## University of Cambridge: Programme Specifications

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## MASTER OF STUDIES IN INTERDISCIPLINARY DESIGN FOR THE BUILT ENVIRONMENT

| 1 | Awarding body | University of Cambridge |
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| 2 | Teaching institution | Department of Architecture |
| 3 | Accreditation details | Royal Incorporation of Chartered Surveyors; Joint Board of Moderators (Institution of Civil Engineers, Institution of Structural Engineers, Chartered Institution of Highways and Transportation); Royal Institute of British Architects Advanced CPD. |
| 4 | Name of final award | Master of Studies |
| 5 | Programme title | Interdisciplinary Design for the Built Environment |
| 6 | JACS code(s) | K100 |
| 7 | Relevant QAA benchmark statement(s) | QAA 264 08/08 Qualification Descriptor |
| 8 | Qualifications framework level | 7 (Masters) |
| 9 | Date specification produced/ last revised | January 2007, October 2011 |
| 10 | Date specification last reviewed | May 2013 |

The core course is organized and administered by a Course Director employed by the Department of Engineering. University Teaching Officers from the Departments of Architecture, Engineering and elsewhere in the University, together with a wide range of distinguished and leading industry thinkers, provide lectures and supervision during seven intensive residential weeks held over a two year period. Between the weeks, students prepare individual written assignments including a 15,000 word thesis in the second year.

The course is based at and run from the Department of Architecture, 1-5 Scroope Terrace, Cambridge CB2 1PX, while lectures and studio teaching take place generally at the Department of Engineering as well as at Wolfson College, and in other university departments from time to time.

### Educational Aims of the Programme

The course was inaugurated as a response to issues raised at a conference – the Madingley Seminar – hosted by the Ove Arup Foundation and held in Cambridge in September 1991. Here senior figures in design and construction considered initiatives that would benefit the education of built environment professionals and promote higher standards in design and construction. Seen to be pre-eminent was the need to encourage and support the integration of skills between specialists from different background disciplines – civil engineering, structural engineering, building services engineering, architecture, and so on – and the course was devised to meet this clearly articulated need.

Subsequently, joint industry/government reports – notably Sir Michael Latham's *Constructing the Team* and Sir John Egan's *Rethinking Construction* – also argued for the strengthening of collaboration between disciplines, and with clients and the supply side of the industry. A number of government-supported best practice industry initiatives followed, demonstrating coincidence of purpose between the course, the industry and government, and providing a range of case studies and guidance about improved business processes which the course helped to promote and disseminate.

With the increasing importance to the built environment of the 'sustainability agenda', course content has evolved to address this, with environmental sustainability in particular given prominence, but without neglecting social and economic sustainability. Educational aims relating to this topic include raising awareness of the risks and implications associated with climate change and of the environmental impact associated with the production and operation of the built environment, and teaching strategies and approaches that help to mitigate this impact.

The sustainability agenda and the promotion of collaborative working practices are entirely consistent with one another, since sustainable buildings need integrated teams.

The course is supported by an Advisory Panel comprising leading representatives from the design professions, clients and related disciplines who contribute to the planning of the course and its content. Through this and other links to practice, the course maintains its industrial relevance.

**Programme Outcomes**

Design for the built environment is essentially collaborative and demands effective communication between disciplines, all of which have their own specialist terminology and knowledge. It also requires responsiveness to the social, economic and environmental context. A key aim of the course is to help students from different disciplines to work effectively together harnessing their knowledge in the design of a well integrated product.

Students joining the IDBE course typically enter the programme with a professional qualification in a built environment discipline (Engineering, Architecture, Surveying, Construction Management, and so on) and with a minimum of three years experience in practice. They are therefore deemed to have achieved a level of proficiency in their chosen specialism.

Outcomes for the IDBE programme are geared towards providing the students with a broader strategic understanding of the context of design and of current challenges and opportunities facing the production of the built environment. There is an emphasis on leadership and team-working skills to support productive interactions between specialist members of design teams, between these teams and those who procure facilities, and between the functions of design and construction. Equally, the course emphasizes strategies and design tools that minimise the need for applied energy and embodied carbon in the built environment, that conserve fresh water, that protect biodiversity, and that exploit renewable energy technologies.

Ultimately, the outcomes are geared towards improving the built environment to ensure it contributes to the quality of peoples' lives including their physical health, mental well-being and productivity, as well as to a low carbon future.

