td>E-learning Core 10 Credits</td>
<td></td>
</tr>
<tr>
<td>Sustainable Architecture and Low Energy Design</td>
<td>Negotiated Module</td>
<td></td>
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<tr>
<td>Construction Contracts and Dispute Resolution</td>
<td>Autumn Optional 20 Credits</td>
<td>Autumn Optional 20 Credits</td>
</tr>
<tr>
<td>Autumn Prescribed 20 Credits</td>
<td>Negotiated Module</td>
<td>Autumn Optional 20 Credits</td>
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<tr>
<td>BIM and Integrated Project Collaboration</td>
<td>Sustainable Architecture and Low Energy Design</td>
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<tr>
<td>Autumn Optional 20 Credits</td>
<td>Construction Contracts and Dispute Resolution</td>
<td></td>
</tr>
<tr>
<td>Autumn Prescribed 20 Credits</td>
<td>BIM and Integrated Project Collaboration</td>
<td>Autumn Optional 20 Credits</td>
</tr>
<tr>
<td>Autumn Prescribed 20 Credits</td>
<td>BIM and Sustainable Design Analysis</td>
<td>Autumn Optional 20 Credits</td>
</tr>
</tbody>
</table>

¹ Available to be studied alongside Masters
**MSc Building Information Modelling and Project Collaboration - September Part Time**

<table>
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<table>
<thead>
<tr>
<th>YEAR 1 AUTUMN = TWO CORE + ONE PRESCRIBED</th>
</tr>
</thead>
<tbody>
<tr>
<td>Research Methods, Application and Evaluation&lt;br&gt;Autumn Core 10 Credits</td>
</tr>
<tr>
<td>BIM and Integrated Project Collaboration&lt;br&gt;Autumn Prescribed 20 Credits</td>
</tr>
<tr>
<td>Environmental Risk and Responsibility&lt;br&gt;Autumn Core 10 Credits</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>YEAR 1 SPRING = TWO PRESCRIBED</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIM and Sustainable Design Analysis&lt;br&gt;Spring Prescribed 20 Credits</td>
</tr>
<tr>
<td>Advanced Parametric Design, Customisation and Visualisation&lt;br&gt;Spring Prescribed 20 credits</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>YEAR 2 AUTUMN = ONE PRESCRIBED + ONE OPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>nD BIM – Costing, Project Planning and Design Management&lt;br&gt;Autumn Prescribed 20 Credits</td>
</tr>
<tr>
<td>Construction Contracts and Dispute Resolution&lt;br&gt;Autumn Optional 20 credits</td>
</tr>
<tr>
<td>Sustainable Architecture and Low Energy Design&lt;br&gt;Autumn Optional 20 Credits</td>
</tr>
<tr>
<td>Negotiated Module&lt;br&gt;Autumn Optional 20 Credits</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>YEAR 2 SPRING/SUMMER = ONE CORE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Independent Scholarship (Technology)</td>
</tr>
<tr>
<td>Spring Core 60 Credits</td>
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</tbody>
</table>

¹ Available to be studied alongside Masters
# MSc Building Information Modelling and Project Collaboration - January Part Time

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</table>

### Year 1

**Spring**
- **Two Core + One Prescribed**
  - Advanced Parametric Design, Customisation and Visualisation (20 credits)
  - Research Methods, Application and Evaluation (10 credits)
- **Environmental Risk and Responsibility E-Learning Core 10 Credits**

**Autumn**
- **Two Prescribed**
  - nD BIM – Costing, Project Planning and Design Management (20 credits)
  - BIM and Integrated Project Collaboration (20 credits)

### Year 2

**Spring**
- **One Prescribed + One Option**
  - Project Planning, Value Engineering and Risk Management (20 credits)
  - BIM and Sustainable Design Analysis (20 credits)
- **CPD and Strategic Management Spring Optional 20 Credits**

**Summer/Autumn**
- **One Core**
  - Negotiated Module (20 credits)

### Year 3

**Summer**
- Independent Scholarship (Technology) 60 Credits

¹ Available to be studied alongside Masters
Personal Development Planning (PDP)

