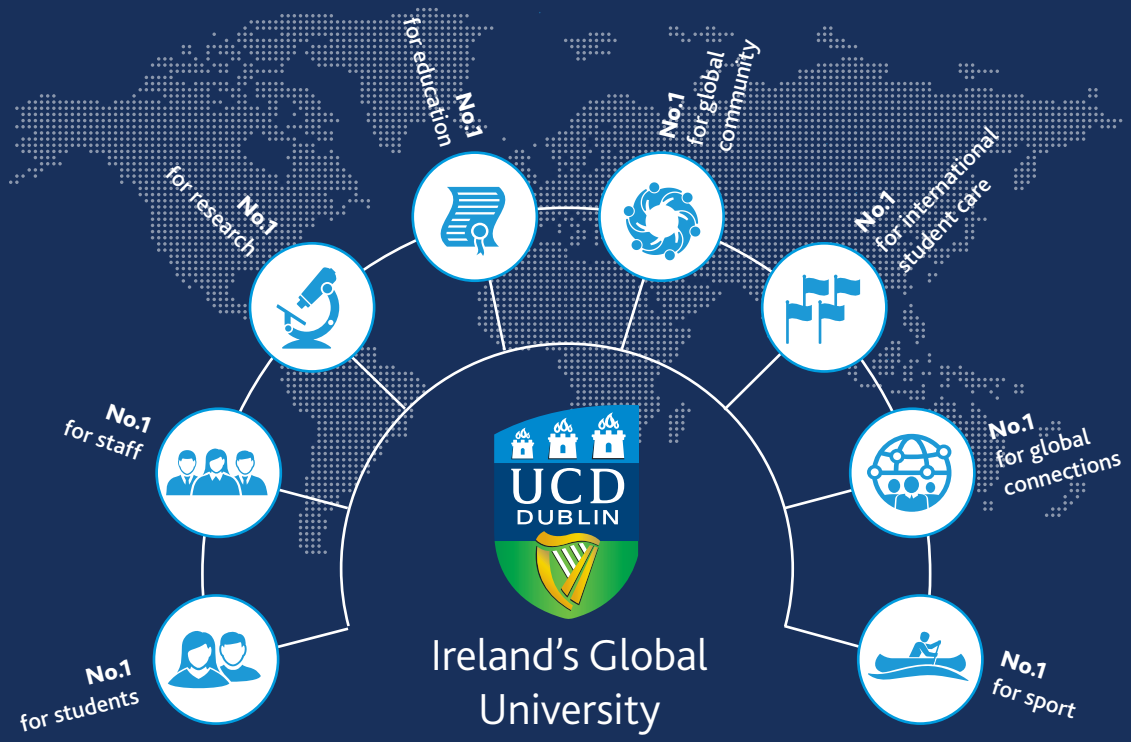
UCD ENGINEERING

GRADUATE TAUGHT COURSES ENTRY 2024



WELCOME TO UCD IRELAND'S GLOBAL UNIVERSITY

University College Dublin has a fantastic reputation, justified by its position as number one in Ireland across so many university facets.

As an internationally recognised and research-intensive university, UCD attracts talented students from around the world.

There are currently over 12,800 students enrolled in graduate study at UCD.

UCD is Ireland's leader in graduate education with 25% of all postgraduate students in Ireland studying at UCD.

UCD is Ireland's most popular university for international students with more than 9,500 international students from over 152 countries.

UCD has a dedicated international student centre. The UCD Global Lounge is a relaxed space for international and Irish students to meet and hang out during their time at UCD.

CONTENTS

One Year Full Time Programmes

Two Year Full Time Programmes

Part Time Programmes

WELCOME TO UCD ENGINEERING

Whether you are continuing your engineering and technical education directly following a bachelor's degree, or have developed your experience as a professional engineer and now wish to complement that with additional qualifications, I am confident that you will find a relevant graduate degree programme within UCD Engineering.

Offering you opportunities to follow your interests across the agri-food, business, communications, energy, healthcare, materials, pharmaceuticals, physical infrastructure, transport or water sectors, there are options within UCD Engineering that will advance your knowledge and stimulate your passion for your chosen field.

With international leaders across the engineering disciplines, the programmes will provide you with core knowledge in the subject, an expectation of attaining excellence and the development of your capacity for independent and creative thinking, problem solving and leadership in your chosen speciality.

Professor Aoife Ahern
Dean of Engineering

WHY CHOOSE UCD ENGINEERING

A knowledge-based, sustainable, future is reliant on the interaction of aspects of engineering science, technology, design, planning and environment. The UCD College of Engineering and Architecture is a key player in this future. With over 320 staff and almost 2,200 students, is the largest and most comprehensive College of its kind in Ireland.

UCD is ranked among the top 1% of universities worldwide

Programmes are recognised and variously accredited by Engineers Ireland, IOM3 & IChemE

Six to eight months of professional work experience on all 2 year masters and a dedicated support unit to facilitate the placements

UCD is ranked in the top 1% of higher education institutions worldwide

UCD hosts an annual Science, Engineering and Technology recruitment fair with 100+ national and international companies on campus to hire our engineering graduates

National Teaching Award and Teaching Excellence Awards received by staff

Powerful network of in influential alumni worldwide

World class Engineering education and a dynamic learning experience

Robust research profile and strength of global significance

Strong record of innovation and good links with industry

Three of the College's academics are ranked among the top 1% of the most cited researchers in the world

PROFESSIONAL WORK EXPERIENCE (PWE) INTERNSHIPS

The ME degrees in Engineering at UCD all incorporate a Professional Work Experience (PWE) internship module, designed to integrate students' academic and career interests with practical work experience for a period of 6-8 months. The College of Engineering & Architecture has two dedicated Internship Managers, who help prepare the students for their internship in conjunction with UCD Careers Network's Career & Skills Consultants. ME students completed internships with 100 different employers in the past academic year. Among those employers are: AbbVie, AMD, Analog Devices, APC, Arup, BD, Boston Scientific, Bristol Myers Squibb, Deloitte, DePuy Synthes, EirGrid, ESB, Fingleton White, FoodMarble, Intel, Jabil Healthcare, Logitech,Mainstream Renewable Power, Medtronic, Meinhardt (London), Mercury, MSD, National Rehabilitation Hospital, OHB (Germany) PwC, RPS, Stryker, Ward and Burke Construction (Canada).

WHICH ME PROGRAMMES INCLUDE A PWE INTERNSHIP MODULE?

JANUARY-JUNE /AUGUST INTERNSHIPS

- ME Biomedical Engineering
- ME Biosystems & Food Engineering
- ME Civil, Structural & Environmental Engineering
- ME Electrical Power Engineering
- ME Electronic & Computer Engineering
- ME Energy Systems Engineering
- ME Materials Science & Engineering
- ME Mechanical Engineering

JUNE-DECEMBER INTERNSHIPS

- ME Civil Engineering with Business
- ME Electrical Engineering with Business
- ME Electronic Engineering with Business
- ME Mechanical Engineering with Business

FAQs

In which year will the internship take place?
The majority of internships take place in Stage 1 of the ME, with the exception of ME Engineering with Business, for which the internship takes place over the Stage 1 Summer Trimester and Stage 2 Autumn Trimester.

Who will make the initial contacts/links with the companies?
The Internship Managers make the initial contact with a list of approved employers sourced by UCD, though students can self-source an internship outside of those offered by UCD once it is approved by the internship Module Coordinator.

What if I don't want to participate in an internship, but want to do research to prepare for a PhD?
Students may undertake a research internship within UCD or with another institute if it's available or self-sourced (& approved by the Module Coordinator). Alternatively, there is a range of 1-year Masters programmes which do not incorporate a compulsory internship.

What if I am not successful in getting an internship?
Students who aren't successful in getting an internship have the option of doing additional taught modules along with a short summer internship/UCD-based research internship.

Michaela Begley

ME Materials Science and Engineering graduate

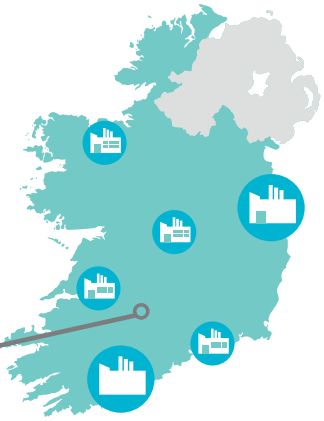
My internship was in the Materials and Surface Technology Department in DePuy Synthes, based in Ringaskiddy, Co. Cork. DePuy Synthes is a member of the Johnson & Johnson family of companies and manufactures hip and knee replacements.
I sourced this internship with the help of the Internship Managers in the College of Engineering & Architecture. The Internship Managers and the Careers Office were brilliant support during this process; offering CV workshops, tips for cover letters, and mock interviews. They made it very easy to create an impactful CV, which gave me great confidence when applying for internship roles, and afterwards for graduate programmes.
The internship was invaluable to me and my professional development. It was a great insight into what a career as an engineer is like, and exposure to how large multinational companies operate. During the internship, I got the chance to work on design projects, quality investigations, and co-ordinate with colleagues in the US and China, while improving my presentation and communication skills.
As a result of my internship I was offered a position on the Johnson & Johnson Graduate Programme when I finished my studies.

CONTACT US **Internship Managers: Eibhlín Loughman and Fionnuala McGowan**
E: eainternships@ucd.ie **T:** +353 1 716 1756 / +353 1 716 1870

Ireland's Engineering & Industrial Technologies Sector

250+

Engineering & Industrial Technology companies in **Ireland**



A wide range of **Industry sectors** are located in Ireland.

9 of the top 10
global software companies

9 of the top 10
US ICT companies

10 of the top 10
of the world's top 10 Pharma companies

8 of the top 10
Global Automation companies

9 of the top 10
of the world's top Medical Technology companies

4 of the top 5
Global Engineering Design firms

IDA Ireland 2022

Top Employers

intel · KPMG · PM GROUP · ARUP · Pfizer · AMGEN · Deloitte. · Medtronic · MSD · AECOM · Bristol Myers Squibb™

86.4%

In 2021, 86.4% of engineering masters graduates surveyed were in employment and 3.2% had gone onto further study.

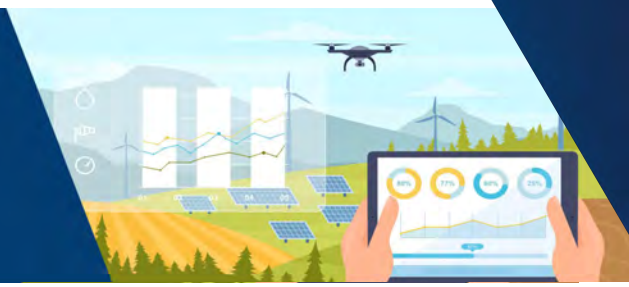
UCD Graduate Outcomes Survey, 2021

University College Dublin
Ireland's Global University

Course code: T385

MSc Digital Technology for Sustainable Agriculture

One Year Full Time (September start)



Introduction

The world's population is expected to grow to approx. 10 billion by 2050. This growth will result in increased demand for resources, raw materials and food. Furthermore, the world faces intersecting challenges like climate change, exploitation of natural capital and an aging and declining rural population. To produce a "sustainable food future," the world must increase food production while cutting GHG emissions and maintaining (or reducing) the land used in agriculture.

Digital technologies could address these value chains more efficiently, equitably, and environmentally sustainably - before, during, and after on-farm production.

The programme is aimed at students who wish to build their knowledge and skills-base to address the complexities of developing, deploying and managing digital technology in the agriculture sector. With a focus on design, numeracy, and hardware software technology, our students will be deeply engaged agricultural with production, and specifically, technology to enhance efficiency, sustainability, resilience and reliability.

Course Highlight

The programme is delivered by a highly research-intensive and multi-disciplinary school – Ireland's premier agri-food related research entity with excellent networks into the agri-food industry. The Programme Director, Dr Dimitrios Argyropoulos has won numerous prestigious research and innovation awards from the European Commission on sustainable and digitized agri-food value chains.

The programme also offers hands-on experience on a range of novel digital technology, training in state-of-the-art labs and applied research in a real life environment at the Lyons Research Farm.

Course Content and Structure

All modules are optional and will be delivered mainly face-to-face including blended (i.e., online lectures and assignments supported by occasional face-to-face tutorials), and intensive (i.e., one or two week full-time) formats. Students will be able to take themed clusters of modules (e.g. three modules of precision farming, three modules of sensing technology, three modules of computers and electronics, three modules of data science) to reflect specific technical interests or needs for upskilling.

Research Project: Students will undertake an applied, work related, research project in the summer trimester.

Modules include:

- Data Programming with Python
- Crop technology and Mechanisation
- Soil Technology
- Hyperspectral Imaging
- Remote Sensing and GIS for Decision Making
- Computers and Electronics in Agriculture
- Numerical Methods for Agriculture
- Sensors and Sensing Systems
- Optical Sensing Technology
- Precision Agriculture
- Precision Livestock Management
- IoT enabled Agrifood Production

For those who wish to take individual modules, but not the course, please contact the ADVANCE Centre - info@advancecentre.ie

Why study at UCD?

Graduate education

12,800 graduate students; 17% graduate research students; structured PhDs

Global community

9,500 international students and a 300,000 alumni network across 165 countries

Global Profile

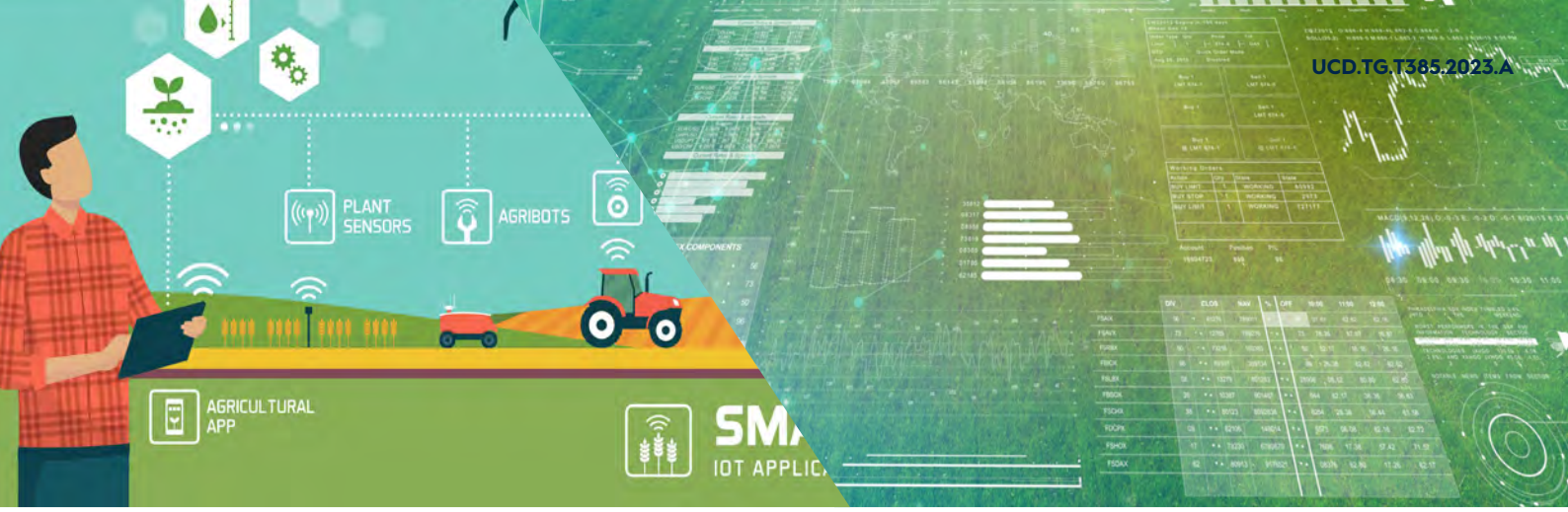
UCD is ranked in the top 1% of higher education institutions worldwide

Global careers

Dedicated careers support; 2-year stayback visa to work in Ireland

Programme offered as part of the

THE ADVANCE CENTRE
for Graduate Professional Education
www.advancecentre.ie



Career Opportunities

Graduates of the MSc Digital Agriculture may find employment opportunities in the following areas:

- Agricultural machinery (e.g. Agco, CNH Industrial, Claas, John Deere)
- Precision farming (e.g. Amazone, Lemken, Rauch, Dairymaster)
- Decision support in agriculture (e.g. Corteva Digital Ag, Syngenta Global)
- IoT, data and predictive analytics (e.g. BASF, Bosch, IBM, Microsoft)

Applicant Profile

- Applicants must hold a bachelor's degree with a minimum upper second-class honours (NFQ level 8) or international equivalent in agriculture, biological science, physical science, environmental related, engineering, computer science or other appropriate discipline. Where an applicant has no formal qualification encompassing agriculture/biology, practical knowledge of, and experience in, agriculture will be considered.

- Applicants whose first language is not English must also demonstrate English language proficiency of IELTS 6.5 (no band less than 6.0 in each element), or equivalent.

International Fees and Scholarships

Tuition fee information is available on www.ucd.ie/fees. Please note that UCD offers a number of graduate scholarships for full-time, self-funding international students, holding an offer of a place on a UCD masters programme. Please see www.ucd.ie/global/scholarships/ for further information.

Related Masters Programmes of Interest

- MSc Environmental Technology
- MSc Sustainable Energy & Green Technologies

Programme Director

Dr Dimitrios Argyropoulos

Rapid advances in computing technologies are leading to radical transformations across a multitude of industry sectors. Data analytics, machine learning, and artificial intelligence offer new solutions to challenges in sectors including agriculture. Although this degree is new within UCD, Digital Agriculture is recognised as one of the most critically important technical disciplines supporting the use of new and advanced technologies integrated into one system. The MSc programme provides students with an understanding of the tools that digitise data capture relating to the environment and activity (sensor technologies and systems), move the data (accumulation networks), store the data (databases), analyse data to gain insights (models and AI), share the resulting information along the agricultural value chain (distribution networks) and provide actors and stakeholders access to the digital chain (interfaces).

CONTACT US

Irish/EU Students – Katie O'Neill **E**: katie.oneill@ucd.ie **T**: +353 1 7161781
International Students – **E**: eamarketing@ucd.ie/internationalenquiries@ucd.ie **T**: +353 1 7168500
Joanna Kozielec, Manager, ADVANCE Centre for Professional Development, **E**: joanna.kozielec@ucd.ie

APPLY NOW

This programme receives significant interest so please apply early online at **www.ucd.ie/apply**

University College Dublin
Ireland's Global University

Course code: X565

MSc Environmental Technology

One Year Full Time (September start)

Introduction

The programme addresses the demand for graduates who have the skills to develop technological solutions for air, water and soil protection in existing and emerging sectors across industry (particularly agri-food and bioresources), consulting companies and regulatory authorities. This programme will enable its students to acquire skills in the areas of environmental engineering, risk assessment, air pollution, waste management, life cycle assessment, buildings and environment, energy systems and sustainable environment. Students will enhance their ability to work effectively as an individual, in teams and in multi-disciplinary settings, together with the capacity to undertake lifelong learning.

Course Highlight

Dr Tom Curran, the academic coordinator has received teaching and research awards from UCD, the American Society of Engineering Education (ASEE), the American Society of Agricultural and Biological Engineers (ASABE) and most recently the prestigious Fulbright Award (TechImpact).

Course Content and Structure

- 90 credit taught masters
- 60 credits taught modules
- 30 credits Thesis

Thesis: The project can be focused on one of the following: basic research; applied research, design, feasibility assessment, system analysis modeling, innovation or case study.

Modules include:

- Advanced Air Pollution
- Buildings and Environment
- Energy Systems and Sustainable Environment
- Water and Wastewater Engineering
- LCA Applications
- Life Cycle Assessment
- Quantitative Risk Assessment for Human and Animal Health
- Research and Teaching Methods
- Waste to Energy Processes & Technologies
- Thesis

Why study at UCD?