**Knowledge and Understanding**

1       Knowledge of assumptions, methods, design criteria and motivations of built environment stakeholders beyond each student's home discipline.
2       Knowledge of design opportunities and challenges emerging within the wider built environment discourse.
3       Understanding of the positive and negative impacts of students' personal attitudes, values and behaviours within a team setting
4       Understanding of team roles and team behaviour
5       Knowledge of the structure of the construction industry
6       Knowledge of recent research in the field of the built environment
7       Awareness of climate change and of a broad range of mitigation strategies in the built environment

Learning and Teaching Methods

Acquisition of these educational outcomes is promoted through a combination of lectures, seminars, workshops and collaborative design studio exercises. The residential weeks of the course support a distinctive collaborative learning style in which young professionals who attend IDBE learn from one another as well as from the course delivery team.

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**Skills and other Attributes**

Intellectual skills

- A systematic understanding of the status of knowledge and the way in which techniques of enquiry and research are used to create and produce new knowledge in the discipline.
- A critical awareness of current issues and new insights emerging at the forefront of the discipline and which inform advanced professional practice.
- The ability to pursue a reasoned argument, including the critical evaluation of assumptions, abstract concepts and evidence in the making of judgments, together with the ability to frame appropriate questions to achieve a solution – or identify a range of solutions – to a problem.
- A reflective attitude towards practice and learning, including awareness of the differing (and sometimes conflicting) motivations and values of professional colleagues from other disciplines, and the criteria and expectations of users and other stakeholders including society at large.
- A positive approach towards continuing professional development including an independent and self-directed learning ability to advance knowledge and understanding.
- An understanding of professional ethics including personal and professional responsibilities to individuals and to wider society as a whole.

Practical skills

- An understanding of techniques and methods applicable to the discipline, including the theoretical and practical limitations on their use in professional practice.
- Demonstration of originality and inventiveness in the application of knowledge and the solving of problems.

- Effective planning and implementation of design project work at a professional level, including decision-making in complex and unpredictable situations.
- An ability to deal with complex issues systematically and creatively, make sound judgements in the absence of complete data, and communicate conclusions clearly to specialist and non-specialist audiences.

Transferable skills

- Knowledge of available information sources and their effective use and implementation.
- Development of academic rigour in identifying and analysing evidence and presenting it in written argument.
- Intellectual curiosity and an ability to pursue it systematically.
- Negotiation skills, including effective communication and collaboration and a constructive attitude to identifying and resolving conflict if and when it arises.
- Informal presentation skills (communication within design team)
- Formal presentation skills (communicating with the media)
- Problem solving in a context of multiple criteria
- Team membership and leadership skills.
- Knowledge of research methods and the criteria of significance, rigour and originality
- The conduct of a research project, including the carrying out of a literature search, the identification of research objectives, the framing of research questions, the gathering and analysis of data, the drawing of conclusions, and an appreciation of the significance of the resulting findings including their limitations.

Learning and Teaching Methods

Intellectual, practical and transferable skills are not delivered separately but rather are developed jointly from the mix of lectures, seminars, workshops and design project work undertaken through the course, including active participation in problem solving (design projects), in discussion (seminars), through experiential learning (workshops), and through the preparation of written work with support from specialist supervisors. For example, students experience working in a team, receive lectures about the management and leadership of effective teams, participate in a role-playing game to develop negotiation skills, and may choose to prepare a written assignment on teamwork or leadership. Students present their project work and case study to the cohort of students and external reviewers. Skills in researching and writing are developed through the progression of individual written assignments, each supported by a supervisor who is a subject specialist.

**Assessment**

The degree is awarded on the basis of the case study, two essays and thesis that every student writes and which form the main assessed part of the students' work. The collaborative studio design work is also graded but this assessment forms a relatively minor element in the overall assessment of the student's output.

The case study (5,000 words) is the opportunity for the student to reflect on and to describe a recent project on which he or she has worked in practice. Students are expected to account for the successes and difficulties encountered, provide commentary on the effectiveness of the team and offer conclusions of relevance to other practitioners.

Subject areas for the two essays (3,000 words) are agreed between each student and his or her individual Director of Studies. There are no prescribed titles which the student must adhere to and students are encouraged to venture beyond the boundaries of their home disciplines. Students are assessed on the thoroughness of their research into the subject, the depth and relevance of their insights and the quality of exposition of their ideas.