PDP will take place in the modules:
- Research Methods, Application and Evaluation
- Independent Scholarship

As a student on a post-graduate programme of a vocational nature it is expected that you will have already reflected and fully considered the effect that studies will have on your personal development (PDP) and continuing professional development (CPD). In the case of latter, you will have regular access to the relevant CIAT CPD events and East Midlands BIM Hub seminars. Individual modules are related to professional practice and you will be further supported in your PDP via regular personal tutor sessions. You will be encouraged to identify how aspects of the programme will both benefit your development and future practice. The aim of your Personal Development Plan is to facilitate the integration of academic and practical aspects of the programme and to enable you to develop yourself as a well-rounded high-level practitioner, through continuous attainment of knowledge and reflection on your studies, recording progress, career development and planning for the future. The programme actively encourages you to fully participate in a developmental and reflective attitude towards an understanding of transferable skills and their potential for employment opportunities.

The programme has continuing professional development through individual module components, such as BIM and Integrated Project Collaboration, nD BIM – Costing, Project Planning and Design Management and BIM and Sustainable Design Analysis, where you will carry out work related learning on the real projects, sites and clients or work in the multidisciplinary collaborative teams on real project simulations.

At each stage of your programme you will be individually counselled as to your module choices and programme progression options. This counselling will take the form of a one-to-one discussion between you and your Programme Leader to best evaluate the most appropriate module choices based on both your perceived academic strengths and interests and career aspirations.

SECTION FIVE: PROGRAMME DELIVERY

Learning and Teaching Methods

A variety of teaching and learning strategies will be employed in accordance with University of Derby’s Learning and Teaching Strategy and the needs of the professional bodies.

Staff-led lectures will set the scene and provide the background and knowledge base, but you will be encouraged to actively participate and engage in intellectual debate and enquiry based on the prior reading and reviews of the topics under scrutiny. Analysis, evaluation, synthesis and application of material discussed in the lectures will be achieved through live projects, industry links and live case studies, conferences, exhibitions, regional professional bodies CPD courses, short placements, proposals, presentations, student delivery of seminar topics, professional workshops, group and one-to-one tutorials, and practical work in preparation for the Independent Scholarship (Technology). The programme also includes site/companies visits which will provide you with the opportunity to experience real world application of building information modelling in the project collaboration.

Whilst it is recognised that there are a significant number of modules to be studied (all modules being 20 credits except for the independent scholarship module which is 60), we feel that this will allow more flexibility, clarity and shorter, more manageable assessment tasks. In addition, modules would lead into another wherever academically appropriate, for example in the case of BIM and
Project Collaboration, nD BIM-Costing, Project Planning and Design Management and BIM and Sustainable Design Analysis modules. These modules, by their nature, provide for continuation both in terms of their indicative content and assessment.

For postgraduate study you will normally be expected to prepare in advance of teaching sessions by independent reading or set preparatory work. All specialist modules you study will be related to current industrial or research developments and some will involve the relevant industry or research collaboration, either directly working with a representative from industry or through appropriate involvement with a live project. Throughout the programme you will notice the emphasis on student-centred learning rather than on tutor-led input so that you become a true independent learner. Encouraging and maintaining this independence forms the main components of your learning experience on this programme. In light of this, the learning and teaching is centred on you developing your own research interests and working independently whilst being supported with a mixture of taught and structured independent learning modules. In the taught based modules you will be provided with a framework for study through the taught sessions and the recommended reading (e.g. Advanced Parametric Design, Customisation and Visualisation, Project Planning, Value Engineering and Risk Management, Construction Contracts and Dispute Resolution). As appropriate, you are encouraged to link the content of these sessions to your own areas of interest which may be developed further through the assignments. The independent-learning modules (e.g. Research Methods, Application and Evaluation, CPD and Strategic Management, Negotiated Module) allow you to develop the skills and knowledge to support the taught based modules. This enables you to pursue issues of theory and/or research methodology which may relate to a specific building information modelling topic or to an interdisciplinary avenue of enquiry in relation to its application. The move towards fully autonomous learning is highlighted in the Independent Scholarship (Technology) module.

