

MSc Information Management for Design Construction and Operation (full-time)
For students entering in 2017/8

Awarding Institution:	University of Reading
Teaching Institution:	University of Reading
Relevant QAA subject Benchmarking group(s):	
Programme length:	12 months
Date of specification:	17/Aug/2017
Programme Director:	Dr Richard Davies
Board of Studies:	SCME Board of Studies for Postgraduate
Programmes	

Summary of programme aims

The construction sector is moving to an increasingly digital mode of operating; the programme aims to enable construction professionals to apply, deliver, benefit from, and shape these changes and to equip them to manage the construction organisations of the future. More specifically, the aims of the programme are to enable students to develop specialist expertise and skills in building information modelling (BIM) and in the use and implementation of information management systems, tools and processes in architecture, engineering, construction and operations. Students will also be introduced to core management knowledge, and relevant theoretical foundations and analytical skills.

Students will be given up-to-date knowledge of BIM (information management systems and processes for integrated project delivery and asset management) and will apply that knowledge in group exercises simulating the development and management of built environment and infrastructure assets. Students will also work collaboratively to apply major theoretical approaches to case studies of real world sociotechnical change in the sector.

Within these contexts, students will develop knowledge of a range of issues including: national and international standards; collaborative and virtual working; visualization, virtual reality and the application of emerging technologies; theories and frameworks for understanding and managing technology, innovation and change; implementation and use of IT in construction; mapping and optimising construction processes and information.

Transferable skills

The University's Strategy for Teaching and Learning has identified several generic transferable skills which all students are expected to have developed by the end of their degree programme. In following this programme, students will have had the opportunity to enhance their skills relating to career management, communication, information handling, numeracy, problem-solving, team working, use of information technology and hands-on skills in computer simulations.

The programme will develop the following transferable skills:

- The ability to think analytically, to develop frameworks for considering and resolving complex problems, and to discriminate between strong and weak arguments.
- The ability to research and assess academic literature and to apply theoretical frameworks and research findings.
- The development and implementation of information technologies, including BIM.
- The use of industry-standard collaboration and communication tools.
- Skills in virtual working.

Programme content

The programme offers seven core modules and three optional modules to be taken from the list below. Flexibility in the choice of optional modules enables candidates to tailor the programme to their own learning requirements.

Core modules:

<i>Code</i>	<i>Title</i>	<i>Credits</i>	<i>Level</i>
CEM100	Dissertation and Research Skills	60	7
CEM110	Collaboration, practice and innovation	40	7
CEM208	Information Systems in Construction	10	7
CEM225	Building Information Modelling	10	7

CEM242	Advanced Visualisation and Interactive Technologies	10	7
CEM243	New Technology, Management and Change	10	7
CEM244	Analysing Construction Processes	10	7

Optional modules - Any three from this list:

CEM201	An Introduction to Project Management	10	7
CEM203	Financial and Management Accounting in Construction	10	7
CEM204	International Construction	10	7
CEM205	Human Resource Management	10	7
CEM206	Construction Contract Law	10	7
CEM209	Managing Construction	10	7
CEM214	Construction Sector Transition Pathways in Emerging Economies	10	7
CEM228	Construction Economics	10	7
CEM230	Design Management	10	7
CEM232	Sustainable Urban Systems	10	7
CEM235	Engineering Project Management	10	7
CEM238	Construction Cost Engineering	10	7
CEM302	Strategic Management	10	7
CEM303	Sustainable Design, Construction and Operation	10	7
CEM334	Innovative Developments in Construction	10	7
CEM335	Real Estate Development: Appraisal and Analysis	10	7

Part-time or modular arrangements

This programme may be taken on a part-time basis, normally over 24 months, up to a maximum of 63 months, with a choice of September or January start. January starts involve spreading the period of study over three academic years, with a view to graduating in December of the third year.

All 10-credit modules will be provided in one-week attendance periods at the University.

Any 10-credit module provided by the School can be taken as a short course on an ad-hoc basis.

Progression requirements

There are no intermediate progression requirements in this programme.

Summary of Teaching and Assessment

The general assessment pattern for each module is by coursework. Detailed assessment regimes are specified in the relevant module descriptions.

The overall mark for the programme will be the aggregate mark of modules, weighted by credit value and classified as below. For further details see 'How to calculate an award' at <http://www.reading.ac.uk/exams/>

The programme uses the University's classification scheme:

Passing categories:

70-100% Work of distinction standard

60-69% Work of merit standard

50-59% Work of good standard

Failing categories:

40-49% Work below threshold standard (BTS)

0-40% Unsatisfactory Work

Further information on the classification conventions, including borderline criteria, are available at

<http://www.reading.ac.uk/internal/exams/Policies/exa-class.aspx>

Masters award

To obtain the Masters award a student must take 180 credits consisting of the six compulsory core modules and four optional modules. To pass the MSc students must gain an average mark of 50 or more over 180 credits including a mark of 50 or more for the dissertation. In addition, the total credit value of all modules marked below 40 must not exceed 30 credits and the total credit value of all modules marked below 50 must not exceed 55 credits.

