OXFORD BROOKES UNIVERSITY

ACADEMIC POLICY & QUALITY OFFICE

PROGRAMME SPECIFICATION

for the award of

MSc Building Information Modelling and Management

Managed by the Faculty of Technology, Design and Environment

delivered by School of the Built Environment

Date approved:	Date approval confirmed, on recommendation of University validation panel or other authorised body.
Applies to students commencing study in:	September 2018

RECORD OF UPDATES

Date amended*	Nature of amendment**	Reason for amendment**
July 2016	**Transferred to new template**	**CMA Compliance**

Updated May 2016

SECTION 1: GENERAL INFORMATION

Awarding body:	Oxford Brookes University
Teaching institution and location:	Oxford Brookes University, Headington Campus
Language of study:	English
Final award:	MSc
Programme title:	Building Information Modelling and Management
Interim exit awards and award titles available:	Post Graduate Certificate in Construction Studies (PG Cert) Post Graduate Certificate in Building Information Modelling and Management (PG Cert) Postgraduate Diploma in Building Information Modelling and Management (PG Dip) *These are exit awards only.*
Brookes course code:	MSC-BIM/BE61
UCAS code:	P052341
JACS code:	N213
HECoS code:	100584
Mode of delivery:	Full-time (face to face/on-campus) Distance learning (part-time)
Mode/s and duration of study:	Full-time (1 year) or Distance Learning (2 years)
QAA subject benchmark statement/s which apply to the programme:	There are no relevant postgraduate subject benchmark statements, but the following have been used as a reference point: Masters' Degree in Business and Management 2007 http://www.qaa.ac.uk/Publications/InformationAndGuidance/Documents/BusinessManagementMasters.pdf
Professional accreditation attached to the programme:	Royal Institution of Chartered Surveyors http://www.rics.org/ Chartered Institute of Building (TBC) http://www.ciob.org.uk/
University Regulations:	The programme conforms to the University Regulations for the year of entry as published/archived at: http://www.brookes.ac.uk/regulations/

SECTION 2: WHY STUDY THIS PROGRAMME?

The Building Information Modelling and Management (BIMM) programme builds on a firm foundation of our existing masters' provision in project management by embracing the emerging field of Building Information Modelling (BIM). This is a relatively new area which is attracting a lot of interest from industry as the UK Government has mandated the use of BIM on all publicly funded construction projects from 2016. Construction companies that do not demonstrate BIM capability will not be allowed to tender for publicly funded projects. This has led to the emergence of new job roles in industry such as BIM Manager, BIM Co-ordinator, Project Information Manager and Task Information Manager requiring the development and acquisition of specialist knowledge and skills in BIM.

Despite the increasing interest in BIM, it is widely acknowledged that the lack of professionals with specialist knowledge in BIM is slowing the wider adoption in industry. Consequently, the UK Government BIM Task Group established by the Department for Business Innovation and Skills to promote BIM adoption in the construction industry has consulted industry and academia widely and has published a 'BIM Learning Outcomes Framework' to support education and training and which have informed the design of this programme. These learning outcomes align well with the knowledge and skills normally expected of project managers such as advising stakeholders on the benefits of BIM, project organisation and collaborative supply chain management, management and coordination of information across project teams, developing BIM execution plans, the contractual and commercial implications of using BIM, etc.

Our MSc BIMM programme is available both as a one year full-time programme, as well as the open-learning mode that is normally taken over two years (extendable up to 5 years). The department hosts three construction management masters programmes, MSc Project management in the Built Environment (PMBE), MSc Construction Project Management (CPM) and MSc Building Information Modelling and Management (BIMM). As with its sister programmes, the course consists of four core modules plus research methods and a final dissertation. As each of these core modules is entirely self-contained students may enter the program in either September or January.

Each of the core modules is designed around 6 'learning packages' delivered through a Problem-Based Learning (PBL) approach. The PBL approach enables students to develop a whole range of management skills and knowledge. It is achieved through guided working on real-life or reality based problems as experienced within the construction sector and its associated industries, consultants and clients. Moreover, using the PBL approach, students are also exposed to behavioural aspects of managing projects, which most construction project managers only experience when their careers are well-advanced. Not only is PBL an extremely effective way of teaching, it is also more interesting and engaging than the traditional 'study and examination' approach to learning.

A further innovative (aspect) of the programme is the inclusion of four intensive study periods wherein full time and open-learning students come together on campus to attend lectures, seminars and workshops and to share experiences. This allows both cohorts to network and build lasting synergies to serve them throughout their careers.