The programme is flexible in its delivery, utilising on-line, blended and traditional face-to-face taught delivery modes. All of the modules are supported with appropriate on-line materials through the University website. As well as the face-to-face activity and University online repository, tutors will support you in your learning via email and other communication opportunities, as appropriate, in your study. Where applicable, you will be applying and reflecting on your knowledge in your workplace and will be encouraged to elicit value and use feedback from others in the workplace.

Independent Scholarship

The programme leader assigns a member of staff to have responsibility for the coordination of supervision and monitoring of progress. Students taking independent scholarship as part of a standard Master’s programme are assigned a Director of Study and Second Supervisor. It is the responsibility of the supervisors to provide academic guidance in the conduct of the research work. The supervisors are also responsible for monitoring your progress and providing proactive academic and pastoral support. Although not based on mandatory work placement, part time students will also have the opportunity to be assigned an industrial mentor who will support them with regards to the day to day queries that they might have. He/she will also support them in terms of providing them with adequate time and resources in order for them to be able to carry out the work successfully and efficiently. The industrial mentor will have no input into the summative assessment but may provide formative feedback with regards to your overall performance at the company in relation to carrying out the relevant work.

Sharing, developing and reflecting on your learning with other students and staff is an important part of achieving your potential in postgraduate study. In order to be able to facilitate this you will be part of seminars, CPD sessions, discussion groups and an online postgraduate learning forum, where
you can share ideas and experiences and reflect on a module or programme. You will also have
several opportunities during the year for less formal face-to-face discussion.

You are required to comply with research governance and ethics principles whilst undertaking your
programme of study. This is of particular importance when conducting research involving other
people e.g. for module assessments or Independent Studies. Information on these principles can be
found on the University web site at www.derby.ac.uk/research/ethics

Use will be made of the University’s computer facilities, for the teaching of BIM and other related IT
work in a wide selection of modules. The facilities available for these modules include dedicated
computer studios with the appropriate software required to teach these modules.
Furthermore, use will be made of other e-learning and e-support resources, such as
Construction Information Services, ConstructionSite Online Resources, CIAT / RIBA / CIOB Student
Members Resources Intranet, VTC software tutorials online, Learning and Information Services
extensive digital journal libraries, RIBA Construction Index, NBS Building Online, Building Regulations
and British Standards on-line (see Architectural resources at UOD website)
In addition, to further strengthen the e-learning and on-line resources strategy, the Development
Team has put proposal to the Management (subject to the approved funding), to develop online
learning material related to the current real life case studies, industry collaborations and externally
funded projects (e.g. Retro-Tek, Smart POD, Hierons Wood, SusRefurb, , Sports Centre - Kedleston
Road, Engineering Block - Markeaton Street, company case studies and projects).

The immediate research environment is provided by BERG (Built Environment Research Group)
Whilst working as a multidisciplinary group, BERG focuses on a research profile that in particular
underpins teaching and the curriculum in areas of architecture, construction and civil engineering.
Some of the key themes include building information modelling (BIM) integration and
implementation, environmental/sustainable design, sustainable refurbishment of historic and
traditional buildings, conservation/regeneration research, sustainable environments and
communities. Also performance based fire risk engineering research, health and safety, building
biology and health in buildings, theories and educational research in architecture, interdisciplinary
and cross-boundary connections with arts and design. The research on the construction and civil
engineering side includes infrastructure railway asset management and optimisation, heavy
maintenance techniques, specialist construction procedures and innovations in construction
management, facilities management, innovations in surveying methods and site preparation.

Assessment

This programme operates within the University’s Postgraduate Regulatory Framework and conforms
with its regulations on assessment. A mixture of assessment methods will be used on the
programme, with a strong commitment to deep learning and aimed at continuously developing you
as an independent learner throughout your studies.