Students who gain an average mark of 70 or more overall or an average mark of 68 or more and a mark of 70 or more in 90 credits, including a mark of 60 or more for the dissertation, and have no marks below 40 will be eligible for a Distinction. Those gaining an average mark of 60 or more overall or an average mark of 58 or

more and a mark of 60 or more in 90 credits, including a mark of 50 or more for the dissertation, and have no mark below 40 will be awarded a Merit.

Diploma Award:

To obtain the Postgraduate Diploma a student must take 120 credits including at least three compulsory core modules (not including 'CEM100 Dissertation and Research Skills' or 'CEM105 Emerging Economies Integrating Studies'). To pass the Diploma students must gain an average mark of 50 or more over the 120 credits. In addition, the total credit value of all modules marked below 40 must not exceed 30 credits and the total credit value of all modules marked below 50 must not exceed 55 credits.

Students who gain an average mark of 70 or more over 120 credits or an average mark of 68 or more over 120 credits and a mark of 70 or more in 60 credits and have no mark below 40 will be awarded a Distinction. Those gaining an average mark of 60 or more over 120 credits, or an average mark of 58 or more and a mark of 60 or more in 60 credits and have no mark below 40 will be awarded a Merit.

Certificate Award

To obtain the Postgraduate Certificate a student must take 60 credits consisting of three compulsory core modules (not including 'CEM100 Dissertation and Research Skills' or 'CEM105 Emerging Economies Integrating Studies'). To pass the Certificate, students must gain an average mark of 50 or more over the 60 credits. In addition, the total credit value of all modules marked below 40 must not exceed 10 credits.

Note: A module cannot be credited for more than one award.

Admission requirements

Applicants are normally required to have a good undergraduate honours degree, preferably with some relevant industrial experience. Candidates with a lesser degree and relevant professional qualifications (e.g. RIBA, ARICS, MICE, MCIOB, MCIBSE) may also be considered.

Admissions Tutor: Dr Richard Davies

Support for students and their learning

University support for students and their learning falls into two categories. Learning support is provided by a wide array of services across the University, including: the University Library, In-sessional English Support Programme, the Study Advice and Mathematics Support teams and IT Services. There are language laboratory facilities both for those students studying on a language degree and for those taking modules offered by the Institution-wide Language Programme. Student guidance and welfare support is provided by Personal Tutors, School Senior Tutors, the Students' Union, the Medical Practice and the Support Centres. If a student has a general enquiry and is unsure where to seek help, they should visit their Support Centre. There are five Support Centres across the University, including one based at the London Road Campus. The Support Centre will be able to advise on matters such as extenuating circumstances, module selection, suspensions, withdrawals, timetable queries and transferring programme. The Support Centre will also be able to signpost students to Carrington building where other University services related to disability, financial support, counselling and wellbeing, accommodation and careers can be found. More information on what student services are available can be found here: <http://student.reading.ac.uk/essentials>.

All students in the School are provided with guidance and support for their learning in a variety of ways. Interaction takes place with the Programme Director, Lecturing Staff and Dissertation Supervisors who provide guidance throughout the period of study. Dissertation Supervisors will guide students through the dissertation by organising regular structured meetings. A minimum of 12 supervision meetings would be expected during the programme at times that are mutually convenient. Furthermore all students will be able to meet the Programme Director and lecturing staff at mutually convenient times throughout the year. The School's administrative, support and technical staff help to support and personalise students' experience with the School. In addition to the above, students will have access to the SCME Resource Room and receive a detailed programme handbook and other relevant information packages. The Programme Director will also organise an annual induction event where all students will be welcomed by their lecturing staff in a friendly and informal setting.

All modules are supported by learning materials on a dedicated website. Students are given access to the material via the Blackboard platform, which can be accessed on or off campus.

Career prospects

Graduates will be ideally placed to be employed in many emerging roles in: construction information management; BIM and CAD management; design management; document management etc. In an increasingly

digital construction sector, graduates will also follow careers in a wide range of traditional construction-related vocations: architectural and engineering design, project management, construction management, general business management, and in the public sector or client organisations. Graduates are also expected to work for firms delivering technology or process consultancy to the construction sector or for the information systems function within construction organisations.

Opportunities for study abroad or for placements

There are no formal arrangements for study abroad or placements.

