

IESD

Institute of Energy and Sustainable Development

Climate change, and the impact it will have on our lives, is one of the greatest problems facing mankind. The UK is at the forefront of global efforts to reduce the emission of greenhouse gases, and strategies for adapting to the global warming that will inevitably occur are being developed. The Institute of Energy and Sustainable Development (IESD) plays an important role in this by working to reduce energy consumption in buildings; to develop and apply renewable energy systems; to understand the social, economic and technical implications of climate change; and to educate current and future generations of the need to develop more sustainably.

The IESD's research work is conducted by a team of professors, readers, lecturers and research fellows – supported by higher degree students – who are internationally respected for the quality of their work. Their disciplines range from mathematics and physics, through engineering, to economics, sociology and psychology. This diverse range of skills enables staff to lead multi-disciplinary, multi-university projects and address inter-linked environmental, economic and social problems.

Their expertise enables IESD staff to:

- Provide strategic advice to central government departments and to regional and local policy makers and planners
- Act as environmental design consultants to architects and engineers working on architecturally significant and award-winning buildings both in the UK and overseas
- Offer advice to numerous small businesses and local authorities who are seeking to adopt more sustainable business practices.

The IESD provides a high quality environment for doctoral study and its Master's programmes cater for a wide range of graduates and professionals wishing to increase their knowledge of environmental issues in an interdisciplinary context or to work more effectively as building design professionals.

Institute of Energy and Sustainable Development

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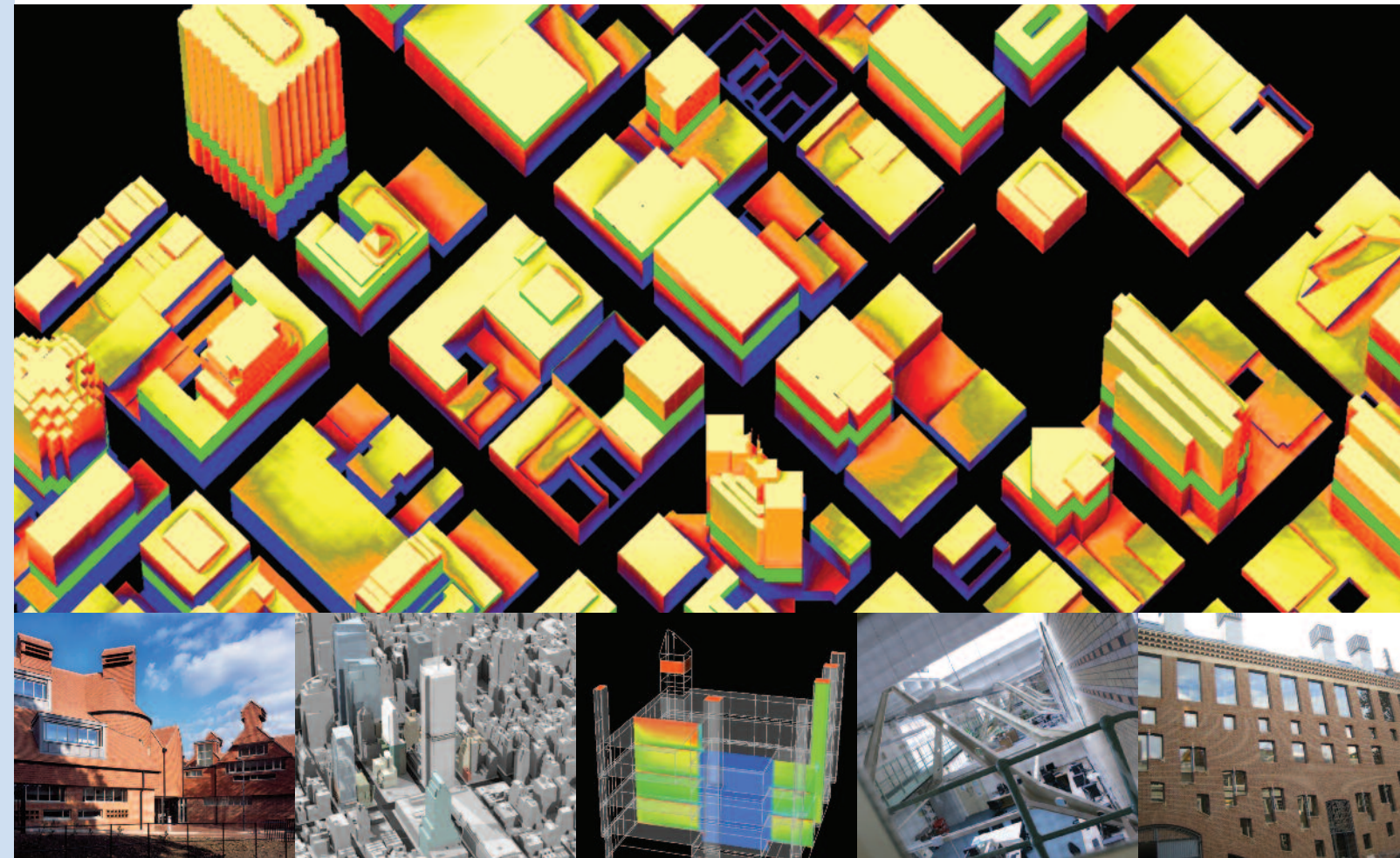
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Institute of
Energy and Sustainable Development



MSc in Energy and Sustainable Building Design

- A modular course for graduates and professionals
- Modern approaches to sustainable building design
- Computer modelling and design of sustainable buildings
- Internationally recognised research expertise
- Full-time, part-time and electronic distance learning
- International enrolment

Course Leader

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Location

The Institute of Energy and Sustainable Development occupies the award-winning Queens Building, a groundbreaking low-energy, naturally ventilated building on De Montfort University's City Campus. The campus is situated close to Leicester city centre in the historic area of Castle Park. It is a compact campus with a wide range of facilities for students: library, bookshop, sports facilities and Students' Union, plus a full range of student services such as welfare and accommodation.

