

MSc in Intelligent Buildings
For students entering Part 1 in 2011/2

Awarding Institution:	University of Reading
Teaching Institution:	University of Reading
Relevant QAA subject Benchmarking group(s):	
Faculty:	Science Faculty
Programme length:	5 years
Date of specification:	24/Aug/2011
Programme Director:	Dr Abbas Elmualim
Programme Advisor:	
Board of Studies:	Construction Management and Engineering
Framework Board	
Accreditation:	

Summary of programme aims

One generally accepted definition of an intelligent building is as follows:

'An intelligent building is a dynamic and responsive architecture that provides every occupant with productive, cost effective and environmentally approved conditions through a continuous interaction among its four basic elements: places (fabrics; structure; facilities): process (automation; control; systems): people (services; users) and management (design; construction; performance) and the inter-relationship between them.'

It can be concluded that an intelligent building creates an environment that allows organisations to achieve their business objectives and maximise the effectiveness of its occupants, while allowing efficient management of resources with a minimum lifetime cost. The modules for the course reflect this idea.

The principal aim of the course is to provide advanced knowledge and understanding about intelligent buildings and hence educate those who will commission, design and operate such buildings. It will include building owners and developers, architects, scientists, engineers and facilities managers, who already work in the construction and property industry, or those who are considering entering the construction industry and who have had other industrial experience. The course also aims to:

- Import a holistic interdisciplinary approach to design and management process;
- Describe the latest technologies and also how changing social outlooks are affecting building design;
- Engender a sustainable approach to building design and management.

This Masters degree aims to develop in students a capacity for the strategic design and management of buildings. Students, on completion of the programme, should be capable of demonstrating a much broader view on the implications of management decisions extending well beyond building issues, and the possibilities for improving the performance of organisations through improved environmental effectiveness.

The purpose of the learning experience is to familiarise students with the full range of issues encountered in hybrid disciplines relevant to intelligent buildings and provide them with the necessary skills to deal with these issues. Part of this learning experience will be based on case studies that serve to reinforce concepts introduced during the programme.

In setting the principal objectives for the course, it is intended that students will:

- Be able to use a holistic interdisciplinary approach in their work;
- Recognise that intelligent buildings are responsive to human needs - consume minimum energy, conserve water, employ the principles of waste management and are non-polluting;
- Be able to manage the rapid rates of change which impinge on the activities of their companies.

Students who attend the course will have the opportunity to study the nature of intelligent buildings with respect to design, construction and the operation processes from which they are derived. The construction industry is very fragmented at all levels. This programme offers the opportunity for professionals to study and work together irrespective of their discipline.

Transferable skills

Programme content

Compulsory modules:

Students must take all of:

CEMIB1	Concept, Strategy and Management	20	7
CEMIB2	Building Systems, Architecture and People	20	7
CEMIB3	Information Technology and Communication Systems	20	7
CEMIB4	Engineering Intelligence into Buildings	20	7
CEMIB5	Financial Analysis and Investment Appraisal	20	7
CEMIBD	Dissertation	50	7

Optional modules:

Students must take three of :

CEMIB6	Facilities Management	10	7
CEMIB7	Design Management and Briefing	10	7
CEMIB8	Principles of Project Management	10	7
CEMIB9	Sustainable Design, Construction and Operation	10	7
SEMIO51	Applied Informatics	10	7
SEMIO52	Research Methods	10	7
SEMIO53	IT Project Management and Planning	10	7

Part-time or modular arrangements

Modules will be taught in three to five day attendance periods at the University, pre-course reading and post attendance assignments and examination for some modules supported by students' private study.

Progression requirements

There will be no formal interim progression stages.

Students must achieve an overall mark of at least 50% in each of the modules taken and the Dissertation. Where a module is assessed by two pieces of coursework, a minimum of 40% must be achieved in each assignment with an aggregate of at least 50% being achieved in the assessment of the Module overall.

A student will commence the dissertation module at the beginning of the second year when four modules will have been successfully completed. Failure to complete the Masters award may allow the award of a Certificate or Diploma on the basis stipulated below.

Assessment and classification

The full detail of teaching and assessment in each module is given in the module descriptions.

Teaching

The general approach is to deliver lectures, seminars, workshops and site-visits during study at the University, usually one-week module duration per module suited to the part-time mode of studying. This attendance period is supported with guided study through private study and web-based learning.

Assessment

Assessment in most modules consists of coursework assignments. All compulsory, core modules are assessed by two pieces of coursework and most elective modules are assessed by one piece of coursework. Elective modules Principles of Project Management and Design Management and Briefing will be assessed by a closed book examination. Detailed assessment regulations are given in the module descriptions.

The overall grade for the programme will be the aggregate of modules passed weighted by credit value and classified as below.

The programme will use the University's classification scheme:

Mark Interpretation

70 - 100% Distinction

60 - 69% Merit

50 - 59% Good standard (Pass)

Failing categories:

40 - 49% Work below threshold standard

0 - 39% Unsatisfactory Work

For Masters Degrees

To obtain Master's award a student must take 180 credits consisting of the six compulsory modules, and three optional modules.

To pass the MSc students must gain an average mark of 50 or more overall including a mark of 50 or more for the dissertation and have no mark below 40 in compulsory modules. In addition the total credit value of all modules marked below 40 must not exceed 30 credits and for all modules marked below 50 must not exceed 55 credits.

Students who gain an average mark of 70 or more overall including a mark of 60 or more for the dissertation and have no mark below 40 will be eligible for a Distinction. Those gaining an average mark of 60 or more including a mark of 50 or more for the dissertation and have no mark below 40 will be awarded eligible for a Merit.