Programme Outcomes

Knowledge and Understanding

A. Knowledge and understanding of:

1. The use of Building Information Modelling (BIM) in professional work and leading research in implementation and use of BIM.
2. Digital practices in open shareable asset information to manage assets and deliver projects.
3. Digital tools, advanced visualisation technologies and innovative design concepts in architecture, engineering and construction.
4. Information technology and systems in architecture, engineering and construction.
5. Major theoretical approaches to technology-related organisational change and their use in explaining and planning sociotechnical change.
6. Management, planning and/or analysis of e.g. projects, firms, procurement, design, construction, operation, economics and/or sustainability - to provide students with an understanding of core concepts in construction management tailored to their individual requirements and aspirations.

Teaching/learning methods and strategies

The core one-week modules provide the concepts in a variety of disciplines that form the multi-disciplinary study. Optional modules allow students to tailor their learning experience to their needs. Application of the principles is undertaken in the integrating studies module. Teaching methods include formal lectures, guest lecturers from invited industry speakers, tutorial discussions, individual and group presentations, group exercises, case studies, guided reading and guidance on key sources of reference material. Feedback and guidance are important elements in formative assessment and complement an emphasis on self-study. Learning is supported by Blackboard VLE.

Assessment

Details of assessment are provided in the module descriptions. Modules are individually assessed through assignments and coursework, with some group work. The assessment in the integrating studies module is designed to focus on the application of knowledge from individual modules. Independent research skills and the ability to produce a major report are assessed in the dissertation.

Teaching and learning is offered through case-supported lectures and tutorials, web-based material, guest speakers from international firms, visits to national and international institutions, and guided reading

Skills and other attributes

B. Intellectual skills - *able to*:

1. Solve complex problems with a multi-disciplinary approach
2. Use quantitative, qualitative and systemic tools for decision-making and analysis
3. Communication and presentation skills
4. Analytical skills including appropriate levels of abstraction
5. Creative and lateral thinking
6. Use IT skills to plan, schedule, and manage

Teaching/learning methods and strategies

Students are challenged in class to make clear arguments, form views and defend them. Written assignments, discussions and group work provide vehicles for developing intellectual skills. Dissertation research under supervision provides opportunities for critical thinking and developing the ability to construct arguments from different disciplinary perspectives.

complex tasks

7. Interpret codes and standards for complex, multi-firm processes
8. Understand and apply multiple perspectives to academic and applied issues and cases

Assessment

Intellectual skills are assessed by means of assignments and exercises:

1. Individual and teamwork problem-solving exercises and assignments
2. Case-based assignments including reports and presentations.
3. Class tests and intensive teamwork exercises, presentations and reports.
4. Case-based teamwork assignments.
5. Dissertation work.

Intellectual skills are gained through all modes of teaching/learning as part of every module and are assessed through individual and teamwork assignments, reports, presentations, class tests and a dissertation.

C. Practical skills - *able to:*

1. Evaluate current theoretical and empirical research in the field of study.
2. Evaluate alternative technical and organisational solutions and strategies.
3. Evaluate the behaviour, culture and strategy of construction firms and their clients.
4. Effectively apply key professional skills learned in classes and from prior experience to the business world.
5. Understand and cope with the complexities of collaborative working and virtual organizing and communication.

Teaching/learning methods and strategies

The teaching is structured around research and theoretical conceptualisations from researchers and practitioners with extensive experience of the construction sector, enabling students to develop and apply practical skills.

Assessment

Case studies in the integrating studies module. Assessed group work. Case-based assignments including reports and presentations, both individually and in teams.

All practical skills will be developed through case-based group assignments and finally demonstrated and improved through a dissertation. In addition to that students will learn practical skills through directed reading and lectures.

D. Transferable skills - *able to:*

Students are expected to acquire an ability to think analytically, to develop frameworks for considering and resolving complex problems, and to discriminate between good and bad arguments. They will be able to research a variety of sources in libraries and on the internet, and, in particular, to research and assess academic literature. Particular elements of the programme expose students to the use of information technology and encourage the development of general professional capabilities including recognition of deadlines, time management, communication skills and collaborative working.

Teaching/learning methods and strategies

Students are required to undertake and understand a wide range of reading; specified references and their own sources. Discussions in lectures and seminars emphasise the use of critical thinking and empirical evidence, and the demonstration of reflective skills and examples from the students' personal experiences, especially from the construction sector and projects.

Assessment

Self-assessed Blackboard tests, written assignments, case studies, presentations and dissertation.

Transferable skills are attained through all modules in the way of exercises, problem-solving assignments, presentations, lectures, and through the Blackboard VLE.

Please note - This specification provides a concise summary of the main features of the programme and the learning outcomes that a typical student might reasonably be expected to achieve and demonstrate if

he/she takes full advantage of the learning opportunities that are provided. More detailed information on the learning outcomes, content and teaching, learning and assessment methods of each module can be found in the module description and in the programme handbook. The University reserves the right to modify this specification in unforeseen circumstances, or where the process of academic development and feedback from students, quality assurance process or external sources, such as professional bodies, requires a change to be made. In such circumstances, a revised specification will be issued.