Assessment and assessment feedback are designed to be formative as well as summative, providing
motivation, direction and a platform for further learning. Formative assessment is widely used in
your programme. This consists of frequent continuous feedback (sometimes called ‘feed forward’) on
your progress which does not result in a formal grade, occurring in most of the modules on the
programme and may include structured peer feedback from fellow students, project reviews where
your project work is presented and discussed by the group as a whole or individual, one to one
tutorial feedback with the staff. Formative assessment may be recorded in a variety of ways,
through written comments, presentation recordings and notes, tutorial record forms or by yourself in
your Personal Development Plan.
Summative assessment of all of your core and prescribed modules is by 100% coursework reflecting the fundamental pedagogical concept of “learning by doing” in this practice-based discipline. The coursework will focus on the range of projects and assignments you undertake throughout the programme, with main assessment methods to be used as follows:

- Work related studio based collaborative design based on “live projects” with collaborative work, project reviews, student exhibitions and design competitions whenever possible (e.g. BIM and Project Collaboration, Sustainable Architecture and Low Energy Design and Independent Scholarship - Technology).

- In-course assessments, case studies and presentations, which provide a method of assessing your understanding and progression within any given module (e.g. Advanced Parametric Design, Customisation and Visualisation, BIM and Sustainable Design Analysis).

- Work-based learning ranging from professional practice related simulations in vocational aspects of taught modules to collaborative and interdisciplinary team work projects (e.g. BIM and Project Collaboration, nD BIM-Costing, Project Planning and Design Management, Negotiated Module).

- Personal Progress Files, which are a critical element in the formative assessment of the Programme, as they provide you with the means to record and evaluate both personal and continual professional development (e.g. Research Methods, Application and Evaluation, Independent Scholarship - Technology, Negotiated Module).

- Presentations and seminars, which will be used across the range of modules to encourage peer group knowledge sharing and to improve your confidence and skills in preparation, understanding, capacity to structure information and communication of either design ideas or independent research. Wherever possible (studio based work, design competitions, exhibitions, work related projects), the presentations will be organised to reflect and simulate professional practice scenarios (e.g. Independent Scholarship -Technology, BIM and Sustainable Design Analysis, BIM and Project Collaboration, Project Planning, Value Engineering and Risk Management).

- Other forms of assessment methods, such as critiques and case studies, practical investigations, visual recognition tests, controlled peer group assessment, etc.

This comprehensive set of assessment methods means that all the learning outcomes are covered and that you will receive adequate feedback on performance as you are progressing through the different stages of the Programme.
SECTION SIX: ADMISSIONS

Entry requirements

Although this programme is academically demanding it is important that you have an enthusiastic attitude to this programme of study and a passion for the subject area. A wide variety of potential applicants, from a variety of cognate backgrounds, are invited to apply. We are seeking to attract well-motivated students who wish to pursue their studies and further professional development in a stimulating and vocationally orientated learning environment.

You will normally be expected to have an architectural or other built environment first degree appropriate to apply for the MSc (Minimum 2:2 or above), a professional qualification of equal standing, or significant practical or professional experience gained following your initial qualification that would support your application. If requested you should bring your portfolio to the interview, normally arranged at the University.

Level of BIM knowledge and skills required

Level 5 or equivalent BIM knowledge and specialist software skills are required for this programme. If you have no evidence of prior certified learning you could be required to study BIM and Project Collaboration single module, dependent on the level of existing BIM knowledge and skills in your portfolio. This Level 5 module can be studied as a part of University Diploma in CAD and BIM (Architecture) here at the University, or you could undertake equivalent module somewhere else. If you are required to study this module you will have to complete it prior to the commencement of your Masters programme. It is designed to equip you with the relevant and practical BIM knowledge and skills required for your Masters study. The “face to face” delivery of module runs from mid-January till mid-April for a period of 12 weeks, one day a week, 5pm till 9pm. Flexible methods to undertake this module exist, such as an intensive summer course before the MSc September start, distance learning or online facilitation.