Graduate education

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Global community

9,500 international students and a 300,000 alumni network across 165 countries

Global Profile

UCD is ranked in the top 1% of higher education institutions worldwide

Global careers

Dedicated careers support; 2-year stayback visa to work in Ireland

Career Opportunities

Graduates of the MSc Environmental Technology may find employment opportunities in the following areas:

- Eco-consulting and design
- Engineering consultancy
- Environmental regulation
- Public service
- Research

Graduate Profile

Shubhangi Singh
Iarnród Éireann-Irish Rail

UCD's well designed MSc Environmental Technology curriculum covering pertinent topics such as air, water, soil, biodiversity, abatement techniques, management, and ethics offered me a well-rounded education. The programme allowed me to cultivate a skill set that enhanced my capability to serve mother nature in a professional manner. Since UCD fosters a culture of learning, innovation and discipline, my pursuit of higher education at UCD serves as an imperative steppingstone to accomplish these goals. Not only has it broadened my knowledge but it has also helped me secure a job opportunity in Irish Rail as a graduate environmental engineer and utilise my skills in my professional life.

Applicant Profile

- Applicants must hold a bachelor's degree with a minimum upper second class honours (NFQ level 8) or international equivalent in a relevant Engineering, Science or Technology programme.
- Applicants whose first language is not English must also demonstrate English language proficiency of IELTS 6.5 (no band less than 6.0 in each element), or equivalent.
- Students who do not meet the IELTS requirement may wish to consider taking the Pre-Sessional or Pre-Master's Pathway. Full details at https://www.ucd.ie/alc/programmes/pathways/

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Related Masters Programmes of Interest

- MSc Digital Agriculture
- MSc Sustainable Energy & Green Technologies

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W: www.ucd.ie/global

APPLY NOW

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University College Dublin
Ireland's Global University

Course code: X413

MSc Sustainable Energy & Green Technologies

One Year Full Time (September start)

Introduction

The MSc Sustainable Energy & Green Technologies enables you to focus on advanced education and training in the development and optimisation of renewable energy resource exploitation, the efficiency in energy generation and utilisation pathways (including energy conservation), the mitigation of environmental impacts, and preparation for business innovation and job creation opportunities in renewable energy systems technology development, plant biotechnology and entrepreneurship. The programme is underpinned by the best European practice by incorporating compatible EU policy drivers such as the Strategic Energy Technology Plan (SET Plan) for energy research, current R&D in crops (through ongoing and research initiatives under the Charles Parsons Energy Research programme), and the collaboration with internationally acknowledged experts in the subject domains from universities, research institutions and industry. This programme enables you to maintain relevance of academic and research training, and therefore enhance your employability in the area of sustainable energy.

Course Highlight

The programme Director, Professor Kevin McDonnell won the inaugural SEAI Energy Innovation award, the Environcom award for energy innovation and is a Fulbright Scholar. This programme also provides opportunities for site visits and industry internships where possible.

Course Content and Structure

- 90 credits taught masters
- 60 credits taught modules
- 30 credits dissertation

The programme is structured in three academic semesters (12 calendar months).

Research Project: During the last semester of this programme, students will be required to complete their MSc Thesis. Co-requisite for embarking on the Research Project module include, successful completion of the On-line Research Skills, and completion of a series of Term Papers related to specific taught modules.

Modules include:

- Advanced Air Pollution
- Bioeconomy Feedstocks
- Energy Systems Integration
- Energy Systems & Sustainable Environment
- Entrepreneurship & Biotech
- Life Cycle Assessment
- LCA Application
- Research and Teaching Methods
- Waste to Energy Process & Technology
- Biorefinery Processes & Technology
- Biosystems Engineering Thesis

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Global Profile

UCD is ranked in the top 1% of higher education institutions worldwide

Global careers

Dedicated careers support; 2-year stayback visa to work in Ireland

Career Opportunities

Graduates of the MSc in Sustainable Energy & Green Technologies programme will have competences and skill sets for employment in companies and organisations geared to planning, deploying and utilising a wide range of green technologies systems including environmental impact mitigation. Typical 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 and hydrogen energy, as well as leading energy utility companies, and research institutions.

Graduate Profile

Mert Satir
Siemens Wind Power

I have extended my prospects by combining my engineering background with what I learned during this programme, and more importantly, I was constantly introduced to novel concepts related to the industry. The variety of material and software offered by each module greatly enhanced my learning experience. I have benefited from academics who are experts in their fields and who also have close links with the industry; this, coupled with the entrepreneurship projects and mock interviews has taught me more than I could have learned in a classroom. As a foreign student, UCD is an excellent university from which to enjoy Dublin's vibrant social life and this beautiful country. I would highly recommend UCD to anyone who wishes to work in the industry.

Applicant Profile

- Applicants must hold a bachelor's degree with a minimum upper second class honours (NFQ Level 8) or international equivalent in an Engineering, Physical Science or Environmental related degree programme.
- Applicants whose first language is not English must also demonstrate English language proficiency of IELTS 6.5 (no band less than 6.0 in each element), or equivalent.
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Related Masters Programmes of Interest

- MSc Environmental Technology
- MSc Digital Agriculture
- ME Electrical Power Engineering
- ME Energy Systems

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University College Dublin
Ireland's Global University

Course code: X082

MEngSc Food Engineering

One Year Full Time (September start)

Introduction

The MEngSc in Food Engineering provides a comprehensive coverage of bioprocess and food manufacturing systems engineering. The programme will be of particular interest to graduates in Engineering, Science and related disciplines who are interested in food and bioprocess engineering, risk assessment, process development, process control, advanced manufacturing systems and associated environmental issues. On this programme you will develop new technical competencies in food and bioprocess engineering, learn how to develop and execute a research plan, and acquire skills in the application of leading-edge technologies to the agri-food and biotechnology industries, including novel food processing technology, food process automation, risk assessment, computer vision for food quality and food safety. Excellent job prospects are available to graduates in the food, bioprocess, manufacturing and related agencies and industries.

Course Highlight

This programme is delivered by a highly research-intensive School comprising a European Research Council Fellow and six Marie Curie Fellowships. Professors Sun and O'Donnell are in the world's top one per cent of the most cited scientists in their field. Opportunities for site visits and industry internships are provided where possible.

Course Content and Structure

- 90 credits taught masters
- 60 credits taught modules
- 30 credits dissertation

The programme is structured in three academic semesters (12 calendar months).

Thesis Project: At the beginning of the year you will be appointed a Supervisor for your thesis and will agree upon a suitable Thesis title. Throughout the year you will be expected to meet with your supervisor to discuss progress

Modules include:

- Advanced Food Process Engineering
- Bioprocess Engineering Principles
- Food Chain Integrity
- Food Refrigeration Systems
- Global Cold Chain Safety
- Life Cycle Assessment
- Quantitative Risk Assessment for Human and Animal Health
- Research and Teaching Methods
- Unit Operations in Bioprocess Engineering
- Waste to Energy Process & Technology
- Thesis

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Global careers

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UCD.TG.X082.2023.A

Career Opportunities

The manufacture of food and drink products is Ireland's most important indigenous industry with a turnover of €27.5 billion. Almost 50,000 people are directly employed in the food and drink sector with a further 60,000 employed indirectly in all regions of the country. The value of food and drink exports is €12 billion per annum. Excellent job prospects are available to graduates in the food, bioprocess, manufacturing and related agencies and industries in Ireland. Graduates have progressed to career opportunities in a broad range of internationally recognised companies including: ALcontrol Laboratories, APV, Coca Cola, Dairygold, Glanbia, Guinness, Kepac, and Kerry Group.

Graduate Profile

Shreyansh Raj Morris
Dairygold

The School of Biosystems and Food Engineering has a very dynamic teaching environment, highly cited academics and great facilities. My professors not only guided me through the course content but also helped to steer me in the right direction career wise. Doing this master's has been really helpful and provided me with the essential skills needed to work professionally in the food industry. The course is well structured and there are modules like food processing and risk assessment which helped me to build my technical skills, and modules which help you to build your soft skills. The UCD Career Development Centre also organises a number of career fairs, where you have the chance to meet industry professionals. This is how I managed to secure a place on Dairygold's graduate programme.

Applicant Profile

- Applicants must hold a bachelor's degree with a minimum upper second class honours (NFQ level 8) or international equivalent in a relevant Engineering, Science or Technology degree.
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Related Masters Programmes of Interest

- ME Biosystems & Food Engineering
- ME Management (Food Engineering) PT

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University College Dublin
Ireland's Global University

Course code: T070/T015

MEngSc Biopharmaceutical Engineering

One Year Full Time / Two Years Part Time

Introduction

Pharmaceutical and Biopharmaceutical manufacturing are key sectors in the Irish economy generating over 50 per cent of GDP. This sector has seen continued and sustained success with a number of high-profile investments in recent years providing excellent job opportunities for graduates. The programme and its academic faculty are closely linked with the National Institute for Bioprocessing Research and Training (NIBRT), which is a global centre of excellence for training and research in bioprocessing. The MEngSc in Biopharmaceutical Engineering programme provides substantial coverage of scientific, technical, management and regulatory issues associated with this industry. The aim of this programme is to offer an internationally recognised, high-quality, flexible curriculum, which follows the latest developments in science and technology. This programme is suitable for Science and Engineering graduates wishing to obtain a qualification which is highly relevant to the biopharmaceutical industry. Classes for the part-time version take place every Friday afternoon (during UCD term time) between 14.00 and 18.00 at the NIBRT facility, Belfield Campus, UCD.

Course Highlight

This programme is closely linked with the National Institute for Bioprocessing Research and Training (NIBIRT) facility. NIBRT offers a quality training and research experience not previously possible anywhere in the world. At the heart of the NIBRT building is the bioprocessing pilot plant, consisting of extensive upstream, downstream, fill-finish and the associated analytical facilities.

Course Content and Structure

- 90 credit taught masters
- 60 credits taught modules
- 30 credits dissertation

The programme provides students with an understanding of the principal scientific and engineering challenges involved in the design, operation and management of biopharmaceutical production facilities.

Modules may include:

- Bioprocessing Laboratory
- Facility Design and Operation
- Biopharmaceutical Industry Regulation and Management
- Bioprocess Scale-up and Technology Transfer
- Biopharmaceutical Engineering Project
- Bioanalytical Science for Biopharma
- Research Methodologies
- Biotechnology & Biopharma
- Downstream Processing
- Principles of Biopharma Engineering
- Animal Cell Culture Technology
- Cell Therapy Technologies and Processing
- Gene Therapy and Vaccine Technologies and Processing
- GMP Manufacturing of Advanced Therapeutics

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Career Opportunities

Your career opportunities upon graduation from this programme are exemplary. Ireland is a world player in pharmaceutical and biopharmaceutical production. The pharmaceutical industry in Ireland comprises a mix of international and local companies. Approximately 120 overseas companies have plants in Ireland, including many of the largest pharmaceutical and biopharmaceutical companies in the world, such as AbbVie, Amgen, Biomarin, BMS, Genzyme, GSK, Janssen Biologics (Ireland), Merck, Novartis, Pfizer, Regeneron, Roche, Sanofi Shire, and many more. Upon graduation from this programme, you will enjoy an extremely high job placement rate with superlative career opportunities.

Graduate Profile

Thomas Raju
Regeneron Pharmaceuticals

I chose this programme as a continuation of my bachelor's degree in Pharmaceutical Chemistry and I wanted to further develop my learning in this area. The best part is that the course offers training in the bioprocess training facility in the National Institute for Bioprocessing Research and Training (NIBRT) which helped to greatly enhance my practical knowledge. The course is designed to give you a well-rounded education in a variety of aspects in the pharmaceutical industry such as cell culture, facility design, engineering modules, regulatory affairs, lean sigma methodologies, etc. The course has helped improve my career opportunities and I have already been offered a job with a pharmaceutical company for when I finish my course. I believe I have gained more practical knowledge from the one year of study that will help me in my workplace.

Applicant Profile

- Applicants must hold a bachelor's degree with a minimum upper second class honours (NFQ level 8) or international equivalent in a relevant Engineering, Science or Technology programme.
- Applicants for the part-time programme must be working full-time in the Pharma/Biopharma or a related sector
- Applicants whose first language is not English must also demonstrate English language proficiency of IELTS 6.5 (no band less than 6.0 in each element), or equivalent.

International Fees and Scholarships

Tuition fee information is available on www.ucd.ie/fees. Please note that UCD offers a number of graduate scholarships for full-time, self-funding international students, holding an offer of a place on a UCD masters programme. Please see www.ucd.ie/global/scholarships/ for further information.

Related Masters Programmes of Interest

- MEngSc Chemical Engineering
- MSc Biotechnology
- ProfCert Manufacturing of Cell & Gene Therapies & Vaccines

CONTACT US

Irish/EU Students – Katie O'Neill **E**: katie.oneill@ucd.ie **T**: +353 1 7161781 **W**: www.ucd.ie/eacollege
International Students – **E**: eamarketing@ucd.ie/internationalenquiries@ucd.ie **T**: +353 1 7168500 **W**: www.ucd.ie/global

APPLY NOW

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University College Dublin
Ireland's Global University

Course code: T218

MEngSc Chemical Engineering

One Year Full Time (September start)

Introduction

The Chemical Engineering industry in Ireland is one of its strongest exporting sectors and is representative of the chemical process industries worldwide. Opportunities for employment exist in a broad range of areas including: the pharmaceutical industry, the petrochemical and energy industries, the ICT industries including medical devices, and the heavy chemicals industries. The MEngSc in Chemical Engineering offers advanced level education for students with bachelor degrees in chemical engineering/ technology programmes. On this programme you will improve your conceptual and practical skills in both the fundamental and applied principles of chemical engineering practice. The programme covers advanced topics in chemical engineering and includes extensive project work in both design (featuring both individual and team elements/efforts) and in an individualised research project.

Course Highlight

This programme is delivered by a highly research-intensive School holding 151-200 in the QS World Subject Rankings for Chemical Engineering and Top 6 in Ireland/UK Employer's and Research rankings and awarded €9.56 million in research funding between 2014-19.

Course Content and Structure

- 90 credit taught masters
- 60 credits taught modules
- 30 credits dissertation

The programme's teaching methods are highly interactive and varied with contributions from a combination of industrial practitioners and leading researchers in their fields.

Modules include:

- Advanced Experimental Design
- Advanced Heat Transfer and Fluid Mechanics
- Advanced Process Design
- Advanced Separation Processes
- Chemical & Bioprocess Engineering Design
- Chemical & Bioprocess Reaction Engineering
- Chemical Processes of Sustainable & Renewable Energy
- Environmental Engineering Process Instrumentation & Control
- Advanced Characterisation Techniques
- Bioreactor Modelling and Control

Why study at UCD?

Graduate education

12,800 graduate students; 17% graduate research students; structured PhDs

Global community

9,500 international students and a 300,000 alumni network across 165 countries

Global Profile

UCD is ranked in the top 1% of higher education institutions worldwide

Global careers

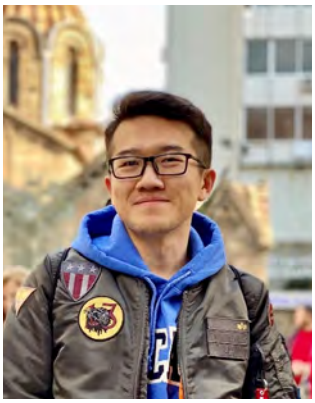
Dedicated careers support; 2-year stayback visa to work in Ireland

Career Opportunities

Your career opportunities upon graduation from this programme are exemplary. It is anticipated that the graduates will play an important role in the development, design and operation of chemical processes in industry at international level in the coming years. Graduates can enter a wide selection of possible industries including fine chemicals (e.g., Proctor and Gamble), heavy chemicals (e.g., CRH), pharmaceuticals (e.g., Lilly, Merck, Pfizer), oil and gas (e.g., Chevron, Conoco Philips, Exxon, Shell), as well as consulting and business.

Graduate Profile

Chenxi Qi



I chose to study for my masters in UCD as it is the top place to study for chemical engineering in Ireland, according to the QS World University Rankings by subject. In addition, lots of chemical and pharmaceutical companies are based in Ireland, which provide a wide range of career opportunities. During my time of study at UCD, the courses used innovative ways of teaching. Some specialists in the chemical industries were invited to give lectures and guide my group projects. Even with COVID-19, the courses made the complete transition to online teaching quite well. Also, administrative staff were extremely friendly and helpful, such as keeping students updated of new career opportunities. Moreover, the university had a lot of social activities which help students to relax after classes. So, I believe UCD is certainly the best university to enjoy both study and social life.

Applicant Profile

- Applicants must hold a bachelor's degree with a minimum upper second class honours (NFQ level 8) or international equivalent in a chemical engineering programme.
- Applicants whose first language is not English must also demonstrate English language proficiency of IELTS 6.5 (no band less than 6.0 in each element), or equivalent.
- Students who do not meet the IELTS requirement may wish to consider taking the Pre-Sessional or Pre-Masters Pathway. Full details https://www.ucd.ie/alc/programmes/pathways/

International Fees and Scholarships

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Related Masters Programmes of Interest

- MEngSc Biopharmaceutical Engineering
- MSc Biotechnology
- ProfCert Manufacturing of Cell & Gene Therapies & Vaccines

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APPLY NOW

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University College Dublin
Ireland's Global University

Course code: T378

MEngSc Electrical Power Networks

One Year Full Time (September start)

Introduction

The modern power system is in the midst of a radical change, as it transitions to the use of increased variable renewable generation, deals with growing demands for the electrification of transport & heating, and embraces new smart grid control approaches. The MEngSc in Electrical Power Networks is a 1 year programme specifically designed to give students a fundamental understanding of the design and operation of electrical power networks in the context of the transition to a more sustainable energy system. The programme is taught by world renowned academics with a strong track record in electrical power systems and energy research. Teaching is underpinned and supported by the research agenda of the UCD Energy Institute which is working towards a net zero carbon future. The programme will equip students with advanced training in specialized aspects of electrical engineering and provide the skills required to pursue a career in the rapidly evolving power system and smart grid sectors.

Course Highlight

This programme is taught by academics from the world-leading Energy Institute, a focal point of research on the integration of renewables into electrical networks and energy systems. If you are interested in being part of the transition to a more sustainable future and you are seeking a professional career in the power system and smart grid sectors, then this programme is ideal for you.

Course Content and Structure

- 90 credits taught masters
- 60 credits taught modules
- 30 credits research project

Core modules include:

- Control Theory
- Power System Operation
- Power System Design
- Applications of Power Electronics
- Power System Dynamics and Control
- Optimisation Techniques for Engineers
- MEngSc Electrical Project

Option modules may include:

- Numerical Algorithms
- Data Science in Python (MD)
- Energy Economics and Policy
- Modelling and Simulation
- Power Electronics and Drives
- Renewable Energy Systems
- Power Electronics Technology
- Professional Engineering (Management)
- Technical Communication

Why study at UCD?

Graduate education

12,800 graduate students; 17% graduate research students; structured PhDs

Global community

9,500 international students and a 300,000 alumni network across 165 countries

Global Profile

UCD is ranked in the top 1% of higher education institutions worldwide

Global careers

Dedicated careers support; 2-year stayback visa to work in Ireland

UCD ENERGY INSTITUTE

UCD.TG.T378.2023.A

Career Opportunities

The demand for graduates in the electrical power and energy sectors both in Ireland and internationally has never been stronger. The programme equips graduates with the skills and knowledge for employment opportunities in areas such as;

- Renewable energy development
- Power system operation
- Energy services
- Smart grid technology development
- Electricity trading

Applicant Profile

- Applicants must hold a 4-year bachelor's degree with a minimum upper second class honours (NFQ level 8) or international equivalent in electrical engineering, electronic engineering, power systems, power electronics, and energy-related subjects.
- Applicants whose first language is not English must also demonstrate English language proficiency of IELTS 6.5 (no band less than 6.0 in each element), or equivalent.
- Students who do not meet the IELTS requirement may wish to consider taking the Pre-Sessional or Pre-Masters Pathway. Full details https://www.ucd.ie/alc/programmes/pathways/

International Fees and Scholarships

Tuition fee information is available on www.ucd.ie/fees. Please note that UCD offers a number of graduate scholarships for full-time, self-funding international students, holding an offer of a place on a UCD masters programme. Please see www.ucd.ie/global/scholarships/ for further information.