Programme

The need for sustainable approaches to building design is universally acknowledged. As the effects of climate change are felt, the drive towards more energy efficient buildings is intensifying. Sustainable buildings need not be technologically complex but, instead, a high level of sophistication in design procedures and performance analysis is required.

This innovative MSc aims to produce graduates with an understanding of the ways in which new and renewable energy can be harnessed in buildings, an ability to undertake the simulation and modelling tasks which are essential for credible building performance analysis, and an ability to work creatively within a multi-disciplinary design team. These skills are increasingly in demand in architecture and engineering consultancies, building

analysis and design consultancies, utilities and regulatory organisations, local and national government, and academia.

The programme has a multi-disciplinary approach to give students a broad insight into energy and sustainability issues. It provides an in-depth study of the modelling techniques that are used in the design of modern sustainable buildings.

Teaching

Teaching strategies place considerable emphasis on student-centred learning and include lectures, seminar work, practical workshops, design exercises, private study and site visits. Documented case studies and examples of best practice, often presented by distinguished visiting speakers, are used to stimulate class discussions and give an appreciation of the practical application of design skills and analysis techniques. In addition, lectures given by the Institute's most experienced staff present a more instructive perspective on topics, and provide a solid basis for self-study.

Group learning, in the form of computer simulation workshops, is intended to deepen understanding and develop skills in computer analysis. There is a strong emphasis on the group design project, which gives you experience in the practical application of the taught methods and develops skills in team-working and communication.

Full-time students attend lectures for two days per week, with the remainder of the time being spent on seminar work and private study. Part-time students attend for one day per week. Distance learners receive individual support from a member of teaching staff plus all required materials in electronic format. Extensive use is made of on-line support and communication.

Assessment

Methods of assessment include project work, essays, case studies, demonstrations and module assignments. The group design project is assessed by both group and individual project reports.

Monitoring of your progress is continuous and thorough, with regular informal communication between students and teaching staff. Distance learning students can complete the taught modules without visiting the University.

Entry requirements

The normal minimum entry requirement for the course is a good degree (second class and above) in a relevant numerate subject, for example, engineering, physical sciences, mathematics. Architects with an interest in computer modelling are also encouraged to apply. Applicants from outside the UK must possess an equivalent qualification from an overseas institution.

Students are selected by applications and references initially and then by interview if necessary. The programme is taught in English. Overseas applicants for whom English is not a first language will normally require an IELTS score of 6.5 or a TOEFL score of 600/250.

Applicants who do not possess the normal entry requirements but can demonstrate substantial work experience in an appropriate area, can be considered for entry to the course.

Programme structure

There are eight taught modules and a design project, leading to the following awards:

- MSc – eight modules and a design project
- Postgraduate Diploma – eight modules or four modules and a design project
- Postgraduate Certificate – four modules.

Individual modules can be pursued as part of a continuing professional development programme, resulting in an award of institutional credits.

Modules studied

Energy in Buildings presents a broad overview of energy use in domestic and non-domestic buildings and how it relates to building construction, including low energy sustainable approaches to design. Building energy-flows, thermal comfort and daylighting practices are discussed. The role of regulation and assessment of environmental impact is investigated.

Climate and Daylight Analysis imparts understanding of how climate influences building design and operation. Principles of solar control and daylighting are introduced and skills in the application of simulation methods to predict daylight quantities developed.

Ventilation and Airflow Modelling provides a comprehensive understanding of the principles of building airflow and strategies for effective natural and hybrid ventilation. A wide range of airflow modelling techniques, from very simple analytical techniques to sophisticated computer simulations are used in building design studies.

Energy and Thermal Performance brings insight into building energy simulation methods and how they can be used to analyse building thermal performance and carbon emissions. The module focuses on how building form, fabric, solar control and airflow inter-relate with energy consumption and thermal comfort. Skills in the application of energy simulation methods in the design process are developed.

Sustainable Development explains the conceptual, historical and political context and encourages you to develop a critical appreciation of the sustainable development debate and to challenge widely held views.

Renewable Energy considers the potential for renewable energies within the urban and rural environment, including integration into the design and refurbishment of settlements.

Research Methods equips you with the skills necessary to successfully complete a research project of a high standard and also imparts a critical appreciation of the purpose of research and how to assess its quality.



Energy Analysis Techniques considers analysis of the energy performance of buildings and industry, including monitoring and target-setting in multi-site organisations, energy audit and survey techniques.

Design project

You will work in teams to develop a building design, working from a realistic architectural proposal and design brief, seeking to produce a scheme that will satisfy specific environmental design criteria. The project gives opportunities to develop modelling skills and make practical application of computer analysis techniques in a design team context. Communication skills are developed as project outcomes are conveyed through presentations, group and individual written reports.

Duration

One year full-time

Two years part-time

Three years distance learning

For further information please visit our website iesd.dmu.ac.uk

The course has been approved by both the Chartered Institute of Building Services Engineers (CIBSE) and the Energy Institute for completing the educational requirements for Chartered Engineer registration.