If you are an international student you can combine this module or whole Diploma with an appropriate English programme to reach the international entry requirements and prepare for your Masters study.

For further information, please follow the link http://www.derby.ac.uk/courses/cad-bim-university-diploma/.

Recognition of Prior Learning (RPL)

Students entering postgraduate programmes are eligible to apply for advanced standing in recognition of prior learning achievements providing that this learning has not already contributed to an awarded higher degree. In this case, Recognition of Prior Experiential Learning (RPEL) or Recognition of Prior Certified Learning (RPCL) may be possible. RPEL/RPCL will only be recommended where applicants can present a portfolio of professional work, deemed to be of an appropriate level. Some constraints on the applicability of RPL are necessary.

- Advanced standing is only available for the taught modules.
- RPL is not available in respect of work based professional practice or for MSc Independent Scholarship (Technology).

For detailed University guidelines on recognition of prior learning please see http://www.derby.ac.uk/media/derbyacuk/contentassets/documents/academicregulations/accreditation-of-prior-learning.pdf

Non-standard Entry

If you are joining the Programme without formal undergraduate qualifications but with relevant industrial experience, you will be interviewed on application and the Programme Leader will assess, taking into account your experience and expectations, the relevance of your previous study to the
programme. The interview should, where possible, take place at the University and the interviewer will take into account any appropriate evidence such as a portfolio of your work.

International Entry Requirements
For postgraduate courses we usually require any student whose first language is not English to attain a minimum of one of the following qualifications:

- IELTS: 6.0 (with a minimum of 5.5 in all areas).
- Pearson Test of Academic English: 51
- Cambridge Advanced Certificate: Pass
- London Tests of English: we accept level 5 for postgraduate courses
- International GCE O Level English Language: Grade C
- International GCSE English or English as a Second Language: Grade C.

Specific information of interest and relevance to International students can be found at http://www.derby.ac.uk/international/

For international applications, where appropriate, interviews can be conducted by telephone or skype and your portfolio should be submitted electronically. If at interview it is agreed that you need to prepare for postgraduate studies you will need to enrol on the University Diploma in CAD and BIM. If you are an international student you can combine this with appropriate English language modules to reach the international entry requirements.

For a full list of accepted qualifications from your country, please follow the link http://www.derby.ac.uk/international/study/apply/postgraduate/qualifications/postgraduate/

Making Applications
Applications for full time students are made directly to the University using the online application system available at http://www.derby.ac.uk/study/apply/apply-online/

Students with Additional Needs
The University and Programme Team welcome applications from students with disabilities and are committed to ensuring that all students engaged on a programme have equal opportunity to succeed in it. The proposed programme is committed to the policies implemented with Student Support Services, http://www.derby.ac.uk/campus/support/ and will also use the Faculty Student Liaison Officer to support all students on the programme. The above will ensure that systems for the anticipation of student needs and early notification of disabilities are fully utilised.

University admissions policy requires competence in the English language. It is not envisaged that students from different cultural backgrounds will be disadvantaged in any way by the learning, teaching and assessment strategy outlined, provided the language requirement is satisfied.
SECTION SEVEN: STUDENT SUPPORT AND GUIDANCE

There is a full induction programme at the beginning of the academic year and you will receive a Programme Handbook that is published on the University VLE which provides all the essential information about the programme and the support we provide for your learning. You will undertake up to a week of induction activities where we will provide a comprehensive insight into the University and the programme. You will be given an academic counselling and a full introduction to your studies, with an overview of the programme structure and expected learning processes and outcomes. You will further be given a health and safety and workshop induction, student support, access to the library and digital resources, along with discussions on the planned CPD, guest lectures and independent scholarship expectations. There is also a field trip during your first week at the University so that you can visit some of local architectural sites and get to know each other.

You’ll find a whole host of useful information in your Programme Handbook and online at: http://www.derby.ac.uk/campus/support/

The Programme Leader, assisted by tutors, oversees all students enrolled on the programme. In addition you will be allocated a personal tutor who will monitor your progress on an individual basis. The University Student Centre offers a range of general, specialist and professional support services for students as detailed in your programme handbook.