Through collaboration with governing bodies, advisors from industry, and use of specialist guest lecturers, the academic content of the course is continuously reviewed to maintain its relevance to industry. Moreover, through delivering the core modules as a series of learning packages, the course also positions itself to meet current continual professional development (CPD) needs of professional institutions such as the Chartered Institute of Building (CIOB) and The Royal Institute of Chartered Surveyors (RICS). The design of the course has been informed by the competency frameworks of these professional bodies as well as the emerging BIM Learning Outcome Framework being developed by the BIM Task Group.

BIM processes must be actively managed for effective integration into the management of the wider construction project processes and deliverables. Thus the (BIMM) programme is designed as a sister

programme to our two existing project management Masters degrees: Project Management in the Built Environment (PMBE) and Construction Project Management (CPM). As such it shares with them two core modules, “People Leadership and Organisation” and “Project Planning, Control and Risk” that are key to the project management discipline. The specialist BIM element of the programme is provided by the two modules “Advanced Construction Technology and BIM” (which provides for the technical aspects of BIM implementation), and “BIM in Practice” (which provides for the managerial aspects of BIM implementation). These two modules provide the project manager the specialist knowledge required to play a pivotal role in establishing an enabling, collaborative and co-ordinated working project environment in which BIM is effectively utilised to deliver projects successfully.

Thus, project management as a discipline is well placed to play a central role in the implementation of BIM on projects. Thus through its problem based teaching approach, flexible delivery structure and specialist modules, the MSc BIMM has been designed to develop a new generation of construction project managers with advanced knowledge and skills to meet this need.

The programme is specifically designed to meet the needs of both cognate and non-cognate students wishing to pursue a career in construction. Through an intense programme of study of subject-specific knowledge, the course provides the student with the knowledge and professional skills that have been identified by both RICS and CIOB as essential for the construction project manager taking a lead role in BIM adoption and development.

Please refer to the following link to view the staff profiles within the School of the Built Environment:
http://rec.brookes.ac.uk/staff/index.html

SECTION 3: PROGRAMME LEARNING OUTCOMES

On successful completion of the programme, graduates will demonstrate the following Brookes Attributes:

3.1 Academic literacy

A1 Demonstrate in-depth subject-specific knowledge in the main disciplines of project scheduling, negotiation, advanced construction technologies (including BIM and green construction), financial management, risk and opportunity management, process management and collaborative approaches to procurement, communication and virtual collaboration technologies, and strategic management of people and projects.

A2 Analyse the frameworks within which construction management decisions are made under a range of different social, economic, environmental and political systems within UK and international contexts.

3.2 Research literacy

R1 Identify and critically appraise appropriate methods and techniques for analysing and solving project problems

R2 Develop and evaluate proposals and strategies at a near professional level. (It is recognised that students graduating with this masters will undertake further training to obtain chartered institute (RICS and/or CIOB) status and thus be producing work at a professional level)

R3 Define, seek out and synthesise data to support decision-making

R4 Design and undertake a major piece of independent research relating to construction project management

R5 Undertake critical analysis of research and other literature relating to a research question.

R6 In relation to a major research project, communicate the purpose, context, research undertaken, results and applicability of the research

3.3 Critical self-awareness and personal literacy

C1 Provide leadership in a professional and international context

C2 Develop personal responsibility and professional effectiveness in complex situations

C3 Deliver a professional standard of both written and oral presentation skills, both individually and as part of a team

3.4 Digital and information literacy

D1 Apply information and management theory to construction project management issues in a real or realistic context.

D2 Utilise a range of information systems including BIM, and critically appraise their value to an organisation's activities and assets.

D3 Develop communication and technical skills using presentational and word-processing software to a professional practice standard.

3.5 Active citizenship

G1 Flexibly and creatively apply understanding of the complex and dynamic forces at work within development of the built environment within the UK and international contexts.

G2 Combine knowledge from different construction industry and business disciplines in order to solve multi-faceted problems of an international nature.

SECTION 4: CURRICULUM CONTENT & STRUCTURE

4.1 Programme structure and requirements:

Code	Module Title	Credits	Level	Status	Coursework: Exam ratio
PMAN7001/ P33504	*People, Leadership and Organisation.*	*30*	7	*Compulsory*	100% coursework
PMAN7002/ P33505	*Project Planning, Control and Risk*	*30*	7	*Compulsory*	100% coursework
PMAN7006/ P33509	*Advanced Construction Technology and BIM*	*30*	7	*Compulsory*	100% coursework
PMAN7007/ P335(10)	*BIM in Practice*	*30*	7	*Compulsory*	100% coursework
PMAN7009/ P33523	*Applied Research Methods*	*10*	7	*Compulsory*	100% coursework
PMAN7010/ P33599	*Dissertation*	*50*	7	*Compulsory*	100% coursework

All modules are compulsory. Students may enter the course at either the start of Semester 1 or 2. PMAN7010/P33599 is normally taken in semester 3 for students starting in Semester 1. For students starting the course in semester 2, PMAN7010/P33599 will normally be taken in semester 2 of the following year.