Related Masters Programmes of Interest

- ME Electrical Power Engineering
- ME Energy Systems
- MSc Sustainable Energy & Green Technologies

Programme Director

Associate Professor Terence O'Donnell

Achieving a decarbonized and sustainable energy system to help mitigate climate change is one of the major challenges facing humanity today. The electrical power system has a central role to play in this as emphasis is placed on increasing renewable generation and electrification of the transport and heating sectors. These developments are rapidly changing the way the power system is planned, designed, and operated. Ireland is at the forefront of these changes with ambitious targets to reach up to 80% renewable generation by 2030, reduce greenhouse gas emissions by 51% by 2030 and achieve net zero by 2050. Consequently, demand for employment in the sectors related to renewable energy and smart grid management has never been higher.

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APPLY NOW

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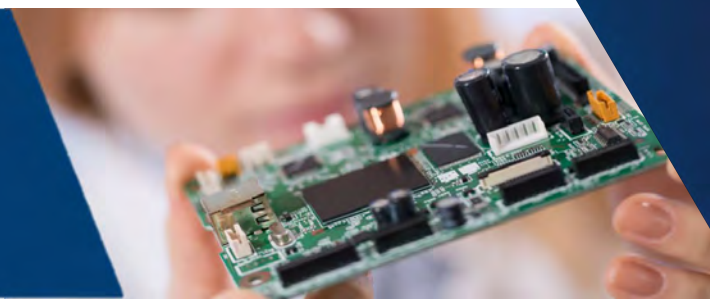
University College Dublin
Ireland's Global University

Course code: T257

MEngSc Electronic and Computer Engineering

One Year Full Time (September start)



Introduction

Ireland has evolved into one of the world's most important centres for high-tech businesses. The ICT sector in Ireland is a thriving and growing industry with 9 of the top 10 global ICT companies maintaining a presence in Ireland. The economic contribution of the sector is substantial with the ICT industry currently responsible for approximately 25% of Ireland's total turnover, representing one-third of Ireland's exports by value. The MEngSc in Electronic & Computer Engineering is a year-long programme designed to provide training for engineers who wish to work at a high level in the electronic and computer sectors worldwide. You will develop an advanced understanding of the theory and technology of modern electronic and computer systems and their business environment. You will build your knowledge through taught modules and project work and you will learn about design, innovation and problem solving at a level significantly beyond that of your bachelor's degree.

Course Highlight

Delivered by a highly research-active School composed of many internationally high-profile academics, including five IEEE Fellows. This master's provides intensive training to up-skill students to meet the needs of the growing Irish ICT sector.

Course Content and Structure

- 90 credits taught masters
- 60 credits taught modules
- 30 credits dissertation

Designed to meet the demands of modern high technology industries, this MEngSc covers topics from electronic engineering and computer science to business, delivered by internationally renowned academics. The modules that you take will depend on your interests and on your prior education.

Modules may include:

- Advances in Wireless networking
- Analogue Integrated Circuits
- Computer Science for Engineers
- Control Theory
- Digital Communications
- Digital System Design
- Enterprise, Innovation and Entrepreneurship
- Data Science
- Networks and Internet Systems
- Neural Engineering
- Numerical Algorithms
- Information Security
- Performance of Computer Systems
- Photonic Engineering
- Processor Design
- Research Skills and Techniques
- RF Electronics
- Software Engineering Project
- Signal Processing
- Wireless Systems

Why study at UCD?

Graduate education

12,800 graduate students; 17% graduate research students; structured PhDs

Global Profile

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Global community

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Global careers

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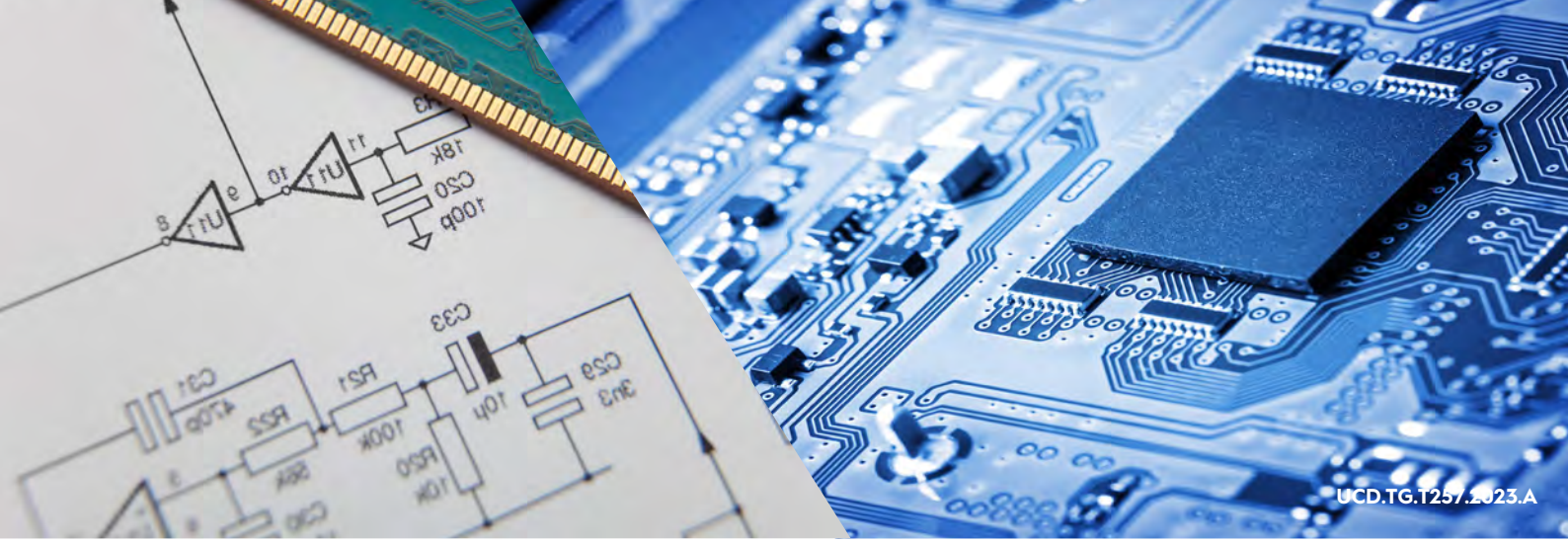

Career Opportunities

There are excellent job opportunities available in the ICT sector in Ireland. The Irish Government is to amend the work permit processing system in a bid to attract overseas workers to fill skill gaps in crucial areas like ICT and engineering. The Government has an ongoing commitment to generate thousands of jobs in the ICT sector every year. At present there are as many as 5,000 job vacancies in Ireland's burgeoning ICT sector and this gap could grow as Ireland hurtles towards becoming the digital capital of Europe. Prospective employers include: Accenture, Analog Devices, Intel, Microsoft, SAP, Synopsys and Xilinx.

Graduate Profile

Sudharsan Rajasekaran
Intel

During my course I was taught the problems that industries are currently facing, making it incredibly relevant. The course was quite brilliantly structured between hardware (Electronics) and software (Computer Science), designed in a way to learn by practice, offering me the confidence to face today's industrial demands. The course also offered a module on entrepreneurship which I believe to be incredibly important for my future Engineering career. Right now I am working alongside leading researchers for my master's project which is guiding me on the right career path and I truly believe that I will be one among tomorrow's industrial leaders. Moreover, I am proud to be a UCD student because it has one of the best campuses in the world

Applicant Profile

- Applicants must hold a bachelor's degree with a minimum upper second class honours (NFQ level 8) or international equivalent in an Electrical, Electronic or Computer Engineering programme.
- Applicants whose first language is not English must also demonstrate English language proficiency of IELTS 6.5 (no band less than 6.0 in each element), or equivalent.
- Students who do not meet the IELTS requirement may wish to consider taking the Pre-Sessional or Pre-Masters Pathway. Full details https://www.ucd.ie/alc/programmes/pathways/

International Fees and Scholarships

Tuition fee information is available on www.ucd.ie/fees. Please note that UCD offers a number of graduate scholarships for full-time, self-funding international students, holding an offer of a place on a UCD masters programme. Please see www.ucd.ie/global/scholarships/ for further information.

Related Masters Programmes of Interest

- ME Electronic & Computer Engineering
- ME Optical Engineering
- MSc Advanced Software Engineering
- MSc Computer Science NL (Negotiated Learning)
- MSc Information Systems

CONTACT US

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APPLY NOW

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University College Dublin
Ireland's Global University

Course code: T288

MEngSc Engineering Management

One Year Full Time (September start)

Introduction

The MEngSc Engineering Management programme offers a unique opportunity for engineering students to deepen their knowledge of the areas of business and management and is open to engineering students of all disciplines. This programme is aimed at students who have already completed a bachelor's degree in Engineering and wish to embark on successful careers in the management of global engineering and technology firms. This one-year master's degree provides grounding in operations, quality, marketing, systems planning, and analysis while building on students' technical expertise to develop the next generation of industry leaders. Our teaching methods and learning environment are highly interactive and varied, and include lectures, workshops, tutorials, labs, and practical exercises. Group-based modular projects and a final applied company-based consultancy project enable students to integrate the covered theoretical knowledge with practice.

Course Highlight

This programme is delivered by the School of Mechanical & Materials Engineering, which has more than 50 years' experience in teaching Engineering Management. The School has well-established industrial links both nationally and worldwide.

Course Content and Structure

- 90 credits taught masters
- 50 credits engineering modules
- 20 credits research project
- 20 credits business modules

Applied research project: This programme offers students a practical company-based project during the summer trimester. This summer project provides immense opportunity to the students to demonstrate their capabilities while working with a company, increasing their chances of employment with the same company.

Modules may include:

- Design & Innovation
- Applied Research Project
- Technical Communication (Option)
- Operations Management
- Engineering Decision Support Systems
- Business Information Systems Management
- Marketing Management
- Systems Analysis & Improvement
- Supply Chain Design & Analysis
- Engineering Project Management - Tools & Techniques
- Introduction to Manufacturing
- Simulation & Robotics
- Quantitative Methods for Engineers
- Professional Engineering (Finance)

Why study at UCD?

Graduate education

12,800 graduate students; 17% graduate research students; structured PhDs

Global Profile

UCD is ranked in the top 1% of higher education institutions worldwide

Global community

9,500 international students and a 300,000 alumni network across 165 countries

Global careers

Dedicated careers support; 2-year stayback visa to work in Ireland

UCD.TG.T288.2023.A

Career Opportunities

Career opportunities are very broad for graduates of MEngSc Engineering Management, apart from the usual engineering discipline-specific job opportunities based on their bachelor's degree, students will be equipped with enough knowledge and experience to pursue a career related to the job positions, such as quality analyst, data analyst, operations analyst, supply chain planner, project management and continuous improvement analyst. The acquired skill sets are invaluable when embarking upon careers in many sectors including energy, consumer goods, medical technology, management consulting, ICT and automotive. Prospective employers include Accenture, Intel, RPS, SAP, Maxim Integrated, Boston Scientific, Microsoft, PwC, Deloitte, Accenture and many more.

Graduate Profile

Abhijit Santhanam
Boston Scientific

UCD's worldwide reputation and the program structure, made UCD an obvious choice to further my studies. I completed my master's program in 2019. The program offers best of both, engineering and management worlds. With core engineering modules like Production system analysis to management modules like Marketing management and Business Information Systems. There was a lot of focus on practical and industry-based learning, with case studies and business simulations. The modules are delivered by faculty from the UCD College of Engineering and Architecture, UCD School of Business and leading industry practitioners. I strongly recommend international students to consider master's in engineering management as an academic option. I hope to see you all in UCD.

Applicant Profile

- Applicants must hold a bachelor's degree with a minimum upper second class honours (NFQ level 8) or international equivalent in a relevant Engineering programme.
- Applicants whose first language is not English must also demonstrate English language proficiency of IELTS 6.5 (no band less than 6.0 in each element), or equivalent.
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International Fees and Scholarships

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Related Masters Programmes of Interest

- ME Engineering with Business
- MSc Management

CONTACT US

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APPLY NOW

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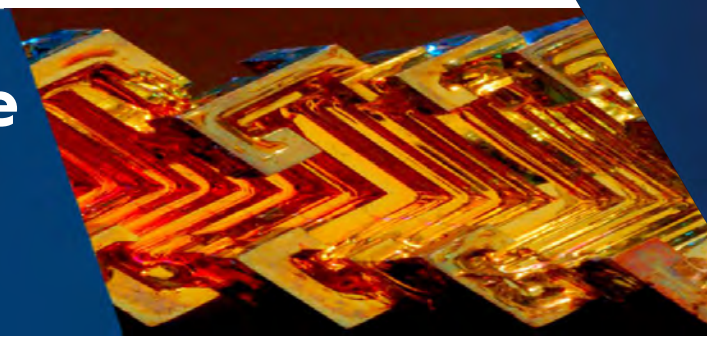
University College Dublin
Ireland's Global University

Course code: T286

MEngSc Materials Science & Engineering

One Year Full Time (September start)



Introduction

Materials Science and Engineering is an interdisciplinary field investigating the relationship between the structure of materials at atomic or molecular scales and their macroscopic properties. Materials Scientists and Engineers are at the centre of virtually every area of technology from optoelectronics to space materials and from automotive and automotive manufacturing to biomedical devices.

The core knowledge in this field is essential in currently evolving advanced technologies such as additive manufacturing (also known as 3D printing) and nanotechnology. Graduates will gain expertise in fundamental materials science and real-world engineering application of materials, including metals, ceramics, composites and semiconductors.

Course Highlight

This programme is delivered by a School with a long history of innovation, establishing its first spin-out company more than 40 years ago, attracting more than €5 million in research funding annually, and leading SFI's national centre for advanced manufacturing.

Course Content and Structure

- 90 credits taught masters
- 60 credits taught modules
- 30 credits dissertation

Core modules include:

- Materials Science & Engineering II
- Technical Ceramics
- Research Skills and Techniques
- Advanced Metals Processing
- Materials Themodynamics and Kinetics
- Advanced Polymer Engineering

Option modules include:

- Chemistry of Materials
- Solid-State Electronics I
- Computational Continuum Mechanics
- Fracture Mechanics
- Energy Systems & Climate Change
- Energy Systems Integration
- Nanomaterials Chemistry
- Advanced Characterisation Tech
- Professional Eng. (Finance)
- Professional Engineering (Mgt)
- Technical Communication
- Biomaterials
- Physics of Nanomaterials
- Medical Device Design

Why study at UCD?

Graduate education

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Global community

9,500 international students and a 300,000 alumni network across 165 countries

Global Profile

UCD is ranked in the top 1% of higher education institutions worldwide

Global careers

Dedicated careers support; 2-year stayback visa to work in Ireland

Career Opportunities

If you are a graduate of the MEngSc Materials Science & Engineering programme you can look forward to limitless employment opportunities in a substantive array of industries. Most companies worldwide employ materials professionals and examples where UCD materials graduates now work are: General Electric or Rolls Royce (Aerospace), Astrium (Space), Boston Scientific or Stryker (Biomedical) or Siemens (Energy).

Applicant Profile

- Applicants must hold a bachelor's degree with a minimum upper second class honours (NFQ level 8) or international equivalent in a relevant Engineering, Science or Technology programme.
- Applicants whose first language is not English must also demonstrate English language proficiency of IELTS 6.5 (no band less than 6.0 in each element), or equivalent.
- Students who do not meet the IELTS requirement may wish to consider taking the Pre-Sessional or Pre-Masters Pathway. Full details https://www.ucd.ie/alc/programmes/pathways/

International Fees and Scholarships

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Related Masters Programmes of Interest

- ME Biosystems & Food Engineering
- ME Management (Food Engineering) PT

Graduate Profile

Susan Nace
PhD Candidate

This programme offered me a chance to study a wide variety of engineering materials used worldwide, such that after finishing the programme, I would be able to use my new knowledge anywhere, not just in jobs or academia in Ireland or the US. The programme required both module and research credits, which allowed me to gain a specialisation in the materials field of mechanical engineering, as well as jumpstart my desired research career. After completing my degree at UCD, I received an Irish Research Council Employment-based Postgraduate Programme doctoral fellowship with a UCD engineering professor and a non-profit based in Dublin, and I am currently in my second year of that PhD programme. I believe that UCD was key to my academic journey and that the university is continuing to help me establish myself in the engineering research field.

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APPLY NOW

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University College Dublin
Ireland's Global University

Course code: T279

MEngSc Structural Engineering

One Year Full Time / Two Years Part Time

Introduction

Studying at master's level, you will cover a wide range of topics not traditionally covered in undergraduate degrees. The programme includes specialist modules in structural dynamics, bridge engineering, structural design and professional engineering. You will also learn how to work in a multidisciplinary setting through combined modules with non-Engineering students. Structural engineering is a continually evolving profession, and through the third trimester Research Project you will learn how to apply this specialist knowledge to develop new concepts and ideas under the supervision of research-active academic staff. This programme will distinguish you as having specialist knowledge in the area of Structural Engineering and provide you with a competitive edge over your peers in the job market.

Course Highlight

This programme is delivered by a highly research-intensive school, which is in the top 150 in the QS world subject rankings. An example of this research activity is the coordination of the 3.7 million euro EU Horizon 2020 TRUSS Innovative Marie Sklodowska-Curie Innovative Training Network, to develop tools for improving the maintenance and management of aging infrastructure.

Course Content and Structure

- 90 credits taught masters
- 60 credits taught modules
- 30 credits dissertation

Modules include:

- Realising Built Projects
- Analysis of Structures 3
- Innovation Leadership
- Structural Dynamics
- Advanced Materials
- Quantitative Methods for Engineers
- Agency: Design/Build
- Design of Structures 3
- Bridge Engineering
- Geotechnics 4
- Professional Engineering (Management)
- Structural Research Project

Why study at UCD?

Graduate education

12,800 graduate students; 17% graduate research students; structured PhDs

Global community

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Global Profile

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Global careers

Dedicated careers support; 2-year stayback visa to work in Ireland

Career Opportunities

Our graduates would typically follow careers in structural engineering consultancy, engineering contracting, construction management, and project planning both in Ireland and abroad. Employed at master's level, graduates can expect more responsibility, and faster professional progression, earlier in their careers. Graduates have progressed to career opportunities in a broad range of internationally recognised companies including: Roughan O'Donovan, Arup, Sisk, Jacobs, RPS, OCSC, Walls, Ward & Burke, and Mott McDonald amongst others.

Graduate Profile

Angelene Dascanio
Thornton Tomasetti

This master's is fast paced, challenging, and encompasses the skills required for a career in structural engineering. It includes both general and specialty concepts; for example, I took modules in steel and concrete design, but was also able to take a bridge engineering module to fulfil my interest in that particular field. I was initially drawn to the programme because it uniquely incorporates some architecture modules into its curriculum. During the academic year I was able to focus solely on my coursework, meet with my professors for extra help, and study for examinations. Then, during the summer, my efforts were placed on carrying out a research project with the guidance of a professor in my field of interest. As an international student (from America), I felt welcomed by the faculty and fellow classmates.