Your opinion and feedback is considered essential for our endeavour to constantly improve programmes, so please feel free to voice your concerns as well as compliment good practice. You will be able to do so through variety of channels, including Programme Committees, Postgradute Survey, Module Evaluation forms and Student Consultation groups.

The University and Programme Team has an excellent record in supporting students with disabilities and employs Student Advisors, some support workers and specialist tutors who will offer help with individual needs when appropriate. The new University building, Markeaton Street, has full access for wheelchair users and appropriate facilities for other disabilities. Upon enrolment you will be advised on how to setup your Student Support Plan and Management and Programme Team will endeavour their best to provide support and additional resources required by your plan. Learning and Information services (LIS) offers support for disabled students when accessing network and using computers.

SECTION EIGHT: POST PROGRAMME OPPORTUNITIES

Post-Programme Opportunities

The MSc Building Information Modelling and Project Collaboration will provide you, on successful completion, an ideal platform to undertake specialist BIM design or management role within the architectural/built environment sector and/or further your professional development.

Upon completion of the Programme, you could seek employment as a designer / manager specialised in the application of BIM and its project integration in construction. You will be an integral part of a BIM enabled project design and management service, working alongside fellow architects, architectural technologists, engineers, surveyors and other design professionals within the construction industry.
Alternatively, there are other employment opportunities for you in architectural and general consultancy practices, working in central or local government, with property developers, building contractors, housing associations, banks, and with retail and manufacturing companies.

In terms of the recognition/approval by professional bodies, subject to your undergraduate qualifications and relevant work experience you will be able to apply for the membership with either Chartered Institute of Architectural Technologists (CIAT) or Chartered Institute of Buildings (CIOB). In addition, a possibility of accreditation with the Royal Institute of Chartered Surveyors (RICS) and Institution of Civil Engineers (ICE) – Non Technical route are being explored. The level of membership will be decided upon your application. For more information please visit CIAT web site at www.ciat.org.uk, CIOB web site at http://www.ciob.org.uk/home.

Alternatively, depending on your previous background, you might try to apply for registration with Architects Registration Board (ARB). To find how follow the link below http://www.arb.org.uk/registration/applying_for_registration/default.php

If you wish to pursue further academic opportunities, you could opt for postgraduate studies on MPhil/PhD level to gain Doctorate. In our team we have experienced supervisors of MPhil/PhD studies by research, so if that sounds exciting and challenging to you, please contact us. We are always on the lookout for high performance students to undertake further research studies. If you wish to consider Knowledge Transfer Partnership schemes (KTPs) or get involved with externally funded research projects, seek advice of your Programme Leader.

SECTION NINE: EMPLOYER LINKS

Employer Links

The MSc, alongside established University of Derby accredited built environment postgraduate and undergraduate courses, have developed a number of strong links within the industry.

The University of Derby architectural courses are renowned for the strength of their contacts with employers and placements success. We are committed to continuously foster an understanding of the industries that we are aiming to serve and have been actively engaged with local employers, sector skills councils, professional statutory bodies and industrial and funding organisations. We already educate a significant number of part-time students and offer specialist short courses, consultancy and research. The existing programmes have developed a number of strong links within the industry who have and continue to provide valuable input through the employer consultation group into the programme structure, design and its delivery. Examples of contacts include Derby City Council, Jacobs Ltd., Vinci Plc, Bouygues UK, Pick Everard, WCAC Group, Lathams Architects, Cullen Carter and Hill Architects, Martin Design Partnership, Millar Management, Benoy Architects, Green4Architecture, Roger Bullivant, Skanska UK, Maber Architects and Balfour Beatty, to name a few. We help organise regular CIAT CPD events and East Midlands BIM Hub seminars at the University.

An Industrial Advisory Committee with members drawn from above companies meets regularly and allows us to keep updated on the current industrial requirements and use these to inform our curriculum. On a practical note, these contacts have also resulted in some excellent site visits, placement opportunities and links to live projects.

