University College Dublin
College of Science

Why UCD?

- One of the world's top 100 universities
- Ireland's largest and most international university
- Emphasis on Research and Innovation
- Safe, modern campus in Dublin, capital city of Ireland
- Extensive accommodation options with 24 hour security
- 1 hr flight from London

MSc in Sustainable Energy & Green Technologies

Why is this course for me?

The Government White Paper Delivering a Sustainable Energy Future for Ireland- The Energy Policy Framework 2007-2020 details policy on the future development of Ireland's energy system. It addresses the three key policies of sustainability, energy security and competiveness. An overriding disquiet is the challenges of addressing the environmental impacts of energy use, i.e,.reducing energy related greenhouse gas emissions in all sectors of the economy. The proportion of fossil fuels in Ireland's overall energy system is still among the highest in the world. Ireland's commitments within the EU mean that a 20% reduction in greenhouse gas emissions must be achieved by 2020, primarily by changes in energy provision and use of energy.

The Msc in Sustainable Energy and Green Technologies programme will tap directly into this exciting and in demand area, by providing advanced education at the highest level, supported by the Science Foundation Ireland (SFI) funded Charles Parson's Energy Research Group in the UCD Bioresources Research Centre (BRC). The Msc programme is founded on a range of fundamental changes within Ireland and the EU, including, among others: the requirement for a knowledge based national economy, driven by highly skilled researchers, where innovation drives industrial growth and underpinned by world-class science.

UCD College of Science

The College is dedicated to the creation, delivery and communication of new knowledge and innovation across the spectrum in the area of Science. With a staff of 753 and a student population of 5454 including 1760 postgraduate students, the College is a vibrant community dedicated to excellence in all our pursuits. Our research informed teaching programmes offer excellent opportunities that equip graduates for the exciting range of employment opportunities provided by the national and

For full programme details see
http://www.ucd.ie/agfoodvet/graduateprogrammes/graduatetaughtprogrammes/
To seek further information Please contact **karen.holland@ucd.ie**

international markets of the 21st Century. In addition to the seven Schools in the College, there are a number of associated Institutes including the Conway Institute of Biomolecular & Biomedical Research, the Institute of Food & Health where students and staff have access to major technology platforms essential to the conduct of world-class cutting-edge research.

What will I study?

The MSc in Sustainable Energy and Green Technologies is a one-year (three academic semesters- 12 calendar months) taught programme. The programme comprises 90 ECTs credits including 60 credits of taught modules (40 credits from "core" modules and 20 credits from "option" modules). The remaining 30 credits are allocated to an Msc research project and thesis.

The programme consists of a common first semester covering Science and Technology modules that include analytical assignments, laboratory and group work, and a foundation module on Research Methods. In the first semester, students will be required to identify and develop the scope for their major research project, which will be further developed and completed in the third and final semester.

The second semester focuses on energy projects and market analyses interfacing with innovation and technology transfer concepts. A major individual Research project is completed in third semester.
Core Science and Technology modules include: Energy Systems & Sustainable Environment; Life Cycle Assessment & Energy Efficiency Analysis; Waste to Energy Processes & Technologies; Renewable Energy Projects Evaluation & Market Analysis; Innovation & Technology Transfer and; Research Skills & Techniques.

The Energy Systems analysis section deals with sustainable energy supply chains and utilisation and Energy Systems Integration Life Cycle Assessment (LCA) of Renewable Energy Systems. There is also an Environmental planning module dealing with the issue of GIS planning for energy projects and planning case studies.

During the last semester of this programme, students will be required to complete their Msc Thesis. Co-requisite for embarking on their Research Project include, successful completion of the Research Skills & Techniques (5 credits), and participation in the Renewable Energy Systems Seminar and Study Tours which culminate in a series of term papers related to specific taught modules.

A primary requirement in the Msc Research Project is that the final thesis should be of near publishable quality for peer-reviewed journals in the relevant

Sustainable Energy and Green Technology project domain.

On successful completion of the programme students will be able to:

1. Use their acquired knowledge to perform detailed feasibility studies, scientific analyses, and conduct research on sustainable energy systems and green technology from exploration, deployment and technical aspects of utilisation, to environmental, social and economic impact analysis.
2. Use their knowledge to support local industry and community organisations in the development and utilisation of renewable energy technologies, as well as supporting increased use of sustainable energy principles on a national basis (including development and/or enhancement of policies and standards).
3. Apply innovative solutions to problems in sustainable energy deployment, including demonstration of understanding of the process of identifying, capturing, developing and commercialising opportunities arising from their research.

Career Opportunities

Graduates of this programme will have competences and skill sets for employment in companies and organisations geared to planning, deploying and utilisation of a wide range of green technologies systems including environmental impact mitigation. Typical job opportunities will be in waste-to-energy facilities, biogas plants, ethanol production facilities, district-heating operations, renewable energy research laboratories, facilities utilising wind energy (including wind farms), solar energy, biomass to energy conversion, as well as leading energy utility companies that are utilising the different types of renewable energy resources.

The Innovation and Technology Transfer & Planning & Environmental Law modules provide graduates with unique insights into entrepreneurial and planning processes; from identification of innovative ideas through to the launch of a successful business drawing from active environmental planning and laws. They cover management process required to transform an innovative idea into a commercial opportunity or business proposition in the Green technologies sector.

There are also many opportunities for further study including focused Continuing Professional Development (CPD) areas. The skills you acquire, particularly through the completion of the Minor Thesis provides a strong foundation for PhD research.

Prospective Employers

Prospective employers would include all of the major industry and research organisations in the area of sustainable and renewable energy systems.

Entry Qualifications

An honours degree (2.2 or higher) in engineering, physical science or environmental related degree. Other disciplines include strong mathematical, technological, and analytical skills. Holders of Postgraduate certificate/Diploma in the relevant areas, but with sufficient industrial/work experience will also be considered.