For PG Diplomas

To obtain the Postgraduate Diploma award students must take 120 credits, including three compulsory modules. To pass the Postgraduate Diploma, students must gain an average mark of 50 or more and have no mark below 40 in compulsory modules. In addition the total credit value of all modules marked below 40 must not exceed 30 credits and for all modules marked below 50 must not exceed 55 credits.

Students who gain an average mark of 70 or more over 60 credits and have no mark below 40 will be eligible for the award of a Distinction. Those gaining an average mark of 60 or more and have no mark below 40 will be awarded eligible for a Merit.

For Postgraduate Certificate

To obtain the Postgraduate Certificate award students must take 60 credits consisting of at least three compulsory modules. To pass the Postgraduate Certificate students must gain an average mark of 50 or more. In addition to total credit value of all modules marked below 40 must not exceed 10 credits. Modules may also be studied individually as part of a personal Continuing Professional Development programme.

Admission requirements

Entrants to this programme and to study for a Module as part of the Continuous Personal Development (CPD) are normally required to have obtained first degree in a relevant area. Applicants who do not hold formal qualifications to degree level, but who are able to demonstrate considerable experience in a relevant field may still be accepted.

For applicants whose native language is not English, proof of competency is required. Our normal requirements are:

British Council International English Language Test Score (IELTS) 6.5 overall with no less than 6 in any component

Test of English as a Foreign Language (TOEFL) (paper-based version) 590

Test of English as a Foreign Language (TOEFL) (internet-based) 88

If applicants' English language ability is below the minimum requirement, they may be asked to attend an English language programme at the International Study and Language Centre (ISLC) before beginning their degree studies.

Admissions Tutor:

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, the Student Employment, Experience and Careers Centre (SEEC), In-sessional English Support Programme, the Study Advice and Mathematics Support Centre teams, IT Services and the Student Access to Independent Learning (S@il) computer-based teaching and learning facilities. 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 advisers in the Student Services Centre. The Student Services Centre is housed in the Carrington Building and offers advice on accommodation, careers, disability, finance, and wellbeing. Students can get key information and guidance from the team of Helpdesk Advisers, or make an appointment with a specialist adviser; Student Services also offer drop-in sessions and runs workshops and seminars on a range of topics. For more information see www.reading.ac.uk/student

Career prospects

The specific aim is to develop ideas and new ways of thinking about smart and intelligent buildings. These arise from the students being exposed to theory, research and methods of critical evaluation, bringing their work-based skills to bear in applying the lessons to their career environment. This will equip students who successfully complete the programme to:

- operate with increased authority within the area of core expertise
- manage others in a team environment
- obtain promotion within or outside their organisation of employment

Opportunities for study abroad or for placements

At present there are no requirements for a period abroad. This is a reflection of the part-time nature of study, although there have been a number of students from other countries who have studied on Masters Programme within the Framework of Modules, to which this Programme belongs, full-time. Opportunities will arise in the future.

Programme Outcomes

Knowledge and Understanding

A. Knowledge and understanding of:

The following issues as related to intelligent buildings:

1. Strategic planning, briefing and management at design, construction and operational phases;
2. The interaction of people with their environment;
3. Innovative information and communication technologies;
4. Whole life value;
5. Facilities management;
6. Sustainability;
7. Evaluation of the latest technical innovations applicable to intelligent buildings;
8. The economic, social as well as technical issues which underpin effective decision making in the design, construction and facilities management processes.

Teaching/learning methods and strategies

Include:

Lecture presentation of theory reinforced by case study scenario via visits and workshops; Presentations are made by professionals from industry and academia.

Assessment

Testing of the knowledge base is in the form of assignments and examinations.

Skills and other attributes

B. Intellectual skills - able to:

1. Analyse the strategic implications of change as it affects the design of intelligent buildings;
2. Formulate the whole life approach to decision making;
3. Generate holistic solutions via impact analysis and synthesis
4. Critically assess the balance between the high and the low energy;

Teaching/learning methods and strategies

Strategic thinking is communicated through discussion groups, illustrating the difference between efficiency and effectiveness of alternative solutions.

The students come from architecture, engineering and management backgrounds this ensures a rich interdisciplinary environment.

5. Synthesise multiple sources of information in order to client requirements;
6. Defend decision such as product selection on the basis of whole life value.

Assessment

Assignments and dissertation will enable the students demonstrate these skills.

C. Practical skills - able to:

1. Liaise on a strategic level with organisations;
2. Undertake sustainability programmes;
3. Produce workplace design;
4. Use whole life cost models;
5. Write briefs describing occupants needs;
6. Evaluate management and business needs for an organisation;
7. Organise large-scale organisational change.

Teaching/learning methods and strategies

Students will be encouraged to 'follow through' all of the concepts introduced in the modules by application to their own organisation. Students will be encouraged to lead discussions on particular areas.

Assessment

Assignments and dissertation will enable the students demonstrate these skills

D. Transferable skills - able to:

1. Work under a time constraint with a team to prepare solutions to a problem;
2. Make effective and convincing presentations to clients concerning buildings solutions;
3. Assess the relevance and importance of other people's contributions to a group project;
4. Be able to undertake an interdisciplinary group project.

Teaching/learning methods and strategies

These will include workshops and seminar presentations.

Assessment

The quality of communication, both verbal and written is fundamental parts of the assessment criteria. They will be assessed both informally (providing the students with ongoing feedback of progress) and formally via assignment and dissertation.

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.