Applicant Profile

- Applicants must hold a bachelor's degree in Civil or Structural Engineering with a minimum upper second class honours (NFQ level 8) or international equivalent.
- Applicants whose first language is not English must also demonstrate English language proficiency of IELTS 6.5 (no band less than 6.0 in each element), or equivalent.
- Students who do not meet the IELTS requirement may wish to consider taking the Pre-Sessional or Pre-Masters Pathway. Full details https://www.ucd.ie/alc/programmes/pathways/

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Related Masters Programmes of Interest

- ME Optical Engineering
- MEngSc Electronic & Computer Engineering
- MSc Advanced Software Engineering
- MSc Computer Science NL (Negotiated Learning)
- MSc Information Systems

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APPLY NOW

This programme receives significant interest so please apply early online at **www.ucd.ie/apply**

University College Dublin
Ireland's Global University

Course code: T277

MEngSc Water, Waste & Environmental Engineering

One Year Full Time / Two Years Part Time

Introduction

This programme prepares graduates to work in the broad field of environmental protection and management. You will gain advanced theoretical and conceptual knowledge and understanding in the area of environmental engineering on topics such as environmental modelling, water and wastewater treatment, solid waste management, and environmental data analysis, amongst others. Environmental engineering involves the application of engineering and scientific principles to solve or prevent environmental problems. This programme allows you to gain competencies in the design of facilities to treat water, wastewater and wastes; in the development and protection of water resources; in the design of flood protection systems; in the analysis of environmental data; and in the design of infrastructure that respects the principles of environmental sustainability.

Course Highlight

The UCD School of Civil Engineering has made major investments in recent years to modernise and improve its research capability across a range of sub-disciplines and to establish facilities for world class research. Facilities include laboratories for structural testing, concrete, soils, road materials, hydraulics, water and effluent analysis, PC and workstation facilities and an engineering workshop.

Course Content and Structure

- 90 credits taught masters
- 60 credits taught modules
- 30 credits dissertation

Modules may include:

- Advanced Air Pollution
- Environmental Impact Assessment
- Environmental Research Project
- Freshwater Resources Assessment
- Remote Sensing and GIS
- Hydraulic Engineering Design
- Waste Management
- Introduction to Water Resources Engineering
- Quantitative Methods for Engineers
- Life Cycle Assessment
- Unit Treatment Process in Water Engineering
- Water Waste and Environmental Modelling

Why study at UCD?

Graduate education

12,800 graduate students; 17% graduate research students; structured PhDs

Global community

9,500 international students and a 300,000 alumni network across 165 countries

Global Profile

UCD is ranked in the top 1% of higher education institutions worldwide

Global careers

Dedicated careers support; 2-year stayback visa to work in Ireland

Career Opportunities

Graduates from the programme will find employment as engineers in the private sector (e.g., engineering consultancy, engineering design, project management, risk assessment, waste management), in the public sector (e.g., environmental protection, regulation, standards development, local government, river basin management), and in the non-governmental sector (e.g., environmental advocacies, NGOs), or may wish to pursue further qualifications (e.g., PhD, MBA) to become even more specialised. Employers of environmental engineers include commercial firms, engineering consultancies, government agencies, and non-governmental organisations, all well known in Ireland and many with global operations

Graduate Profile

Sarah Nolan
Ryan Hanley Consultants

Having always had a passion for the environment, specifically water sciences, I knew the MEngSc degree at UCD was the perfect course to further develop my knowledge and equip me with the skills to succeed in my career. Having worked for many years following graduating from my undergraduate degree, I took the time to carefully choose the best masters that would help me reach my goal of working in the water industry. The Water, Waste and Environmental Engineering master's degree at UCD is a challenging and thoroughly rewarding course, which covers a variety of subject matters taught through lectures, tutorials, and labs. Gaining an engineering context to my previous scientific studies has significantly enhanced my knowledge and understanding of water sciences.

Applicant Profile

- An honours undergraduate degree (NFQ level 8) with a minimum 2:1 award or international equivalence in civil engineering, other related engineering (such as chemical engineering, environmental engineering, agricultural engineering), physical science or environmental related degree programme.
- Applicants whose first language is not English must also demonstrate English language proficiency of IELTS 6.5 (no band less than 6.0 in each element), or equivalent.
- Students who do not meet the IELTS requirement may wish to consider taking the Pre-Sessional or Pre-Masters Pathway. Full details https://www.ucd.ie/alc/programmes/pathways/

International Fees and Scholarships

Tuition fee information is available on www.ucd.ie/fees. Please note that UCD offers a number of graduate scholarships for full-time, self-funding international students, holding an offer of a place on a UCD masters programme. Please see www.ucd.ie/global/scholarships/ for further information.

Related Masters Programmes of Interest

- ME Civil, Structural & Environmental Engineering
- MEngSc Structural Engineering

CONTACT US

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APPLY NOW

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University College Dublin
Ireland's Global University

Course code: T390

GradDip Environmental Sustainability Implementation

1 Year Full Time (September start)

Introduction

Sustainability is on the agenda for many sectors. All sectors are responding to sustainability goals, with many organisations setting targets to be achieved by 2030 for compliance, consumer or market retention purposes. Consultation with a range of industry stakeholders has identified that there is a deficit of expertise in the market to address the implementation of sustainability agendas, however the scale and speed of the change required is urgent. Drivers of this demand are the National Sectoral Emissions Ceilings, the Climate Action and Low Carbon Development (2021) Act, Future Jobs initiative 'Transition to low carbon economy', Ireland's National Plan on Corporate Social Responsibility, and the Greenhouse Gas Protocol (Scope 1, 2 and 3 emissions reporting). This full-time Level 9 Graduate Diploma equips students with the core skills to quantify the sustainability of a product, process or system, identify areas for improvement and devise and manage measures for implementation to improve sustainability.

Pathway

This 60 ECTS Graduate Diploma is a Pathway programme that can build to a Masters degree award. Students who complete the Graduate Diploma have the option of completing a 30 ECTS project which builds to a Masters degree award. The fee for the additional 30 ECTS project is 3000 euro.

Course Content and Structure

This Graduate Diploma comprises 60 credits of modules (10 modules). These modules are offered across the Spring and Autumn Trimesters.

All lectures and tutorials occur during weekdays. Although it will be possible for students to complete the programme almost entirely online as the majority of lectures will be recorded.

However one module will require attendance on campus for four 2-hour sessions in Trimester 2 (Spring 2024). There will also be a need to attend campus for a number of scheduled workshops (maximum 2 per trimester).

Modules offered

- Life Cycle Assessment
- Green Technologies Project
- Renewable Energy Systems Analysis
- Biorefinery Process & Tech
- Bioeconomy Policy & Social
- Energy System & Sustainable Environments
- Carbon & Sustainability
- GHG Accounting
- Carbon Footprinting
- Project Management

Why study at UCD?

Graduate education

12,800 graduate students; 17% graduate research students; structured PhDs

Global community

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Global Profile

UCD is ranked in the top 1% of higher education institutions worldwide

Global careers

Dedicated careers support; 2-year stayback visa to work in Ireland

Career Opportunities

There is very significant industry demand for engineers and scientists with knowledge on methods to quantify sustainability for internal benchmarking, process improvement, and reporting purposes. In January 2023 there were >2000 sustainability-related jobs advertised in Ireland (based on data from LinkedIn). Upon completion of this Graduate Diploma, graduates will have the skills needed to lead the sustainability agenda for a company either individually or as part of a team.

Industry Partner

Seán Douglas

Business Development Manager
BiOrbic, Bioeconomy SFI Research Centre

"Sustainability has become a significant issue for companies across various industries. It is now a necessity for businesses to integrate sustainable practices into their operations, including for reputational, mandatory reporting, and risk-management reasons. The Graduate Diploma in Environmental Sustainability Implementation recognises this increased need by companies to measure and improve their sustainability profile and provides graduates with the technical expertise to implement a company's sustainability goals. Through this program, companies can also access a talent pool of sustainability professionals who are poised to lead the way in creating a more sustainable and prosperous future for businesses and society as a whole."

Entry Requirements

- Recent graduates, jobseekers or those in full time employment, with a Level 8 Honours degree with minimum 2:1 award (NFQ level 8) or international equivalence in disciplines such as engineering, physical science, geography and planning, architecture and environmental related degrees.
- Applicants whose first language is not English must also demonstrate English language proficiency of IELTS 6.5 (no band less than 6.0 in each element), or equivalent.

Tuition Fees

Tuition fee information is available on www.ucd.ie/fees. This programme is also eligible for springboard funding, if you believe you are eligible please apply first on www.springboardcourses.ie

Related Programmes of Interest

- GradDip Carbon Accounting & Life Cycle Assessment PT
- HDip Spectroscopic Technologies and Data Analysis for Advanced Manufacturing

CONTACT US

Katie O'Neill, Marketing Manger - **E**: katie.oneill@ucd.ie **T**: +353 1 7161781 **W**: www.ucd.ie/eacollege
Dr Fionnuala Murphy, Programme Director – **E**: fionnuala.murphy@ucd.ie **T**: +353 1 716 7317

APPLY NOW

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University College Dublin
Ireland's Global University

Course code: T389

Spectroscopic Technologies and Data Analysis for Advanced Manufacturing

8 Months Full Time (September start)

Introduction

This multidisciplinary diploma addresses the National need for the development and deployment of advanced spectroscopic technologies and digital skills. Although new technologies are available to provide massive and continuous data for improved process understanding and control, many industries still rely on manual acquisition and interpretation of data, due to a lack of skilled workforce. Students will develop skills in data analysis, sensors, automation and analytical technologies, which have been highlighted as key to the competitiveness of Irish industry (Manufacturing in Ireland: today, tomorrow and Beyond, Ibec, 2022). These skills are of critical importance in mitigating against unemployment exposure within the biological, chemical, food and other advanced manufacturing industries, future proofing graduates with advanced skills in emerging technologies relevant to advanced manufacturing industries (including bioprocessing, biomaterial, chemical and food processing).

Interdisciplinary Programme

This unique cross-cutting interdisciplinary programme addresses the following priority skills needs for enterprise: Advanced Spectroscopy, Good Manufacturing Practice, Quality Management in Food/Biopharma/Pharma/Materials production, Analytical Science, Industrial Instrumentation, Calibration, Statistics, Data Analytics. Big Data, Smart Manufacturing IOT and Industry 4.0.

Course Content and Structure

- The Diploma in Spectroscopic Technologies and Data Analysis for Advanced Manufacturing comprises 60 credits of Modules (11 modules). These modules are offered across the Spring and Autumn Trimesters.
- All lectures and tutorials occur during weekdays. Remote lectures & labs are available for those who cannot attend in person.
- Modules are delivered in real-time to full-time students and made available online (in real time and via recordings) to off-site learners

Modules may include

- Sensors and Sensing Systems
- Hyperspectral imaging
- Optical Sensing Technology
- IoT enabled AgriFood Production
- Carbon Footprinting
- Biopharma Industry Regulation and Management
- Data Science for Biopharma Manufacturing
- Engineering Project Management

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Global Profile

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Global careers

Dedicated careers support; 2-year stayback visa to work in Ireland

Career Opportunities

Graduates with skills in Advanced Spectroscopy, Analytical Science, Instrumentation, Calibration and Data Analytics are highly sought after in the food/pharmaceutical/materials manufacturing industries. Job readiness is embedded in this programme through both credit bearing and non-credit bearing modules.

Entry Requirements

- Applicants should hold a 2.2 or higher honours degree in a STEM subject. Other disciplines and qualifications will be considered subject to an application detailing suitable mathematical, analytical, and technological skills, particularly from relevant industrial/work environment.
- Applicants will be initially screened to confirm that they satisfy the HCI Pillar 1 eligibility requirements; following this, their eligibility for the programme in terms of their educational record, skills and motivation will be assessed via CV and letter of motivation. Should more than 20 students be eligible, applicants will be ranked for admission.
- Applicants whose first language is not English must demonstrate English language proficiency of IELTS 6.5 (no band less than 6.0 in each element), or equivalent.

Tuition Fees

Tuition fee information is available on www.ucd.ie/fees.

Facilities & Resources

The School of Biosystems & Food Engineering has recently invested in excess of €1.5M in state-of-the-art facilities in sensors, spectroscopy and spectral imaging.

Related Masters Programmes of Interest

- GrapDip Environmental Sustainability Implementation
- GradDip Carbon Accounting & Life Cycle Assessment

Programme Director

Professor Aoife Gowen

The process analytical technology (PAT) initiative is a key driver of adaptive processing, transforming approaches to quality assurance in manufacturing industries, leading to better process control and ultimately improved product quality. Spectroscopic technologies are recognized as a key facilitator of the PAT concept, however the big data produced by such instrumentation requires knowledge of the fundamental light-material interactions that result in a spectrum and understanding of multivariate chemometric data analysis techniques that can be utilized to gain relevant information from the measured data.

CONTACT US

Katie O'Neill, Marketing Manger - **E**: katie.oneill@ucd.ie **T**: +353 1 7161781 **W**: www.ucd.ie/eacollege
Professor Aoife Gowen, Programme Director – **E**: aoife.gowen@ucd.ie **T**: +353 1 716 2601

APPLY NOW

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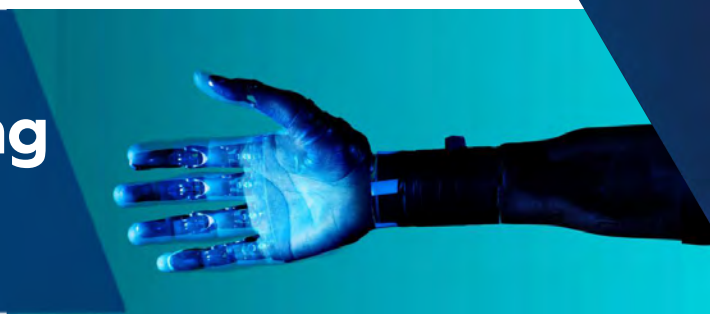
University College Dublin
Ireland's Global University

Course code: T160

ME Biomedical Engineering

Two Years Full Time (September start)



Introduction

There are currently 250 medical technology companies in Ireland, exporting €12.6 billion worth of product annually and employing over 40,000 people – the highest number of people working in the industry in any country in Europe, per head of population. Biomedical Engineering involves the application of engineering principles to healthcare and medicine. It is an interdisciplinary field, requiring knowledge of both living systems and engineering. When studying on this programme, you will work with staff and researchers at UCD who have extensive experience in ground-breaking biomedical engineering research. You will also develop a knowledge of how the medical device industry is regulated and how new products are introduced to the market, drawing from experience within UCD which includes pioneering companies. For more information visit www.ucd.ie/biomedicalengineering/. This ME programme is professionally accredited by Engineers Ireland and recognised by the Washington Accord for Chartered Engineer status.

Course Highlight

The ME Biomedical Engineering at UCD offers a 6-8 month work placement, exposure to world-leading researchers and superlative employment opportunities. With over 450 medtech companies based in Ireland, there are many potential options to chose from, gaining experience in start-ups, multinationals or also in more of a clinical research setting.

Course Content and Structure

- 120 credits taught masters
- 70 credits taught modules
- 20 credits Biomed Project
- 30 credits Work Experience

Modules include:

- Bioinstrumentation
- Biomaterials
- Biomechanics
- Biomedical Imaging
- Biomedical Signal Processing
- Biosensors & Actuators
- Cardiovascular Physiology for Engineers
- Cell Culture & Tissue Engineering
- Experimental Design and Statistics for Engineers
- Medical Device Design
- Medical Sciences for Biomedical Engineers
- Musculoskeletal Biomechanics and Mechanobiology
- Neural Engineering
- Rehabilitation Engineering

Why study at UCD?

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Global careers

Dedicated careers support; 2-year stayback visa to work in Ireland

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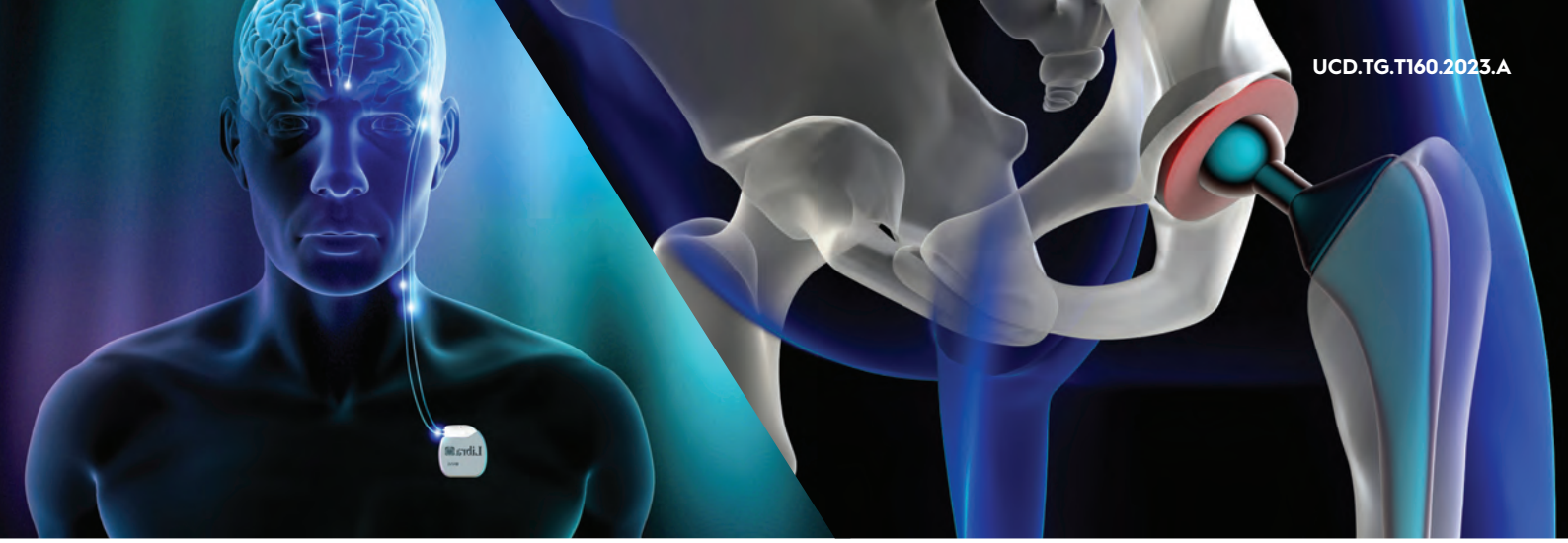

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Career Opportunities

The Irish medtech sector is robust and career opportunities upon graduation from this programme are exemplary. Exports of medical devices and diagnostics products now represent 8% of Ireland's total merchandise exports and growth prospects for the industry globally remain good. Many of the world's top medical technology companies have invested significantly in Ireland and a number of exciting, research-based, indigenous companies are emerging and competing internationally. The Irish Government has identified the medical technology sector as one of the key drivers of industrial growth for the future and provides a wide range of supports to encourage and foster this growth. The medical technology industry in Ireland is changing from being predominantly manufacturing to being more complex and driven by R&D. Prospective employers include medtech startups and multinationals including Medtronic, BostonScientific, De Puy, ResMed, Shimmer and Stryker.

Graduate Profile

Dhanashree Gokhale
Health Products Regulatory Authority

I chose UCD due to the quality of research done in this field and the structure of the ME Biomedical Engineering programme. While allowing students to pick from a wide range of subjects from the schools of engineering, science and medicine the course also focuses on improving professional skills with the inclusion of the work experience internship, which was truly beneficial. UCD's emphasis on research plays a key role in ensuring that students are exposed to a high standard of learning and have experienced staff to guide them throughout the course and with options thereafter. While the coursework at UCD including the projects undertaken as part of the ME programme contribute towards my role as a scientific officer, the network of UCD alumni and staff continue to provide support and guidance wherever and whenever needed.