4.2 Progression and award requirements

The Postgraduate Certificates and the Postgraduate Diploma are exit awards only, and do not carry professional accreditation status. The credit requirements for exit awards are as follows:

- *Post Graduate Certificate in Construction Studies*: A total of 60 M level credits excluding modules PMAN7009/P33525 Applied Research Methods and PMAN7010/P33599 Dissertation

- *Post Graduate Certificate in Building Information Modelling and Management:* Successful completion of core modules PMAN7001/P33504 People Leadership and Organisations and PMAN7007/P33510 BIM in Practice

- *Postgraduate Diploma in Building Information Modelling and Management*: A total of 120 M level credits excluding modules PMAN7009/P33525 Applied Research Methods and PMAN7007/P33599 Dissertation

4.3 Professional requirements

The MSc BIMM programme is accredited by two professional bodies:

The Royal Institution of Chartered Surveyors (RICS)
Assessment of Professional Competence (APC) – the RICS competences are mapped against programme modules in the Programme Handbook.

The Chartered Institute of Building
CIOB Education Framework – the CIOB learning outcomes are mapped against programme modules in the Programme Handbook.

All modules are compulsory and are required to be passed to achieve professional accreditation with the RICS and the CIOB.

SECTION 5: TEACHING AND ASSESSMENT

Information about the learning experience is provided in the course entry. Include information here about:

- typical contact/independent study mix across the programme – how student time is divided between different teaching and learning methods;
- how the assessment strategy is informed by the Brookes Assessment Compact, and how it has been designed to enable students to achieve the programme learning outcomes;
- an indication of the typical mix of coursework/examinations students will experience across the programme.

The programme's teaching, learning and assessment methods are shaped by the use of PBL. PBL is a well-recognised approach to learning in which students tackle problems wherein the problems precede the learning. This method has been shown to develop life-long learning skills, transferable skills and subject knowledge which students can readily apply in practice.

The programme is also designed to facilitate student learning through developing five core Postgraduate Attributes:

Academic literacy is developed by encouraging a critical approach to the subject matter and achieved through the study of construction project planning, technology management and project assessment. In addition, the programme also has substantial professional and practical elements which enable students to begin to think and behave as a member of a professional community.

Research literacy is formally introduced within a specific module in the first semester for full time students and at the start of their second year for the open learners. However, through the use of PBL approach to learning wherein research skills are applied to solve problems, research literacy is continually developed throughout all the course's modules. This culminates with the dissertation at the end of the programme wherein students design and execute their own research project.

Critical self-awareness and personal literacy is taught through a range of game-play exercises on conflict theory and resolution which explore management and human behaviours. An important element of the programme is the use of self-reflection in learning. Here the use of the PBL teaching methods, and the emphasis on self or group directed learning, requires students to develop a reflective approach to their learning. Reflection helps develop self-knowledge and skills as self-directed learners. To further help facilitate a critical self-awareness in learning, use of online journals is made which encourage reflective practice.

Digital information literacy is primarily addressed though the delivery mode of the course being heavily reliant on the use of the VLE mechanism for both full time and open learners. The VLE is a powerful pedagogical tool and is the central tenant of the course delivery structure. The VLE is used to support students in a several ways. It is used to host discussion groups which can be supported and monitored by Module Leaders. It is also used to provide additional teaching and learning material and interactive 'quizzes' or tests which provide regular assessment, rapid feedback and motivation to students. The VLE is also used to provide forms of feedback on work, such as audio feedback and grading forms. The online journal facility is used in modules where students are asked to present drafts of their work prior to submission; the Applied Research and the Dissertation modules make extensive use of this journal facility. In addition to the way course delivery is structured, digital information literacy is also developed in a subject specific context through teaching the collaborative information technologies especially in respect to BIM.

Recent developments in social media also engender strong digital literacy. One aspect of the course of is the integration between the full time and open learning students. Teaching, learning and assessment is delivered simultaneously to both cohorts, and as students are encouraged to engage with social media such as 'facebook' and 'linked-in' to work collaboratively both on and off campus.