As in the case of the essays, students are permitted a high degree of freedom in selecting the subject matter for their theses (15,000 words). It must be within the field of the built environment, but the definition is deliberately broad. As in the case of essays, students are expected to generate a high standard of academic writing but with a greater emphasis on making an original contribution to the field.

During the first year, students complete their essays and case studies, and in the second, the thesis. Students who do not show sufficient progress in the first year are advised to leave the course.

Full and active participation in the studio projects is compulsory, although the assessment of their contributions is only a relatively minor element of the overall assessment. The projects are intended to be an opportunity for students to experiment with new ideas in a supportive and collaborative, rather than a competitive and adversarial, environment.

The course also makes use of workshops which along with the programme of lectures and seminars do not form part of the examination scheme; however their value is monitored through the self reporting of the students. This feedback is sought through pro-forma questionnaires which the students are expected to complete on a regular basis.

**Programme Structures and Features**

The IDBE programme is a two-year part-time Masters Degree course with the students attending seven intensive residential study sessions. The seven residential weeks are compulsory and there are no modular choices. The part-time format permits students to continue with their professional career while studying. They prepare their written work between residential sessions. The seven sessions each last one week. Individually the residential weeks have very clear themes which are the subject of lectures, workshops, and a studio design project.

Across the seven weeks, students on the course are introduced to a wide range of issues relating to the design and production of the built environment, including the construction industry, professional responsibilities, effective teamwork, as well as the social, economic and in particular the environmental context within which they work.

The weeks' themes are as follows:

- Interdisciplinary understanding: Whose project is it anyway? The development of the separate professions and sibling rivalry. The rise of new specialisms. Integrated project working. Multi-disciplinary teams and professional services.

- The client, the user and the design team: Who is the user? Who is the client? Eliciting user needs and requirements, flexibility and adaptability, strategic briefing, the value agenda, professional ethics.

- Interdisciplinary teamwork: What is a team? How can the collective energy of its members be harnessed? Team dynamics, leadership, communication and collaboration, trust and professional ethics, developing a shared vision, dealing with conflicting criteria.

- <u>Sustainable construction:</u> The social, economic and environmental context of practice, sustainable materials, sustainable construction, sustainable communities, sustainable development, resource efficiency, renewable energy, climate change, biodiversity, waste management, ecological footprinting, environmental assessment.

- <u>Infrastructure and landscape:</u> Engineering and the natural environment, aesthetics of infrastructure, strategies of impact avoidance and mitigation.

- <u>The structure of the industry:</u> The funding of capital projects, procurement methods, economics and risk, the relationship between design and construction, new forms of contract, integration of the supply team, industrialisation and prefabrication.

- <u>Urban design and sustainable communities:</u> Land use for greenfield and brownfield sites, density, open space, public and private transport, local and regional policies, urban quality and planning, place-making.

Each theme is supported by a multidisciplinary design exercise or a group task requiring a joint report. Design projects and tasks end with a presentation of results by each group to external assessors, the course delivery team, and to the rest of the student cohort.

Students work on their individual written assignments between the residential weeks.

## Award of the Postgraduate Diploma

The Postgraduate Diploma may be awarded to IDBE students under the following circumstances.

1. The student successfully undertakes the first year of the IDBE course; that is by attending four residential weeks in Cambridge including completing and passing the studio design work, together with obtaining a pass for the first three written assignments (the 5,000-word case study, and two 3,000-word essays), or
2. The student undertakes and completes the two year masters course but fails the thesis.

In either of the above two cases, the award of the PG Diploma is recommended by the Joint Academic and Degree Sub Committee, and by the Degree Committee of the Faculty of Architecture and the History of Art.

Where a student fails one of the first year assignments they may, at the discretion of the JADSC, be required to resubmit a revised version which will be re-marked. Only one re-submission is allowed. Where two of the three assignments fail to achieve the pass mark, the student will not be eligible for the PG Diploma.

The PG Diploma is an exit point from the IDBE course and students receiving it do not then continue to the Masters qualification.

## Further Details

A course brochure is available from the IDBE Course Administrator: email: info@idbe.org
The IDBE website contains extensive information about the course and its delivery, including the structure of the course, details of the residential weeks and their themes, and examples of student work.