Applicant Profile

- Applicants must hold a bachelor's degree with a minimum upper second class honours (NFQ level 8) or international equivalent in a relevant Mechanical, Electronic, Electrical, Mechatronic or Biomedical Engineering programme.
- Applicants whose first language is not English must also demonstrate English language proficiency of IELTS 6.5 (no band less than 6.0 in each element), or equivalent.
- Students who do not meet the IELTS requirement may wish to consider taking the Pre-Sessional or Pre-Masters Pathway. Full details https://www.ucd.ie/alc/programmes/pathways/

International Fees and Scholarships

Tuition fee information is available on www.ucd.ie/fees. Please note that UCD offers a number of graduate scholarships for full-time, self-funding international students, holding an offer of a place on a UCD masters programme. Please see www.ucd.ie/global/scholarships/ for further information.

Related Masters Programmes of Interest

- MSc Biotechnology
- MSc Connected Health
- ME Electronic & Computer Engineering
- ME Mechanical Engineering

CONTACT US

Irish/EU Students – Katie O'Neill **E**: katie.oneill@ucd.ie **T**: +353 1 7161781 **W**: www.ucd.ie/eacollege
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APPLY NOW

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University College Dublin
Ireland's Global University

Course code: T299

ME Biosystems & Food Engineering

Two Years Full Time (September start)

Introduction

This master's will provide graduates from an engineering background with the opportunity to deepen their engineering, mathematical and science knowledge in the design and application of biological systems, particularly in:

- food process engineering
- agriculture system
- wastewater management
- sustainable bioenergy
- environmental protection
- circular bioeconomy

Biosystems Engineers are at the forefront of the search for practical solutions to global problems and this specialisation will lead graduates to a wide variety of employment opportunities with companies focusing on the production and processing of food and other feedstocks, environmental protection, waste recycling, sustainable energy, and green technologies.

Course Highlight

This programme is delivered by a highly research-intensive School with state-of-the-art infrastructure in 1) thermal and non-thermal food processing system and analysis, 2) microalgae biotechnology and biorefinery, 3) spectroscopy and hyperspectral imaging. This programme also provides 6-8 months' professional work experience as an embedded element of the programme

Course Content and Structure

- 120 total credits
- 60 credits taught modules
- 30 credits Research Project
- 30 credits Professional Work Experience

Modules may include:

- Air Pollution
- Bioprocess Engineering Principles
- Biorefinery Process and Technology
- Food Chain Integrity
- Food Process Engineering
- Food Refrigeration Engineering
- Life Cycle Assessment
- Professional Engineering (Finance)
- Professional Engineering (Management)
- Water and Wastewater Engineering
- Waste to Energy Processes and Technologies

Why study at UCD?

Graduate education

12,800 graduate students; 17% graduate research students; structured PhDs

Global community

9,500 international students and a 300,000 alumni network across 165 countries

Global Profile

UCD is ranked in the top 1% of higher education institutions worldwide

Global careers

Dedicated careers support; 2-year stayback visa to work in Ireland

Career Opportunities

Our graduates can find employment in:

- Bioprocess, food and beverage companies
- Environmental protection and waste recycling companies
- Sustainable energy and green technology companies
- Consultancy firms operating in the above areas

Some of these include Glanbia, Sanofi, Royal Oak Distillery, Diageo/Guinness, Abbott, PM Group, Rowan Engineering Consultants, Green Generation, Maria Lucia Bakes, and Takeda Ireland.

There are also opportunities to pursue PhD research at UCD and internationally in relevant areas in circular bioeconomy.

Graduate Profile

Yuchen Li
UCD PhD Student

"I chose to pursue the ME Biosystems and Food Engineering in UCD, because the programme places strong emphasis in developing not only specialist knowledge in food technology but also professional and research skills. I was able to deepen my knowledge in agri-food systems and biorefinery, food processing engineering, environmental engineering, and waste management. Moreover, there were a lot of practical sessions integrated in these modules. The professors were very encouraging and prompt in taking care of student needs. I completed an 8-month professional work experience at Teagasc Food Research Centre, where I developed a novel method for agar extraction from seaweed, the results for which were later published in 'Food Hydrocolloids', a top journal in food biotechnology. This experience consolidated my decision to pursue a research career. At the end of the ME degree, I secured a scholarship offer from the prestigious China Scholarship Council to continue with a PhD at UCD."

Applicant Profile

- Applicants must hold a bachelor's degree with a minimum upper second class honours (NFQ level 8) or international equivalent in a relevant Engineering programme.
- Applicants whose first language is not English or have not completed a previous degree through English must also demonstrate English language proficiency of IELTS 6.5 (no band less than 6.0 in each element), or equivalent.
- Students who do not meet the IELTS requirement may wish to consider taking the Pre-Sessional or Pre-Masters Pathway. Full details https://www.ucd.ie/alc/programmes/pathways/

International Fees and Scholarships

Tuition fee information is available on www.ucd.ie/fees. Please note that UCD offers a number of graduate scholarships for full-time, self-funding international students, holding an offer of a place on a UCD masters programme. Please see www.ucd.ie/global/scholarships/ for further information.

Related Masters Programmes of Interest

- MEngSc Food Engineering
- MSc Environmental Technology
- MSc Sustainable Energy & Green Technologies

CONTACT US

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International Students – **E**: eamarketing@ucd.ie/internationalenquiries@ucd.ie **T**: +353 1 7168500
Programme Director - Dr Ronald Halim **E**: ronald.halim@ucd.ie **T:** +353 89 605 4447

APPLY NOW

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University College Dublin
Ireland's Global University

Course code: T308

ME Civil Engineering (dual degree)

Two Years Full Time (September start)

Introduction

Globally, Civil Engineers are essential to the provision of transportation systems, bridges, buildings and other infrastructure, clean water, waste management, and earthworks. With ever increasing global population, global urbanisation and global concerns about climate change, the formal training of engineers in a global context becomes crucial. This programme offers* students the chance to develop their engineering skills in both University College Dublin and Columbia University, New York and to graduate with a dual degree from both universities. The benefits to both graduates and the industry as a whole will be in the training of high-quality graduates with global knowledge and training of European and American engineering practices.

Course Highlight

Students have the opportunity to study in New York city for a year and receive a dual degree from New York's Columbia University (ranked 16th best university in the world) and University College Dublin. Students will complete a mixture of taught modules, a work placement and research over the course of their studies on this programme.

Course Content and Structure

- 120 ECTS credits + 30 US credits
- 60 ECTS completed in first year in UCD. 30 US credits in second year in New York (this equates to 60 transfer ECTS credits from UCD)
- Stage 1 in UCD comprises 6 core modules in the Autumn Trimester (30 ECTS) and either a Professional Work Experience placement (30 ECTS) which runs across the Spring and Summer Trimesters or a Design Project (10 ECTS) plus Option Modules (20 ECTS) which are undertaken in the Spring Trimester.
- Research Credit Requirements for Stage 2 are equal to 6 US credits from supervised research + 6 US credits from research-intensive course modules. Modules in Columbia will be chosen in consultation with the Programme Director.

Core UCD modules:

- Innovation Leadership
- Civil Engineering Systems
- Water Engineering
- Geotechnics
- Design of Structures
- Quantitative Methods for Engineers
- Product Design
- Interfacial Engineering

Optional UCD modules:

- Advanced Air Pollution
- Environmental Engineering
- Transportation Ops & Planning
- Water & Wastewater Treatment
- Hydraulic Engineering Design
- Bridge Engineering
- Water Waste and Environmental
- Highway Engineering
- Professional Engineering Management
- Statistical Machine Learning

Why study at UCD?

Graduate education

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Global Profile

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Global community

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Global careers

Dedicated careers support; 2-year stayback visa to work in Ireland

**Students will need to have a minimum GPA of 3.08 from UCD (equivalent to 2:1) and with the support of UCD make an application to Columbia University for acceptance. Students who are unsuccessful will complete Stage 2 of their degree in UCD.*

Career Opportunities

There are excellent job opportunities for graduates of this dual master's programme in civil engineering design and construction, damage assessment and disaster relief, working in the developing work as engineers with NGOs, project management and site management. Established civil engineering employers with a presence in both Ireland, the US and around the world include Arup, Jacobs and AECOM.

Programme Director

Dr Ekin Ozer

While this dual-master's programme is new, the discipline of civil engineering is well-established and has a long-standing history in both UCD and Columbia University. Students will have the opportunity to learn in both institutes, each with an excellent track record in teaching and research. Students graduating with this dual-master's degree from UCD and Columbia will have international experience that is unrivalled in the global world of civil engineering. Society will clearly benefit from engineers with global training of both European and American practices.

Applicant Profile

- **For UCD:** A first cycle honours (2:1) bachelor's degree in civil engineering or equivalent and the appropriate prior learning.

  Applicants whose first language is not English must also demonstrate English language proficiency of IELTS 6.5 (no band less than 6.0 in each element), or equivalent.

- **For Columbia:** GPA of 3.08 or better from UCD (equivalent to 2:1 or better)

  The Graduate Record Examination (GRE) is not required for the 2024 admission cycle. If you have taken the exam and would like to provide your scores, you may, but it is not required. Students who do not submit scores will not be penalized in the graduate admissions review process.

International Fees and Scholarships

Tuition fee information is available on www.ucd.ie/fees. Please note that UCD offers a number of graduate scholarships for full-time, self-funding international students, holding an offer of a place on a UCD masters programme. Please see www.ucd.ie/global/scholarships/ for further information.

Related Masters Programmes of Interest

- MEngSc Structural Engineering
- MEngSc Water, Waste & Environmental Engineering
- ME Civil, Structural & Environmental Engineering

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University College Dublin
Ireland's Global University

Course code: T298

ME Civil, Structural & Environmental Engineering

Two Years Full Time (September start)

Introduction

This programme prepares graduates to work as professional engineers in the broad field of infrastructural design, construction and management. Graduates will satisfy the academic requirements for the title of Chartered Engineer. You can choose a specialisation either in civil, structural or environmental engineering and as such the range of module options is extensive. The programme is delivered by a culturally diverse group of internationally renowned academic staff. The ME programme is professionally accredited by Engineers Ireland and recognised by the Washington Accord for Chartered Engineer status.

Course Highlight

This programme is delivered by the top ranked civil engineering department in Ireland according to the QS World subject rankings for Civil and Structural Engineering. UCD Civil Engineering has also made major investments in recent years to modernise and improve its research capability across a range of sub-disciplines and to establish facilities for world class research.

Course Content and Structure

- 120 credits taught masters
- 70 credits taught modules
- 20 credits Research Project
- 30 credits Work Experience

Core modules include:

- Case Studies
- Civil Engineering Systems
- Professional Engineering (Management)
- Geotechnical Engineering
- Highway Engineering
- Innovation Leadership
- Quantitative Methods for Engineers
- Design of Structures
- Water Engineering
- Transportation Engineering
- Engineering Research Project

Option modules may include:

- Advanced Air Pollution
- Analysis of Structures
- Bridge Engineering
- Design of Structures
- Environmental Engineering
- Geographical Information Systems
- Geotechnics
- Hydraulic Engineering Design
- Transport Modelling
- Realising Built Projects
- Transport Operations and Planning
- Water and Wastewater Treatment Processes
- Waste management

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ACCREDITED PROGRAMME

Career Opportunities

Graduates from the programme will find employment as engineers in the private sector (e.g., engineering consultancy, engineering design, project management, civil engineering contractors), in the public sector (e.g., local government, higher education sector), and in the non-governmental sector (e.g., environmental advocacies, NGOs), or may wish to pursue further qualifications (e.g., PhD, MBA) to become even more specialised. Graduates will be equipped with the skills that allow them to be lifelong learners, whether in the pursuit of knowledge for personal use or in connection with their engineering careers. Employers of civil, structural and environmental engineers include commercial firms, engineering consultancies, government agencies, and non-governmental organisations, all well known in Ireland and many with global operations. Some of these include: AECOM, Arup, Environmental Protection Agency, Local Authorities, Eirgrid, RPS Group, SISK, Jacobs

Graduate Profile

Enoch Ademo
Waterman Moylan Consulting

I picked the ME in Civil, Structural and Environmental Engineering degree because it allows me to combine three different courses in one because it covers three different branches of Civil Engineering in one master's programme. It also allows me to explore areas such as geotechnical engineering and covers case studies which gives you real-life solutions to real life practical problems. While the course content is challenging and you are kept on your toes, it makes you think fast and equips you with real insight knowledge on how to achieve and how to prepare solutions to problems that we meet every day. As part of the course you also complete an eight-month internship to a civil engineering company, to gain valuable knowledge and gain valuable insight. I got an internship at Waterman Moylan and with them I hope to gain skills and further my knowledge as I build towards a good career when I finish my master's in UCD.

Applicant Profile

- Applicants must hold a bachelor's degree in Civil or Structural Engineering with a minimum upper second class honours (NFQ level 8) or international equivalent.
- Applicants whose first language is not English must also demonstrate English language proficiency of IELTS 6.5 (no band less than 6.0 in each element), or equivalent.
- Students who do not meet the IELTS requirement may wish to consider taking the Pre-Sessional or Pre-Masters Pathway. Full details https://www.ucd.ie/alc/programmes/pathways/

International Fees and Scholarships

Tuition fee information is available on www.ucd.ie/fees. Please note that UCD offers a number of graduate scholarships for full-time, self-funding international students, holding an offer of a place on a UCD masters programme. Please see www.ucd.ie/global/scholarships/ for further information.

Related Masters Programmes of Interest

- MEngSc Structural Engineering
- MEngSc Water, Waste & Environmental Engineering

CONTACT US

Irish/EU Students – Katie O'Neill **E**: katie.oneill@ucd.ie **T**: +353 1 7161781 **W**: www.ucd.ie/eacollege
International Students – **E**: eamarketing@ucd.ie/internationalenquiries@ucd.ie **T**: +353 1 7168500 **W**: www.ucd.ie/global

APPLY NOW

This programme receives significant interest so please apply early online at **www.ucd.ie/apply**

University College Dublin
Ireland's Global University

Course code: T335

ME Electrical Power Engineering

Two Years Full Time (September start)

Introduction

The ME Electrical Power Engineering programme is taught by world-renowned academics from the Energy Institute (EI) at University College Dublin, which is a global research leader in energy systems integration. This professionally accredited programme addresses the challenge of transitioning towards sustainable power systems, and integrating diverse generation and demand-side technologies, while maintaining stable and economic operation. It provides strong training in various aspects of electrical engineering and enhances this through a major research project and professional work experience. If you are a mathematically strong engineering student who is interested in power system analysis and renewables integration, and you are seeking a professional career in the power system and smart grid sectors, then this programme is ideal for you. The ME programme is professionally accredited by Engineers Ireland and recognised by the Washington Accord for Chartered Engineer status.

Course Highlight

Delivered by a highly research-active School composed of many internationally high-profile academics, including five IEEE Fellows. This programme is also taught by academics from the world-leading Energy Institute for the integration of renewables into power systems and energy systems.

Course Content and Structure

- 120 credits taught masters
- 65 credits taught modules
- 25 credits Research Project
- 30 credits Work Experience

Core modules include:

- Applications of Power Electronics
- Control Theory
- Electrical Power Thesis
- Electrical Machines
- Power Electronics and Drives
- Power System Design
- Power System Dynamics and Control
- Power System Engineering
- Power System Operation
- Professional Engineering (Management)
- Professional Work Experience
- Renewable Energy Systems

Option modules may include:

- Applied Dynamics II
- Data Science in Python
- Energy Economics and Policy
- Energy Systems & Climate Change
- Entrepreneurship in Engineering
- Fossil Fuels, Carbon Capture and Storage
- Machine Learning for Engineers
- Numerical Algorithms
- Optimisation Techniques for Engineers
- Power Electronics Technology
- Power System Stability Analysis
- Signal Processing

Why study at UCD?

Graduate education

12,800 graduate students; 17% graduate research students; structured PhDs

Global Profile

UCD is ranked in the top 1% of higher education institutions worldwide

Global community

9,500 international students and a 300,000 alumni network across 165 countries

Global careers

Dedicated careers support; 2-year stayback visa to work in Ireland

ENGINEERS IRELAND
ACCREDITED PROGRAMME

Career Opportunities

By completing the ME Electrical Power Engineering programme, you will become a graduate with power systems and power electronics expertise, whose rare skills will be attractive to a wide variety of technical and managerial roles in the electrical utility and smart grid sectors on an international scale. Potential employers include ABB Cylon, Alstom, Eaton, EDF, EirGrid, EPRI, ESB, NREL, Premium Power, Siemens, Smart Wires, SSE, and SuperNode. The ME programme also provides an excellent starting point for those aiming for a PhD programme and a research career within a university or specialised research institution.

Graduate Profile

Rachel Perkinson
SSE Renewables

The ME in Electrical Power Engineering at UCD is a challenging but rewarding course. I found that the course prepared me well for a career in renewable energy by making me aware of the opportunities and challenges facing the industry by mixing knowledge of the key technologies with how electricity markets and networks interact and operate. Throughout my 5 years at UCD I had the opportunity to spend a year studying in New Zealand and undertook two internships which provided invaluable experience. I am now working as an electrical engineer for SSE Renewables based in Scotland and find I use many of the skills I developed at UCD on a regular basis.

Applicant Profile

- Applicants must hold a bachelor's degree with a minimum upper second class honours (NFQ level 8) or international equivalent in electrical engineering, electronic engineering, power systems, power electronics, and energy-related subjects.
- Applicants whose first language is not English must also demonstrate English language proficiency of IELTS 6.5 (no band less than 6.0 in each element), or equivalent.
- Students who do not meet the IELTS requirement may wish to consider taking the Pre-Sessional or Pre-Masters Pathway. Full details https://www.ucd.ie/alc/programmes/pathways/

International Fees and Scholarships

Tuition fee information is available on www.ucd.ie/fees. Please note that UCD offers a number of graduate scholarships for full-time, self-funding international students, holding an offer of a place on a UCD masters programme. Please see www.ucd.ie/global/scholarships/ for further information.

Related Masters Programmes of Interest

- MEngSc Electrical Power Networks
- ME Energy Systems

CONTACT US

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APPLY NOW

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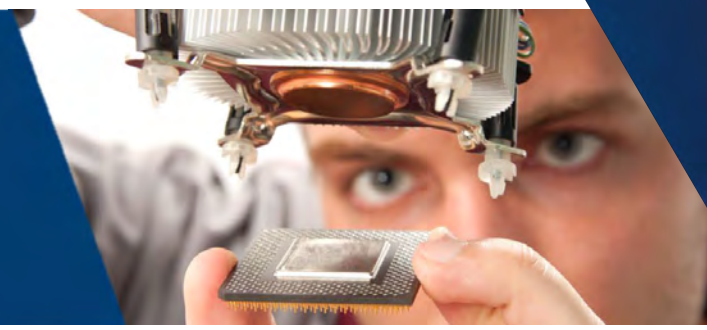
University College Dublin
Ireland's Global University

Course code: T163

ME Electronic & Computer Engineering

Two Years Full Time (September start)



Introduction

Ireland has evolved into one of the world's most important centres for high-tech businesses. The ICT sector in Ireland is a thriving and growing industry with 9 of the top 10 global ICT companies maintaining a presence in Ireland. The economic contribution of the sector is substantial. The ICT industry is responsible for approximately 25% of Ireland's total turnover, representing one-third of Ireland's exports by value. This ME in Electronic & Computer Engineering is a two-year programme designed to develop professional engineers who can excel in the electronic and computer sectors worldwide. The ME programme is professionally accredited by Engineers Ireland and recognised by the Washington Accord for Chartered Engineer status.

Course Highlight

Delivered by a highly research-intensive School composed of many internationally high-profile academics including five IEEE Fellows. This two-year programme provides 6-8 months' professional work experience as an embedded element of the programme.