Apart from the regular contact with employers through the Industrial Advisory Committee, research collaborations, consultancy projects and the Placement Tutor visits, a regular guest lectures from
practitioners in the field have been established in a number of modules. Significant external input also comes from two further sources; firstly from the use of external practitioners and clients on design reviews and design competitions (as a judging panel members) and secondly, from our External Examiners whose contribution cannot be underestimated. Opportunities for enhanced development of these links with local and national employers will be further facilitated through the validation and professional recognition of proposed MSc programme, including enhanced research and consultancy profile.

The strong philosophical thread of our programmes is inspired by its locality, being relevant to the City we belong to, its local communities and people. We closely collaborate with local authorities, industry and Marketing Derby on a wide range of challenging and relevant choices of live projects. These are related to real sites and buildings in Derby, often in significant need of regeneration and requiring not only place making and public realm strategy improvement, but dealing with challenges of their socio-economic, environmental, cultural and heritage context too.
Appendix 1

Curriculum Mapping
**Knowledge and understanding**

On successful completion of the programme you will be able to:

<table>
<thead>
<tr>
<th>Module Title</th>
<th>Demonstrate the ability to make critically informed choices about the issues and constituencies which influence the process and delivery of projects and the ways of showing and exposing innovation in design to wider concerns</th>
<th>Research, analyse and critically appraise the building information relationships and influences</th>
<th>Acquire a critical awareness of the complexities and interdependencies of the building information modelling and the constraints involved in applying its theories and methods into practice, at a variety of building life cycle stages.</th>
<th>Critically examine relationship of advanced parametric modelling, customisation and visualisation and the impact that may have upon the design integration, sustainable design analysis and project collaboration.</th>
<th>Articulate in a critically informed manner development of more complex building information modelling theories, methods and processes related to design integration and project collaboration.</th>
<th>Undertake advanced and independent scholarship, developing your own critique and originality in the application of subject knowledge and, where appropriate, proposing new hypotheses and speculations.</th>
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<td><strong>LEVEL 7</strong></td>
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<td>BIM and Integrated Project Collaboration</td>
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<td>BIM and Sustainable Design Analysis</td>
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<td>Sustainable Architecture and Low Energy Design</td>
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<td>Independent Scholarship (Technology)</td>
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### Intellectual skills

On successful completion of the programme you will be able to:

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**Demonstrate an in-depth understanding of building information modelling and ability to critically analyse and evaluate concepts using a wide range of information sources.**

**Demonstrate original and complex thought on how building information modelling and project collaboration theory and principles can be applied to practical problems.**

**Critically reflect, evaluate and realise your practice and professional development through active research.**

**Engage in intellectual and critical debate related to the design integration and project collaboration and impact of different approaches on the building user, built and natural environment.**

**Critically evaluate the theoretical approaches and form considered judgements about spatial, aesthetic and contextual, technical and social qualities of a BIM enabled design within the scope and scale of a wider environment.**

**Critically evaluate and apply advanced parametric computer modelling, customisation and interface programming to the analysis and solution of design and integration problems.**
Practical/subject specific skills
On successful completion of the programme you will be able to:

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<td>Research Methods, Application and Evaluation</td>
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<td>Independent Scholarship (Technology)</td>
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![Checkmark] - Available, ![X] - Not available.
**Transferable skills**
On successful completion of the programme you will be able to:

| Module Title | Define objectives pertinent to the chosen research problem, critically evaluate and apply established techniques of research and enquiry in pursuing those research objectives. | Work autonomously in a self-directed manner, thereby developing the practices of reflection and lifelong learning. | Demonstrate strong understanding of the problem solving skills, professional judgment, and ability to take initiative in complex and unpredictable circumstances. | Critically evaluate overall strategy and present the outcomes from work in a professional way, including reflecting on further improvement in personal development and skills required to work within contemporary interdisciplinary environments. | Systematically apply professional and research skills to remain at the forefront of practice in the field. |

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