Active citizenship is developed both formally through course content, and informally through the unique opportunity of the juxtaposition of the full time and open learning modes of delivery. Several of the modules use multi-faceted international problems for their PBL. Here students are encouraged to collaboratively work with each other through the VLE and social media. As with many of our open learning students are based abroad, this affords students the opportunity to experience first-hand the differing cultural approaches to problem solving.

The assessment strategy aims for rigour, variety and support of learning. There are no examinations, only coursework to help promote a deep learning approach. Much of the coursework is formative, such as regular online 'quizzes' for students to make sure they have acquired the necessary knowledge and group reports of learning and recommendations related to PBL. However, in some modules a largely summative approach is adopted, in the form of an extensive paper or report, although a formative element is normally included as well. Peer-reviews are also used to promote learning from each other and reflective learning.

By having a coursework-only approach, the programme recognises that students and teaching staff have a joint responsibility for assessment and need to engage in a dialogue about all assessment practice, including feedback. This is central to the University's Assessment Compact.

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For the full time students formal contact will normally constitute 8 hrs per week during semester. This will consist of lectures, workshops seminars and tutorials according to the learning needs of respective modules. Formal contact for open learning students takes place within the four study periods wherein they share much of their learning with the full time students. These study periods include a series of workshops and other activities which develop problem-solving skills and gets full and open learning students to know each other and begin to form cohesive and supportive groups. The workshops cover group formation and appropriate behaviour skills in groups. The course also includes a range of field-trips which are valuable for both broadening student experiences and learning, but also for developing social bonding amongst members.

Though not compulsory, the open-learning students are advised to have at least six months experience in the industry prior to starting the course. Open-learning students are encouraged to integrate their learning with their work-place environment and in the virtual classroom to enhance their knowledge and skills as professionals. Thereupon, through collaboration between the open learning students and the full time students the knowledge and skills that the open learners can bring to the course as professionals can be disseminated to the full time students.

SECTION 6: ADMISSION TO THE PROGRAMME

6.1 Entry requirements

Prior qualifications necessary for entry to the programme, including English language requirements.

Applicants will normally be expected to have:

1. A first class or upper second class honours degree in a construction related discipline Applicants who do not possess an honours degree or equivalent may be considered subject to a proven record of a minimum of 6 months industrial experience and a formal interview. Please see the university's general entry requirements http://www.brookes.ac.uk/studying-at-brookes/how-to-apply/entry-requirements/postgraduate-courses/

2. If you do not have English as a first language, you will require IELTS 6.5 or other appropriate evidence of English language skills, both oral and written, that meets the University and Programme requirements

(see: http://www.brookes.ac.uk/international/applying-to-arriving/how-to-apply/english-language-requirements/)

SECTION 7: PREPARATION FOR EMPLOYMENT

Meeting industry's requests for MSc courses to involve more practical and interdisciplinary skills, this programme is designed to provide graduates with the attributes employers seek. As such, the programme is accredited by both RICS and CIOB thus providing graduates with access to the widest range of professions the built environment offers. Graduates can, for example, go on to employment with one of the major project management consultancy firms, which allows them to complete their Assessment of Professional Competence (APC) within about two years and achieved their RICS chartered status.

Our graduate employability profile includes local and national government, SME and large multinational companies. Our current graduates are employed throughout the globe including India, Pakistan, South Africa, Canada, Australia, Peru, Middle East and China.

As with our MSc PMBE and MSc CPM programmes, the MSc (BIMM) programme has strong links with the construction industry, both locally and nationally. The teaching team provides a strong professional emphasis to the module contents underpinned by a rigorous academic approach. They are supported by external industry speakers, such as Sir Richard Ogden, Chairman of Build-off-Site; field trips organised with major firms and management support from industry employers,

The School of the Built Environment has a strong relationship with the University's Careers Centre. Together they organise a major built environment Careers Fair each autumn, where students can approach a wide range of construction, real estate and other related companies for work experience and specific careers advice. Students are encouraged to use the facilities offered by the Careers Centre, including CV workshops, and practice interviews and assessment-centre activities.

The students undertaking the open-learning mode of study are normally employed and many are sponsored by their companies. By combining the full-time and open- learning-modes of study during the intensive study weeks, our full-time students are afforded the opportunity to develop global networks of contacts within industry. In addition, current students and alumni can interact through the active Linked In Alumni/Student Group.

Being accredited with both the RICS and CIOB and with strong links to other organisations such as Constructing Excellence, Association for Project Management and the Project Management Institute, students have the opportunity to attend the many continual professional development events, lectures, seminars and workshops these organisations host. These events provide excellent opportunities for our students both to gain professional knowledge and to network with potential employers.