Course Content and Structure

- 120 credits taught masters
- 65 credits taught modules
- 25 credits Research Project
- 30 credits Work Experience

Modules may include:

- Advanced Signal Processing
- Analogue Integrated Circuits
- Control Theory
- Data Science in Python
- Digital Communications
- Digital & Embedded Systems
- Entrepreneurship in Engineering
- Information Security
- Information Theory
- Machine Learning for Engineers
- Networks and Internet Systems
- Neural Engineering
- Optimisation Techniques for Engineers
- Professional Engineering Management
- Quantum Computing
- Software Engineering
- RF Electronics
- Wireless Systems

Why study at UCD?

Graduate education

12,800 graduate students; 17% graduate research students; structured PhDs

Global Profile

UCD is ranked in the top 1% of higher education institutions worldwide

Global community

9,500 international students and a 300,000 alumni network across 165 countries

Global careers

Dedicated careers support; 2-year stayback visa to work in Ireland

ENGINEERS IRELAND
ACCREDITED PROGRAMME

Career Opportunities

There are excellent job opportunities available in the ICT sector in Ireland. The Irish Government has an ongoing commitment to generating thousands of jobs in the ICT sector every year. As one of the top priorities of our economy, Ireland's ICT industry is rich in expertise, innovation and development – while Dublin has quickly become known as one of the tech start-up capitals of Europe. Employers in this area include Accenture, Analog Devices, Intel, Microsoft, SAP, Synopsys, Xilinx, Qualcomm, Google, Facebook and LinkedIn

Graduate Profile

Ruth Fitzmaurice
Intel

When looking at postgraduate courses, the electronic and computer engineering masters at UCD stood out to me due to its excellent facilities and respected lecturers. The two-year course includes an 8-month internship, 3 trimesters of taught subjects and an 8-month research project. For my internship, I worked with the Internet-of-Things and Wearables Group at Intel. Working within Intel as an intern gave me the opportunity to enhance the technical and problem-solving skills I acquired throughout my previous three years at UCD. I am currently working as a Graduate Product Development Engineer with the Manufacturing Verification and Performance Group in Intel.

Applicant Profile

- Applicants must hold abachelor's degree with a minimum upper second class honours (NFQ level 8) or international equivalent in an Electrical, Electronic or Computer Engineering programme.
- Applicants whose first language is not English must also demonstrate English language proficiency of IELTS 6.5 (no band less than 6.0 in each element), or equivalent.
- Students who do not meet the IELTS requirement may wish to consider taking the Pre-Sessional or Pre-Masters Pathway. Full details https://www.ucd.ie/alc/programmes/pathways/

International Fees and Scholarships

Tuition fee information is available on www.ucd.ie/fees. Please note that UCD offers a number of graduate scholarships for full-time, self-funding international students, holding an offer of a place on a UCD masters programme. Please see www.ucd.ie/global/scholarships/ for further information.

Related Masters Programmes of Interest

- ME Optical Engineering
- MEngSc Electronic & Computer Engineering
- MSc Advanced Software Engineering
- MSc Computer Science (Negotiated Learning)
- MSc Information Systems

CONTACT US

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APPLY NOW

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University College Dublin
Ireland's Global University

Course code: T164

ME Energy Systems Engineering

Two Years Full Time (September start)

Introduction

The ME in Energy Systems Engineering prepares graduates to meet the engineering, economic and environmental challenges facing the energy systems of developed and developing countries. Graduates of this programme gain a comprehensive understanding of the complex multi-disciplinary and often conflicting issues that arise in the search for effective solutions. Graduates will also be capable of working anywhere in the world at an advanced technical level or as a professional engineering manager. The ME programme is professionally accredited by Engineers Ireland and recognised by the Washington Accord for Chartered Engineer status.

Candidates who have already completed a 4-year professional engineering bachelor's degree may be eligible for recognition of prior learning, enabling them to complete a 90 ECTS version of this programme over 12 months.

Course Highlight

This Masters is a professionally accredited qualification delivered by a school with a long history of innovation. The programme provides the opportunity for a 6-8 month industrial placement as well as an extensive research project.

Course Content and Structure

- 120 credits taught masters
- 60 credits taught modules
- 30 credits Research Project
- 30 credits Work Experience

Core modules include:

- Chemical Processes of Sustainable and Renewable Energy
- Electrical & Electronic Circuits
- Electrical Energy Systems II
- Energy Systems & Climate Change
- Energy Systems in Buildings II
- Engineering Thermodynamics II
- Fossil Fuels, Carbon Capture & Storage
- Power System Operation
- Professional Engineering Management
- Research Project/Thesis
- Research Skills and Techniques
- Wind Energy

Please see online for a full list of option modules.

Why study at UCD?

Graduate education

12,800 graduate students; 17% graduate research students; structured PhDs

Global Profile

UCD is ranked in the top 1% of higher education institutions worldwide

Global community

9,500 international students and a 300,000 alumni network across 165 countries

Global careers

Dedicated careers support; 2-year stayback visa to work in Ireland

ENGINEERS IRELAND
ACCREDITED PROGRAMME

Career Opportunities

Graduates of this ME Energy Systems programme will be equipped with the skill set and knowledge vital for crucial roles in research, design and development in companies in the energy sector. Alumni from this programme have obtained jobs in a wide variety of organisations in Ireland and further afield, the majority in the energy sector. Previous employers of ME in Energy Systems graduates include: Accenture, Arup, Berkeley Lab, Berkeley, Commission for Energy Regulation, Dublin Airport Authority, Intel Ireland Limited, Dalkia Ltd, Dimplex Renewables, Dynapower LLC, Eclareon, EirGrid, ESB International, Exergyn, Enercon GmbH, Imtech, Independent Market Operator, Intel, Irish Cement Limited, Phillips 66 Whitegate Refinery Ltd, KBR, KBR, MCS Kenny, National Grid, Northstar Drillstem Testers, Edmonton, PM Group, PwC, RPS Group, Saudi Aramco, Schletter UK Ltd, Schwenk Zement, Sea Breeze Power Corp, Sellafield Ltd, Trelleborg Marine Systems, and Melbourne.

Applicant Profile

- Applicants must hold a bachelor's degree with a minimum upper second class honours (NFQ level 8) or international equivalent in Mechanical, Electrical or Electronic Engineering.
- Applicants whose first language is not English must also demonstrate English language proficiency of IELTS 6.5 (no band less than 6.0 in each element), or equivalent.
- Students who do not meet the IELTS requirement may wish to consider taking the Pre-Sessional or Pre-Masters Pathway. Full details https://www.ucd.ie/alc/programmes/pathways/

International Fees and Scholarships

Tuition fee information is available on www.ucd.ie/fees. Please note that UCD offers a number of graduate scholarships for full-time, self-funding international students, holding an offer of a place on a UCD masters programme. Please see www.ucd.ie/global/scholarships/ for further information.

Related Masters Programmes of Interest

- ME Electrical Power Engineering
- MSc Sustainable Energy & Green Technologies

Graduate Profile

Siúin O'Riordan
Wesgroup Properties

I chose to do the Master's in Energy Systems Engineering in UCD to broaden my skills and career opportunities and to be trained to work in the energy systems industry. The course included an 8-month professional work placement which was another important factor in choosing the master's. This work experience has given me confidence in approaching interviews, working as part of a professional team and developing my future career in the renewable energy sector. The high-quality material provided and the wide variety of modules offered have provided me with a deeper understanding of the current and future technical and economic challenges faced by the world's energy systems. The master's has prepared me to work as an engineer and be involved in future energy solutions.

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APPLY NOW

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University College Dublin
Ireland's Global University

Course code: T166

ME Engineering with Business

Two Years Full Time (September start)

Introduction

Engineering is viewed by many as an ideal preparation for a career in business or management. The ME in Engineering with Business offers a unique opportunity for engineering students to complement their technical expertise with a deep understanding of the business and management aspects of engineering practice such as operations, human resources, marketing and strategy. As a result, graduates will develop a distinctively cross-disciplinary perspective, which is essential to a successful career in business. If you have a mechanical, civil, electrical or electronics background and you plan to practise engineering in a business context, then the ME (Engineering with Business) is an excellent choice for you. The programme is the only business-oriented master's programme accredited by Engineers Ireland for Chartered Engineering status.

Course Highlight

This programme is delivered in conjunction with the UCD Michael Smurfit Graduate Business School, Ireland's leading business school, which is ranked in the top 25 in the latest Financial Times European Business Schools Rankings.

Course Content and Structure

- 50 credits Engineering modules
- 30 credits Business modules
- 40 credits Live Learning

- **Live Learning:** This programme offers students the opportunity to complete a 6-month work placement, where students' technical and business knowledge can be applied and developed in a dynamic real-world setting. This is then followed by an industry-focused research project which combines academic and practice-based learning.

Business modules include:

- Business Information Systems
- Data Analytics for Engineers
- Economics
- Entrepreneurship
- Marketing
- Operations Management
- Organisational Behavior
- Introduction to Robotics
- Engineering Decision Support Systems
- Supply Chain Design & Analysis
- Engineering Project Management

Why study at UCD?

Graduate education

12,800 graduate students; 17% graduate research students; structured PhDs

Global community

9,500 international students and a 300,000 alumni network across 165 countries

Global Profile

UCD is ranked in the top 1% of higher education institutions worldwide

Global careers

Dedicated careers support; 2-year stayback visa to work in Ireland

ENGINEERS IRELAND
ACCREDITED PROGRAMME

Career Opportunities

The ME in Engineering with Business is designed to produce fully qualified engineers who have a particular interest in and understanding of the business context within which engineers usually operate. It was conceived to address the perceived lack of industry-ready engineers coming out of third-level education. Career opportunities are very broad as the ME degree positions the student not as a narrow technical specialist but as a multi-skilled engineer, combining specialist skills with a broad understanding of the business environment. In addition to careers within their technical specialisations, graduates can consider careers in commercial roles, management consulting, the financial sector or IT. Previous employers of alumni include: Accenture, Abbvie, Boston Scientific, Deloitte, Intel, Jaguar UK, MSD Carlow, PJ Walls, PM Group, RPS Consulting, and SAP.

Graduate Profile

Rachel Ward
GSK

This master's programme is quite unique and allowed me the opportunity to interview for roles both in Ireland and overseas, eventually allowing me to secure a job in a pharmaceutical company in the UK which I could never have imagined before beginning this programme. This master's has provided me with the tools to confidently pursue my goals. UCD has offered me everything I could have hoped for in terms of a memorable college experience; from industry exposure and challenging classes to pushing me to think as both an engineer and a businesswoman. I encourage anyone interested in broadening their knowledge and getting noticed on an international stage to strongly consider this programme.

Applicant Profile

- Applicants must hold a bachelors' degree with a first class honours (NFQ level 8) or international equivalent in Mechanical, Civil, Electrical or Electronic Engineering.
- Applicants whose first language is not English must also demonstrate English language proficiency of IELTS 6.5 (no band less than 6.0 in each element), or equivalent.
- Students who do not meet the IELTS requirement may wish to consider taking the Pre-Sessional or Pre-Masters Pathway. Full details https://www.ucd.ie/alc/programmes/pathways/

International Fees and Scholarships

Tuition fee information is available on www.ucd.ie/fees. Please note that UCD offers a number of graduate scholarships for full-time, self-funding international students, holding an offer of a place on a UCD masters programme. Please see www.ucd.ie/global/scholarships/ for further information.

Related Masters Programmes of Interest

- MEngSc Engineering Management
- MSc Management
- MSc Project Management
- MSc Supply Chain Management

CONTACT US

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APPLY NOW
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University College Dublin
Ireland's Global University

Course codes: T369, T370, T371, T383

ME Manufacturing Engineering (double degree)

Two Years Full Time (September start)

Introduction

This masters merges manufacturing technical and technological aspects with innovation and entrepreneurship teaching, in the context of the global societal challenges, such as circular economy, industrial innovation and sustainability. It is a double degree programme, coordinated by EIT Manufacturing Master School, between UCD and other universities around Europe i.e. Aalto University, Finland, Ecole Centrale de Nantes (ECN), France, Politecnico di Milano (POLIMI), Italy, University of Applied Sciences and Arts of Italian Switzerland (SUPSI), Switzerland, Institut Polytechnique de Grenoble (Grenoble INP), France and and Vienna University of Technology (TU Wien), Austria. The first year is spent at UCD (entry university) and the second year is spent at another (exit) university as listed above. Students choose one of four minors offered as part of the programme i.e. Additive Manufacture for Full Flexibility, Zero-Defect Manufacturing for a Circular Economy, Platforms for digitalized value networks, or Data Science & AI for Competitive Manufacturing.

Course Highlight

On completion students receive two degrees directly from entry and exit universities and the EIT label certificate from EIT Manufacturing, as international recognition of their high-quality education curriculum. EIT Manufacturing (EITM) Master School is part of EIT Manufacturing, a European association of leading Universities, industries and research centres linked to the manufacturing sector.

Course Content and Structure

- 120 credit Taught Masters
  90 credits: Taught modules taken between 2 partner universities
  30 credits: Thesis project undertaken at exit university
- Modules offered will depend on minor stream chosen and the Entry-Exit universities combination
- The teaching methods and learning environment are highly interactive and varied and include lectures, workshops, tutorials, labs, and practical exercises.

Please see UCD Graduate Studies for a full breakdown of each minor stream

Modules offered by UCD include:

- Manufacturing Engineering
- Computational Continuum Mechanics
- Advanced Metals & Materials Processing
- Medical Device Design
- Mechanical Engineering Design
- Technical Communication
- Advanced Polymer Engineering
- Materials Science and Engineering
- Engineering Decision Support Systems
- Professional Engineering (Finance)
- Professional Engineering (Management)
- Engineering Project Management
- Supply Chain Design & Analysis
- Operations Management
- Quantitative Methods for Engineers

Why study at UCD?

Graduate education

12,800 graduate students; 17% graduate research students; structured PhDs

Global community

9,500 international students and a 300,000 alumni network across 165 countries

Global Profile

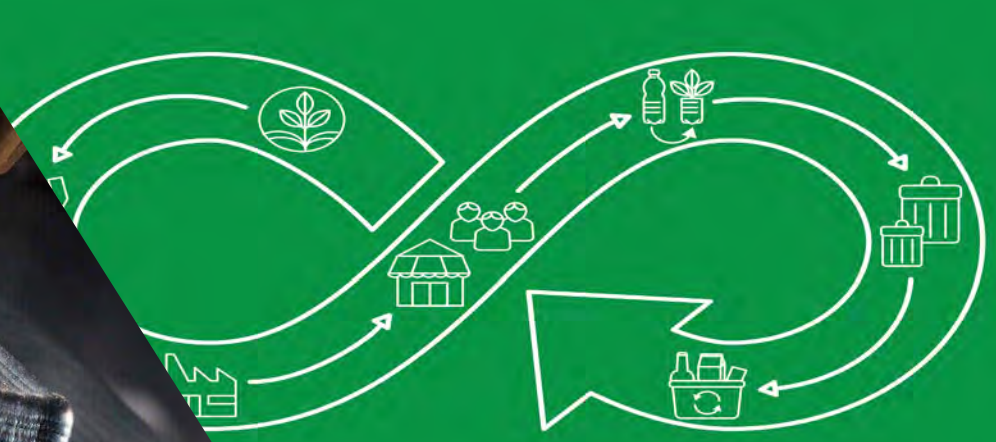
UCD is ranked in the top 1% of higher education institutions worldwide

Global careers

Dedicated careers support; 2-year stayback visa to work in Ireland

eit Manufacturing

Co-funded by the European Union



UCD.TG.T369.2023.A

Career Opportunities

There is strong demand throughout Europe for graduates of manufacturing degree programmes to be better equipped for the marketplace than their predecessors have been. There is strong need for graduates to have direct experience of industry, to have a practical awareness of important developments within the sectors of Europe's manufacturing industry (e.g., increased digitalisation, demands of Industry 4.0, growth of additive manufacturing and robotics, etc.), to have a greater awareness of innovation & entrepreneurship, combined with an international perspective that is the direct result of personal experiences. The ME Manufacturing Engineering will prepare you for high level technical positions, Innovation roles and business profiles, including the capability to create your own start-up. It will also allow you to create a professional network at national and international level through the several initiatives and the EIT alumni communities.

Programme Director

Dr Pezhman Ghadimi

This European and intersectoral mobility postgraduate programme is strongly oriented towards innovation and entrepreneurship. The strong industry component is reinforced by industry projects, the Master thesis and a potential internship. The objective of the Master School is to train the future European leaders in manufacturing, combining digital and technical manufacturing skills to meet the needs of European SMEs and multinationals alike. Students will be delivered a double Master degree after spending one year in two of the seven universities which shaped up this ambitious and prestigious training programme, along with a EIT Manufacturing certificate. UCD will welcome students participating in this programme next September 2022 for the first year of their Master studies. The students will spend their second year at other partner universities.

Applicant Profile

- Applicants must hold a bachelor's degree with a minimum of 180 ECTS credits or equivalent academic qualifications from an internationally recognized university with a minimum 2:1 degree GPA. B.Sc, in Mechanical Engineering, Electrical Engineering, Computer Engineering, Computer Science, Information Technology or Industrial Engineering, depending on the minor that the applicant wants to pursue.

- Applicants whose first language is not English must also demonstrate English language proficiency of IELTS 6.5 (no band less than 6.0 in each element), or equivalent.

International Fees and Scholarships

All students for this programme are eligible for an automatic scholarship. The EIT Manufacturing Master School will rank applicants and offer scholarships at the time of the students admission. Scholarships may include: mobility grant, subsistence costs support and fee waivers. See EIT Manufacturing website https://eitmanufacturing.eu/ for more information

Related Masters Programmes of Interest

- ME Mechanical Engineering
- ME Materials Science & Engineering
- MEngSc Materials Science & Engineering
- ME Engineering with Business
- MEngSc Engineering Management

CONTACT US

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International Students – **E**: eamarketing@ucd.ie/internationalenquiries@ucd.ie **T**: +353 1 7168500
W: www.ucd.ie/global

APPLY NOW

Students apply through a central application system, managed by EIT Manufacturing

https://apply.eitmanufacturing.eu/

University College Dublin
Ireland's Global University

Course codes: T275

ME Materials Science & Engineering

Two Years Full Time (September start)

Introduction

Materials Science and Engineering is an interdisciplinary field investigating the relationship between the structure of materials at atomic or molecular scales and their macroscopic properties. ME Materials Science and Engineering Programme assists manufacturing-based engineering by training students for work in industry sectors as diverse as biomedical, energy, electronic, automotive and aerospace. This programme's aim is to provide advanced engineering education in subject areas related to design and application of materials such as metals, ceramics, polymers, composites and semi-conductors. The core knowledge in this field is essential in currently evolving advanced technologies such as additive manufacturing (also known as 3D-Printing) and nanotechnology.

Course Highlight

The programme is professionally dual accredited by both the Institute of Materials, Minerals and Mining (IOM3) and Engineers Ireland. The programme provides professional work placements for a duration of 6-8 months in Irish industry which includes companies in biomedical, aerospace, energy and electronic sectors.

Course Content and Structure

- 120 credits Taught masters
- 60 credits Taught modules
- 30 credits Research Project
- 30 credits Work Experience

Modules may include:

- Advanced Composites and Polymer Engineering
- Fracture Mechanics
- Materials Thermodynamics and Kinetics
- Materials Science & Engineering
- Professional Engineering (Finance) Solid-
- Solid State Devices
- Technical Ceramics
- Bio-material Interactions
- Nanomaterials
- Advanced Metals Processing
- Energy Systems and Climate Change
- Biomaterials
- Computational Continuum Mechanics I
- Manufacturing Engineering II
- Medical Device Design
- Applied Chemistry: Selected Frontiers Areas
- Professional Engineering (Management)
- Professional Engineering (Finance)

Why study at UCD?

Graduate education

12,800 graduate students; 17% graduate research students; structured PhDs

Global Profile

UCD is ranked in the top 1% of higher education institutions worldwide

Global community

9,500 international students and a 300,000 alumni network across 165 countries

Global careers

Dedicated careers support; 2-year stayback visa to work in Ireland

IOM3 Accredited Programme

Engineers Ireland Accredited Programme

UCD.TG.T275.2023.A

Career Opportunities

Graduate of the ME Materials Science and Engineering programme can look forward to limitless employment opportunities in leading companies of the manufacturing, biomedical, aerospace, energy and electronic sectors. Manufacturing accounts for24% of Irish economic output and employs 20% of the Irish workforce directly or indirectly. Ireland's aerospace and aviation industry is worth over €4.1 billion to the Irish economy, and there are more than 250 companies involved in the aerospace, aviation and space sectors in Ireland, providing employment for around 42,000 full-time workers. Moreover, Ireland hosts 18 of the world's top 25 medtech companies and a multi-national semi-conductor manufacturing company (Intel Leixlip), overall employing over 40,000 people. UCD materials graduates have taken up roles such as data scientist, manufacturing engineer, development engineer, and research engineer, in different industrial sectors including aerospace (General Electric, Rolls Royce, Lockheed Martin Aeronautics), electronics (Intel), biomedical (Boston Scientific, Stryker, DePuy Synthes) and energy (Siemens).

Graduate Profile

Matteo Nicolasi
Stryker

What convinced me to choose this programme was its interdisciplinary nature and the exposure to a wide range of engineering subjects that comes with it. The programme manages to combine theoretical learning and practical experiences masterfully and allowed me to do an internship at the Nano Imaging and Materials Analysis Centre at UCD. Here I gained hands-on experience in advanced electron microscopy and I was put, since day one, at the centre of the laboratory daily operations. Thanks to this experience and the excellent education that this programme provided me with, I was able to obtain a job at one of the world's leading biomedical engineering companies where I currently work as R&D engineer.

Applicant Profile

- Applicants must hold a bachelor's degree with a minimum upper second class honours (NFQ level 8) or international equivalent in a relevant Engineering, Science or Technology programme.
- Applicants whose first language is not English must also demonstrate English language proficiency of IELTS 6.5 (no band less than 6.0 in each element), or equivalent.
- Students who do not meet the IELTS requirement may wish to consider taking the Pre-Sessional or Pre-Masters Pathway. Full details https://www.ucd.ie/alc/programmes/pathways/

International Fees and Scholarships

Tuition fee information is available on www.ucd.ie/fees. Please note that UCD offers a number of graduate scholarships for full-time, self-funding international students, holding an offer of a place on a UCD masters programme. Please see www.ucd.ie/global/scholarships/ for further information.

Related Masters Programmes of Interest

- ME Mechanical Engineering
- MEngSc Materials Science & Engineering

CONTACT US

Irish/EU Students – Katie O'Neill **E**: katie.oneill@ucd.ie **T**: +353 1 7161781 **W**: www.ucd.ie/eacollege
International Students – **E**: eamarketing@ucd.ie/internationalenquiries@ucd.ie **T**: +353 1 7168500 **W**: www.ucd.ie/global

APPLY NOW
This programme receives significant interest so please apply early online at **www.ucd.ie/apply**

University College Dublin
Ireland's Global University

Course code: T165

ME Mechanical Engineering

Two Years Full Time (September start)

Introduction

The ME in Mechanical Engineering is a two-year professional engineering graduate degree. Graduates of the programme will be eligible for the title of Chartered Engineer (CEng). This programme is aimed at graduate Mechanical Engineers seeking to obtain a master's degree in Mechanical Engineering. You will gain advanced theoretical, conceptual and practical knowledge in the application of Mechanical Engineering. Emphasis is placed on the skills required to generate new knowledge through research. This is achieved through independent and project-based learning while working with UCD academics and researchers on contemporary research projects.

Course Highlight

This ME is professionally accredited by Engineers Ireland and recognised by the Washington Accord for Chartered Engineer status. The programme provides the opportunity for a 6-8 month industrial placement as well as an extensive research project.

Course Content and Structure

- 120 credits Taught masters
- 65 credits Taught modules
- 25 credits Research Project
- 30 credits Work Experience

Core Modules include:

- Computational Continuum Mechanics I
- Computational Continuum Mechanics II
- Control Theory and/or Process Control
- Engineering Thermodynamics III
- Fracture Mechanics
- Manufacturing Engineering II
- Mechanics of Fluids III
- Mechanics of Solids III
- Online Research Skills and Techniques
- Professional Engineering Management

Option Modules include:

- Advanced Composites and Polymers
- Advanced Metals and Materials Processing
- Data Analytics for Engineers
- Energy Systems and Climate Change
- Heat Transfer
- Engineering Decision Support Systems
- Engineering Project Management
- Materials Science and Engineering
- Numerical Algorithm
- Operations Management
- Quantitative Methods for Engineers
- Technical Ceramics

Why study at UCD?

Graduate education

12,800 graduate students; 17% graduate research students; structured PhDs

Global Profile

UCD is ranked in the top 1% of higher education institutions worldwide

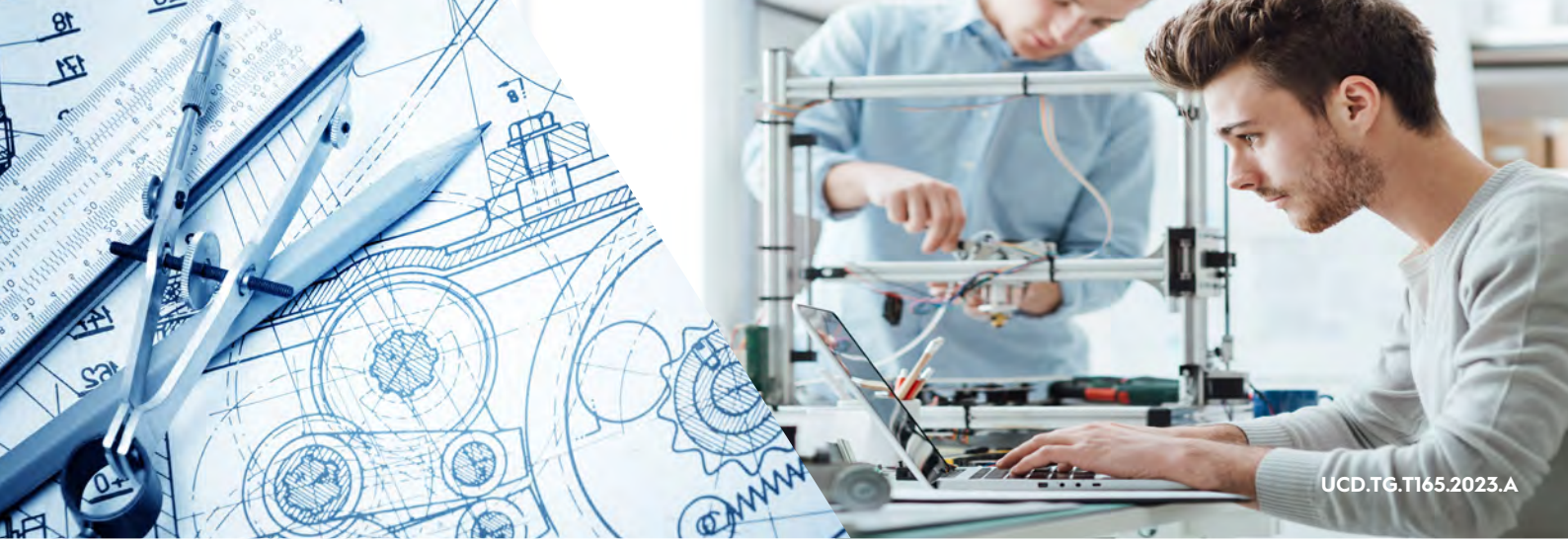
Global community

9,500 international students and a 300,000 alumni network across 165 countries

Global careers

Dedicated careers support; 2-year stayback visa to work in Ireland

ENGINEERS IRELAND
ACCREDITED PROGRAMME



Career Opportunities

In the year immediately after graduation, this programme boasts a 95% success rate for graduates seeking employment or progression to research education. Mechanical engineers are at the centre of every area of technology. Graduates from this programme will be eligible to become fully qualified professional engineers, capable of working anywhere in the world at an advanced technical level or as a professional engineering manager. In the recent past, UCD ME Mechanical Engineering graduates have progressed to careers in industries such as: aerospace industry (e.g., European Space Agency), automobile industry (e.g., Denso, Ferrari, Ford, Jaguar, Land Rover), biomedical industry (e.g., Boston Scientific, Medtronic, Stryker), oil and gas (Cameron), and materials and manufacturing (Henkel, Kingspan).

Graduate Profile

Cathal McClean
ORIX Aviation

In the first year of the master's I was able to spend eight months in an aircraft maintenance organisation, which gave great context to the theory learned in classroom modules. Following on from this, I was fortunate enough to do a research thesis on the topic of fracture of composites, a material used extensively in aircraft structure. UCD Mechanical Engineering is broad enough to give you the range and choice of topics to really pursue an area of interest to you. Whether you are interested in fluid dynamics, or control systems, or micro manufacturing, or 3D printing, the framework is there to pursue these areas.

Applicant Profile

- Applicants must hold a bachelor's degree in Mechanical Engineering with a minimum upper second class honour (NFQ level 8) or international equivalent and the appropriate prior learning.
- Applicants whose first language is not English must also demonstrate English language proficiency of IELTS 6.5 (no band less than 6.0 in each element), or equivalent.
- Students who do not meet the IELTS requirement may wish to consider taking the Pre-Sessional or Pre-Masters Pathway. Full details https://www.ucd.ie/alc/programmes/pathways/

International Fees and Scholarships

Tuition fee information is available on www.ucd.ie/fees. Please note that UCD offers a number of graduate scholarships for full-time, self-funding international students, holding an offer of a place on a UCD masters programme. Please see www.ucd.ie/global/scholarships/ for further information.

Related Masters Programmes of Interest

- ME Energy Systems
- ME Materials Science & Engineering
- MEngSc Materials Science & Engineering

CONTACT US

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APPLY NOW

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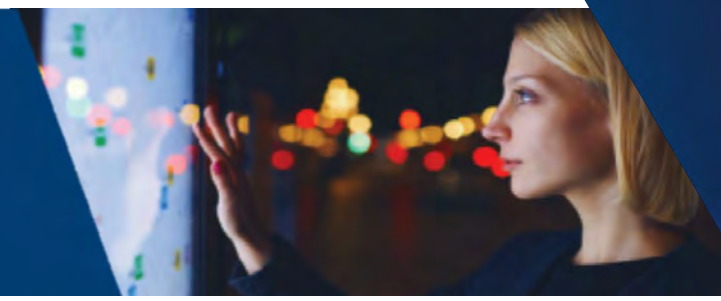
University College Dublin
Ireland's Global University

Course code: T368

MEM Master of Engineering Management

Two Years Part Time (September start)



Introduction

The MEM, established in 1967, is one of Ireland's most successful and highly sought after taught post graduate programmes in engineering management. This Masters is responsible for fast tracking participant's careers, drawing on resources from engineering, business and behavioural sciences in a programme which bridges the divide between engineering and management. This programme equips graduates with the tools and techniques to deal professionally with the areas of innovation and technological development. Participants will gain a deep understanding of the world of engineering management by covering a wide range of business topics, from cost analysis to finance and corporate strategy. Participants will also learn best practices in human and organisational behaviour which are key to improving organisational effectiveness and enhance their analytical skills with a view to improved decision making. Designed for professionals with at least five years of industry experience and a background in engineering, technology, science or mathematics, this two year part-time programme is for individuals with the ambition to progress to senior management and leadership roles in global engineering and technology enterprises.

Course Highlight

The learning environment is highly collaborative and experiential. The part-time nature of the programme, in conjunction with the blended delivery format, allows participants to continue in employment and to quickly apply their newly acquired skills in an experiential manner. Through the discussion based classroom environment, there is a high degree of learning from peers across different industry sectors and organisation types.

Course Content and Structure

- 90 credits Taught modules

or

- 70 credits Taught modules

+

- 20 credits Applied Research Project

The Master of Engineering Management programme is delivered over four academic semesters (two academic years). The theme running through the first two semesters involves analysing the operations of the firm, while the second year of the programme builds on this foundation in order to develop the future direction of the firm.

Applied Research Project:
Students have the option of undertaking an applied, work related, research project in the second year, instead of any four of that years modules.

Topics include:

- Engineering Cost Analysis
- Operations Management
- Human Resource Management
- Intro to Data Analytics
- Technical Communications
- Project Management
- Quality Management (Lean & Six Sigma)
- Behaviour Leadership & Change
- Economics
- Marketing
- International Strategic Management
- Decision Analysis
- Design & Innovation
- Business System Design
- Finance
- Operations Strategy

Why study at UCD?

Graduate education
12,800 graduate students; 17% graduate research students; structured PhDs

Global community
9,500 international students and a 300,000 alumni network across 165 countries

Global Profile
UCD is ranked in the top 1% of higher education institutions worldwide

Global careers
Dedicated careers support; 2-year stayback visa to work in Ireland

Career Opportunities

Participants on the programme represent the full spectrum of STEM qualifications from Ireland and abroad, including all engineering disciplines, science, maths and information technology graduates. These participants are based in a wide range of industries from across private, public and semi-state sectors. Examples include Pharmaceutical (e.g. Amgen, Takeda, Pfizer, Leo), Med. Tech. (e.g. Nypro Healthcare, Mylan, Stryker, Boston Scientific), Semiconductor (e.g. Intel, ASML), Manufacturing (e.g. Sulzer, Kingspan, Pernod Ricard), Engineering Consulting & Services (e.g. Mercury, RPS, Atkins, Arup), Utilities (e.g. Irish Water, ESB, Ervia), Semi-state and public sector (e.g. Office of Public Works, ComReg, Dublin Bus, Irish Rail, Naval Service, Defence Forces, Local Authorities).

Graduate Profile

Cathal Cavanagh
General Manager, Blackrock Clinic

I was looking to progress my career, and for a course that would enable me to bridge the gap between engineering and senior management. An engineer's approach to problem solving is very well regarded in the business world, and this course builds on those strengths while developing the other business skills required. Just as important, the lecturers on the course come from industry, therefore providing real world application of the financial and professional theory covered. This course without doubt played a direct role in my career development. Since completing this course, I would refer back to my notes and the course content as part of my daily role with Blackrock Clinic.

Applicant Profile

- Applicants must hold an honours undergraduate degree (NFQ level 8) with a minimum upper second class honours or international equivalence in a relevant Engineering, Science or cognate technology degree. Applicants who do not meet this academic requirement will be assessed on a case-by-case basis.
- Applicants whose first language is not English must also demonstrate English language proficiency of IELTS 6.5 (no band less than 6.0 in each element), or equivalent.
- Applicants should have a minimum of five years relevant professional experience. However, all applicants will be assessed on a case-by-case basis so that in certain exceptional cases applicants who do not have the relevant qualification may be considered.

Tuition Fees

Tuition fee information is available on www.ucd.ie/fees.

Class Times

This programme is delivered in a blended format. Face to face classes take place on the UCD Belfield Campus on Friday (all day) in weeks 1, 4, 8, 12 of both Autumn and Spring Trimesters. Online classes take place on Friday afternoons and Saturday mornings in weeks 2, 3, 5, 6, 7, 9, 10, 11 of both trimesters.

Related Masters Programmes of Interest

- ME Engineering with Business, full-time
- MEngSc Engineering Management, full-time
- Masters of Engineering Management (Food Engineering), part-time
- Professional Diploma in Operations Excellence, part-time

CONTACT US

Katie O'Neill, Marketing Manger - **E**: katie.oneill@ucd.ie **T**: +353 1 7161781 **W**: www.ucd.ie/eacollege
Dr Vincent Hargaden, Programme Director – **E**: vincent.hargaden@ucd.ie **T**: +353 1 7161725

APPLY NOW

This programme receives significant interest so please apply early online at **www.ucd.ie/apply**

University College Dublin
Ireland's Global University

Course code: T361

Professional Diploma in Power System Analysis

One Year Part Time (September/January start)

Introduction

The Climate Action Plan launched in 2019 by the Irish Government defines a new growth strategy and roadmap to decarbonise the energy sector and renovate buildings and transportation to help cut energy bills and usage. The recent European Green Deal goes in the same direction and will have several implications for Ireland, in particular for the electrical power system.

There is, in particular, a need for training for electrical engineers who are currently in employment, or are expected to be recruited into the sector, in the field of electrical energy system security, control, stability analysis, resilience, renewable energy, converter-interfaced generation and low-inertia systems. This new Professional Diploma fills this gap.

Course Highlight

The programme offers state-of-the-art modules in power system modelling, dynamics and control. Particular emphasis is given to renewable energy systems. The programme also offers modules on optimisation techniques and stability analysis of nonlinear systems, which are specifically designed for applications to power system problems.

Course Content and Structure

The Professional Diploma in Power System Analysis comprises 20 credits of option Modules (four modules). These modules are selected from five modules which are offered across the Spring and Autumn Trimesters. All lectures are in the morning of weekdays and labs in the afternoon. Remote lectures & labs are available for those who cannot attend in person*.

(*Please note however, some attendance may be required as some modules may have in-person exams.)

Spring Modules

- Power System Design
- Applications of Power Electronics

Autumn Modules

- Renewable Energy Systems Power
- System Dynamics & Control
- Optimisation Techniques for Engineers

Why study at UCD?

Graduate education

12,800 graduate students; 17% graduate research students; structured PhDs

Global community

9,500 international students and a 300,000 alumni network across 165 countries

Global Profile

UCD is ranked in the top 1% of higher education institutions worldwide

Global careers

Dedicated careers support; 2-year stayback visa to work in Ireland

Career Opportunities

The programme represents an opportunity for those who have previous experience, or are currently employed, in the electrical engineering sector and wish to enhance their knowledge in the fields of electrical energy system security, control, stability analysis, resilience, renewable energy, converter-interfaced generation and low-inertia systems. This knowldge will be of particular interest to companies such as EirGrid, ESB, SSE, Energia, Arup, Enel X and PremiumPower into the future.

Programme Director

Professor Federico Milano

A combination of technical innovation and the increasing presence of renewable and non-conventional generation in modern electrical networks all over the world highlights the necessity of studying several aspects related to the modelling, regulation, and dynamic of power systems. UCD has a long and well-known tradition in Electrical Engineering and offers a range of high-quality modules on electric power systems as part of its degree programmes. Traditionally, these modules have only been available to full-time students, although the content is of great interest to graduates working in industry. This new Professional Diploma targets specifically this category of students and includes a selection of modules that address the most urgent societal and technical challenges, such as emission reduction, efficient control and resilience, of the electric grid.

Applicant Profile

- Applicants should hold a BE degree in Electrical Engineering or equivalent.
- Applicants whose first language is not English must also demonstrate English language proficiency of IELTS 6.5 (no band less than 6.0 in each element), or equivalent.

Tuition Fees

Tuition fee information is available on www.ucd.ie/fees.

Related Masters Programmes of Interest

- Professional Diploma in Electronic Design
- Professional Diploma in Operations Excellence

CONTACT US

Katie O'Neill, Marketing Manger - **E**: katie.oneill@ucd.ie **T**: +353 1 7161781 **W**: www.ucd.ie/eacollege
Prof Federico Milano, Programme Director – **E**: federico.milano@ucd.ie **T**: +353 1 7161844

APPLY NOW

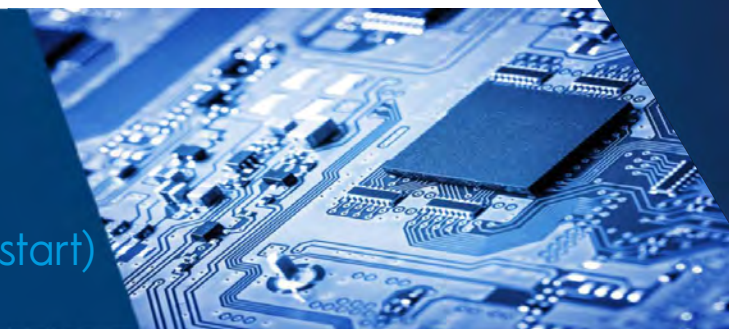
This programme receives significant interest so please apply early online at **www.ucd.ie/apply**

University College Dublin
Ireland's Global University

Course code: T360/T362

Professional Diploma in Electronic Design

One Year Part Time (September/January start)



Introduction

Ireland has a dynamic electronic design industry that employs over eight thousand people and generates export revenue of approximately €9 Billion per annum. The industry depends for its success on the continuing development of talent to the highest international standards. The Professional Diploma in Electronic Design is designed to help electronics graduates transition into design and/or to improve their professional skills. Until recently, it has been impossible for engineers working in industry to gain access to the graduate-level electronic design modules offered by University College Dublin because attendance at the Belfield campus was compulsory; this made participation impossible for those outside Dublin and for those in full-time employment.

Course Highlight

By making selected modules available online, this programme provides a unique opportunity to learn from world leaders in embedded systems, power electronics, mixed-signal, RF, and microwave circuit design, while in employment. Modules are also taught by leaders in the field who regularly publish in the top journals and conferences.

Course Content and Structure

The Professional Diploma in Electronic Design comprises 20 credits of option Modules (four modules). These modules are selected from eight modules that are offered across the Spring and Autumn Trimesters. Students taking Mixed-Signal Integrated Circuits are strongly advised to take Analogue Integrated Circuits first. All lectures are in the morning of weekdays with labs in the afternoon. Remote lectures & labs are available for those who cannot attend in person*.

**Please note however, some attendance may be required as some modules may have in-person exams. For those who wish to take individual modules, but not the diploma, please contact the ADVANCE Centre - info@advancecentre.ie*

Modules offered

- Digital Communications
- Applications of Power Electronics
- Advanced Signal Processing
- Radio-Frequency Electronics
- Digital & Embedded Systems
- Power Electronics Technology
- Analogue Integrated Circuits
- Mixed-Signal Integrated Circuits

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Global careers

Dedicated careers support; 2-year stayback visa to work in Ireland

Career Opportunities

Many leading multinational companies in the electronics industry, including Analog Devices, Bosch, Cadence, Infineon, Intel, Microchip, ON Semiconductor, Qorvo, Synopsys, and Xilinx, have design centres in Ireland that specialise in some or all of digital design, power, mixed-signal and RF circuits.

Electronic design companies are constantly in search of highly-skilled design engineers, and invest heavily in the professional development of their staff.

Programme Director

Professor Peter Kennedy

Ireland has a long history in circuit design with deep experience in advanced signal processing, power electronics, RF and mixed-signal circuits. Due to the traditional nature of programme delivery in universities, on-campus attendance has normally been required. This programme gives design engineers who are in full-time employment a unique opportunity to take classes from some of the world's best experts in circuit design with minimal impact on their day jobs.

Applicant Profile

- **Applicants** should hold a NFQ Level 8 (or international equivalent) BE degree in Electrical Engineering or equivalent.
- Applicants whose first language is not English must also demonstrate English language proficiency of IELTS 6.5 (no band less than 6.0 in each element), or equivalent.

Tuition Fees

Tuition fee information is available on www.ucd.ie/fees.

Related Masters Programmes of Interest

- Professional Diploma in Power System Analysis
- Professional Diploma in Operations Excellence

Programme offered as part of the

THE ADVANCE CENTRE
for Graduate Professional Education
www.advancecentre.ie

CONTACT US

Katie O'Neill, Marketing Manger - **E**: katie.oneill@ucd.ie **T**: +353 1 7161781 **W**: www.ucd.ie/eacollege
Prof Peter Kennedy, Programme Director – **E**: peter.kennedy@ucd.ie **T**: +353 1 7161903
Joanna Kozielec, Manager, ADVANCE Centre for Professional Development, **E**: joanna.kozielec@ucd.ie

APPLY NOW

This programme receives significant interest so please apply early online at **www.ucd.ie/apply**

University College Dublin
Ireland's Global University

Course code: T365/T366

Professional Diploma in Operations Excellence

One Year Part Time (September/January start)

Introduction

Operations Excellence (OpEx) is the application of continuous improvement principles and tools that lead to long-term sustainable growth and create a culture of excellence in organisations. This programme is designed for professional learners who are based in industry and have at least three years of industry experience and a background in engineering, technology, science or mathematics. The outcomes of this Professional Diploma will enable graduates to implement and lead improvement in their manufacturing organisations using principles of Lean, Six Sigma, Data Driven Decision Making and Business Process Re-engineering.

Course Highlight

The learning environment is highly collaborative and experiential. The part-time nature of the programme, in conjunction with the blended delivery format, allows participants to continue in employment and to quickly apply their newly acquired skills in an experiential manner. Through the discussion based learning environment, there is a high degree of learning from peers across different industry sectors and organisation types.

Course Content and Structure

The Professional Diploma in Operations Excellence comprises 20 credits (four modules). These modules are offered across the Autumn and Spring Trimesters.

The four modules in this Professional Diploma will be delivered in a blended format. This comprises of on-campus classroom based seminars and workshops, in addition to online classes.

Students can opt for either a September or January start.

Modules offered

- Operations Management
- Decision Analysis
- Quality Management
- Business System Design

For those who wish to take individual modules, but not the diploma, please contact the ADVANCE Centre - info@advancecentre.ie

Why study at UCD?

Graduate education

12,800 graduate students; 17% graduate research students; structured PhDs

Global community

9,500 international students and a 300,000 alumni network across 165 countries

Global Profile

UCD is ranked in the top 1% of higher education institutions worldwide

Global careers

Dedicated careers support; 2-year stayback visa to work in Ireland

Programme offered as part of the

THE ADVANCE CENTRE
for Graduate Professional Education
www.advancecentre.ie

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Career Opportunities

Operations Excellence (OE) provides individuals with the skills and competencies to undertake a broad range of improvement initiatives in their organisations, which creates competitive advantage by focusing on the operational activities where it can outperform its competitors. Students will develop their knowledge and skills in the area of operations excellence with application in engineering and technology firms, from small medium enterprises to global multinational organisations.

Programme Director

Dr Vincent Hargaden

This programme will equip you with the ability to understand, evaluate and apply the essential tools of lean, six-sigma, process design and decision analysis. You will be able to troubleshoot process inefficiencies, analyse what to change and validate improvements. You will be able to add value for your customers and help your organisation, whether an SME or a multinational, manufacturing or service, to stay ahead of the competition. You will learn from subject matter experts, both academic faculty and senior industry practitioners, as well as your fellow participants who come from a wide range of industry sectors. Finally, the part-time nature of the programme provides you with the flexibility to work and study.

Applicant Profile

- Applicants should hold an honours undergraduate degree (NFQ level 8) with a minimum upper second class honours or international equivalence in a relevant Engineering, Science or cognate technology degree. Applicants who do not meet this academic requirement will be assessed on a case-by-case basis.
- Applicants whose first language is not English must also demonstrate English language proficiency of IELTS 6.5 (no band less than 6.0 in each element), or equivalent.
- Applicants should have a minimum 3 years industry experience in an engineering role or equivalent.

Tuition Fees

Tuition fee information is available on www.ucd.ie/fees.

Class Times

This programme is delivered in a blended format. Face to face classes take place on the UCD Belfield Campus on Friday (all day) in weeks 1, 4, 8, 12 of both Autumn and Spring Trimesters. Online classes take place on Friday afternoons and Saturday mornings in weeks 2, 3, 5, 6, 7, 9, 10, 11 of both trimesters.

Related Masters Programmes of Interest

- Masters of Engineering Management (MEM) PT
- Professional Diploma in Power System Analysis
- Professional Diploma in Electronic Design

CONTACT US

Katie O'Neill, Marketing Manger - **E**: katie.oneill@ucd.ie **T**: +353 1 7161781 **W**: www.ucd.ie/eacollege
Dr Vincent Hargaden, Programme Director – **E**: vincent.hargaden@ucd.ie **T**: +353 1 7161715
Joanna Kozielec, Manager, ADVANCE Centre for Professional Development, **E**: joanna.kozielec@ucd.ie

APPLY NOW

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University College Dublin
Ireland's Global University

Course code: T382

Professional Diploma in Quantum Engineering

Two Years Part Time (September start)

Introduction

Quantum engineering and computing is at the heart of digital transformation and is a long-term research priority area in the EU and worldwide. Access to online quantum computing frameworks, quantum system simulators, and existing quantum computers combined with the progress in high performance computing, materials and electronics for quantum computers accelerated the field over the past decade. This enabled the development of new quantum algorithms and a significant expansion of quantum computing applications. Currently, many problems are being rethought and reformulated as problems for quantum computing. The field of quantum computing and engineering is a multidisciplinary field and benefiting from both, academic and industrial leadership and contribution.

Course Highlight

The programme allows a student to build a focus either on the computational side of quantum engineering & computing and or on the physics of quantum computing.

Course Content and Structure

The Professional Diploma comprises one mandatory and three optional five-credit modules in the field of Quantum Engineering. At the core of the programme are two modules covering basic and advanced concept of quantum computing that combine fundamental theory, code and algorithms examples and relating it to physics of qubits. Students already familiar with fundamental concepts of quantum computing can opt for just one of the two modules.

All lectures are in the morning of weekdays with labs in the afternoon. Remote lectures & labs are available in selected modules. Please note that some attendance (usually up to 4 hours per week) may be required as some modules do not have online options and may have in-person exams.

Modules offered

- Introduction to Quantum Computing
- Foundation of Quantum Mechanics
- Machine Learning
- Applied Quantum Mechanics
- Quantum Computing
- Data Science in Python
- Quantum Theory of Condensed Matter
- High Performance Computation (ICHEC)
- Maths of Quantum Computation

* For those who wish to take individual modules, but not the diploma, please contact the ADVANCE Centre - info@advancecentre.ie

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UCD is ranked in the top 1% of higher education institutions worldwide

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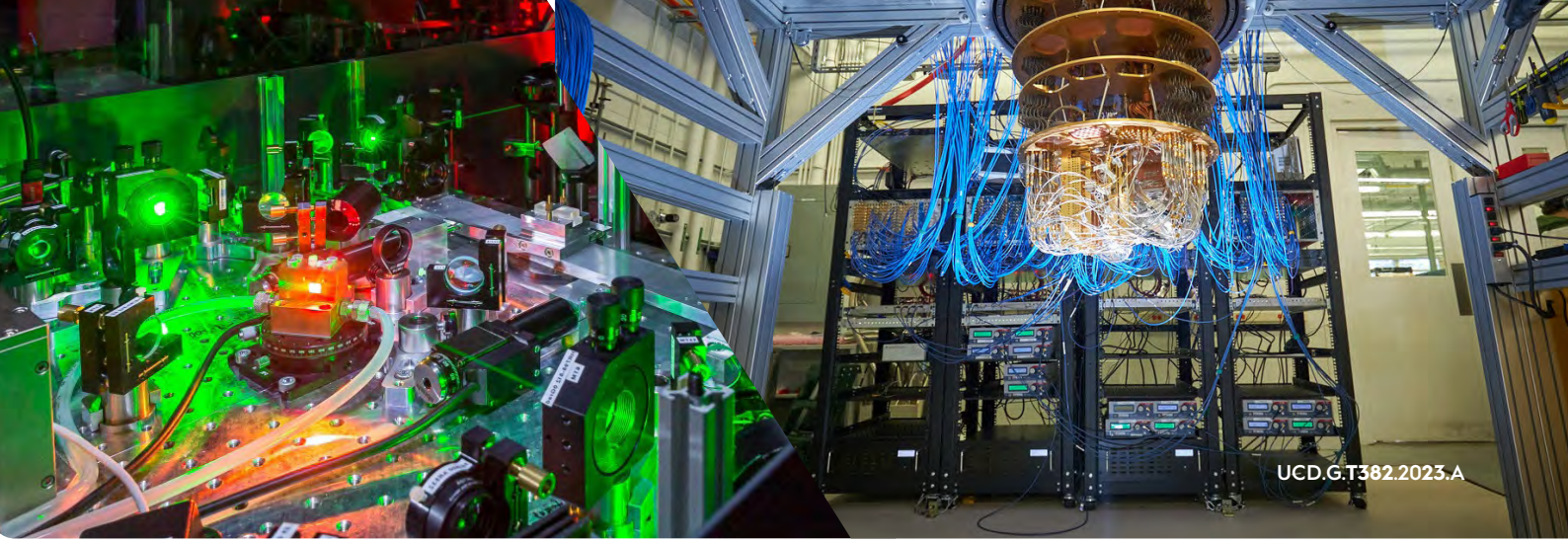
Dedicated careers support; 2-year stayback visa to work in Ireland



Career Opportunities

The programme represents an opportunity for those who have previous experience or are currently employed in the field of computer science, computer engineering and electronic engineering who wish to expand their expertise to understand quantum computation and quantum technologies.

Many international companies and many major industry partners with presence in Ireland including IBM, Google, Microsoft, Intel. In addition to that the multinational companies in the electronics industry, including Analog Devices, Cadence.

Programme Director

Assoc Professor Elena Blokhina

"Quantum science and technology are facilitating complex computational tasks to advance the fields of communications, security, modelling, simulations and sensing. Whether you are interested to understand the foundations of quantum theory or to try some elements of quantum computations, the programme offers you this opportunity with a combination of blended and face-to-face modules."

Applicant Profile

- Applicants should hold a NFQ Level 8 (or international equivalent) BE degree in Electrical Engineering or equivalent.
- Applicants whose first language is not English must also demonstrate English language proficiency of IELTS 6.5 (no band less than 6.0 in each element), or equivalent.

Tuition Fees

Tuition fee information is available on www.ucd.ie/fees.

Related Masters Programmes of Interest

- Professional Diploma in Power System Analysis
- Professional Diploma in Operations Excellence
  Professional Diploma in Electronic Design

Programme offered as part of the

THE ADVANCE CENTRE
for Graduate Professional Education
www.advancecentre.ie

CONTACT US

Katie O'Neill, Marketing Manger - **E**: katie.oneill@ucd.ie **T**: +353 1 7161781 **W**: www.ucd.ie/eacollege
Assoc Professor Elena Blokhina, Programme Director – **E**: elena.blokhina@ucd.ie **T**: +353 1 7161925
Joanna Kozielec, Manager, ADVANCE Centre for Professional Development, **E**: joanna.kozielec@ucd.ie

APPLY NOW

This programme receives significant interest so please apply early online at **www.ucd.ie/apply**

University College Dublin
Ireland's Global University

Course code: T384

Graduate Diploma in Carbon Accounting & Life Cycle Assessment

One Year Part Time (September start)

Introduction

Climate change, environment, and Corporate Social Responsibility are creating an ever increasing demand for employees with skills in carbon footprinting, GHG accounting, and Life Cycle Assessment. Drivers of this demand are the Greenhouse Gas Protocol (particularly understanding and managing scope 3 emissions), the Climate Action and Low Carbon Development (2021) Act, Future Jobs initiative "transition to low carbon economy' and Ireland's National Plan on Corporate Social Responsibility. This programme provides the competency, knowledge and skills required to work with ISO standard methods for carbon footprinting, GHG inventory and life cycle assessment in a commercial environment.

Course Delivery

All lectures, tutorials and practicals can be completed online, with the option of attending some on campus if desired. Practicals are offered in the late afternoon to facilitate online attendance. Most learning activities can be completed at a different time if necessary.

Course Content and Structure

- 60 credits total
- 15 credits Autumn Trimester
- 15 credits Spring Trimester
- 30 credits Industry Project

- Theory based on relevant ISO standards for industry applicability
- Learn to define a project, collect data, appropriate calculations, analysis, reporting and communication using real-world examples.
- Problem-based learning and mini-projects will be used to ensure applicability and success.

Modules offered

- Life Cycle Assessment
- LCA Applications
- Carbon & Sustainability
- Industry Project
- GHG Accounting
- Carbon Footprinting

Why study at UCD?

Graduate education

12,800 graduate students; 17% graduate research students; structured PhDs

Global community

9,500 international students and a 300,000 alumni network across 165 countries

Global Profile

UCD is ranked in the top 1% of higher education institutions worldwide

Global careers

Dedicated careers support; 2-year stayback visa to work in Ireland

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Career Opportunities

Graduates of the Graduate Diploma in Carbon Accounting & Life Cycle Assessment can find employment as:

- Sustainability team member or leader
- Corporate Social Responsibility
- Energy management
- Consulting
- Sourcing and Procurement

Students also have the opportunity to become job ready by putting theory into practice by finishing with a commercial standard project for a product or organisation in the market. Example employers looking for the skills provided include, Veolia, Arup, Codema and RPS.

Programme Director

Prof Nick Holden

I have seen increasing interest in what we are doing the last few years as companies and their employees have to learn about and implement management of GHG emissions (particularly scope 3). While theoretical knowledge of GHG and other emissions is important, there is a clear demand in Ireland for people with the skills necessary to complete Carbon Footprint, GHG Inventory and Life Cycle Assessment of product and organisations. This skill is transferable across sectors and can be aligned with the different parts of a business, be that process and production, management, health and safety, sustainability or even marketing. This graduate diploma will be ideal for professional development or for reskilling by those looking for a new career opportunity.

Entry Requirements

- Level 8 honours degree in a relevant subject

  or

- More than 5 years relevant professional experience

Tuition Fees

Tuition fee information is available on www.ucd.ie/fees.

Related Masters Programmes of Interest

- ME Management (Food Engineering)
- GradDip Bioeconomy with Business

CONTACT US

Katie O'Neill, Marketing Manger - **E**: katie.oneill@ucd.ie **T**: +353 1 7161781 **W**: www.ucd.ie/eacollege
Professor Nick Holden, Programme Director – **E**: nick.holden@ucd.ie **T**: +353 1 716 7460

APPLY NOW

This programme receives significant interest so please apply early online at **www.ucd.ie/apply**

University College Dublin
Ireland's Global University

Course code: T372

Professional Certificate Manufacturing of Cell & Gene Therapies and Vaccines

1 Trimester (January start) - hybrid teaching

Introduction

Ireland has a strong reputation as a Centre of Excellence for biopharmaceutical production. All of the top 10 global pharmaceutical companies have a presence in Ireland and the sector as a whole employs over 30,000 people and contributes €54 billion in exports. There has been significant, sustained investment in recent years and this is set to continue due to the benefits which companies see in our highly skilled workforce, proven track record and the supportive ecosystem.

Vaccines and cell and gene therapies (CGTs) are an emerging and rapidly growing area of interest and Ireland is poised to continue expansion of manufacturing into this exciting area. This programme will provide students with an appreciation of the science and challenges associated with CGT and vaccine manufacture as part of their continuing professional development (CPD) and support them to pursue a successful career in the field.

Course Highlight

The programme and its academic faculty are closely linked with the National Institute for Bioprocess Research and Training (NIBRT) which is a global centre of excellence for training and research in biomanufacturing. Content will be delivered by a blend of industrial leaders and academic experts using a hybrid approach ensuring a high quality, relevant curriculum accessible both in person and remotely.

Course Content and Structure

The Professional Certificate comprises 15 credits of modules (three modules). The modules will be delivered in a hybrid format with the option to attend in-person lectures on the UCD campus or to study remotely. Lectures will take place on Friday evenings from 2 - 6 pm over the Spring trimester (12 weeks, Jan - May).

Further Study

The credits gained can be used toward further postgraduate qualifications offered by UCD should participants wish to pursue a higher qualification e.g. Graduate Certificate (30 credits) / Graduate Diploma (60 credits)/ MEngSc in Biopharmaceutical Engineering (90 credits).

Modules Offered:

- Cell Therapy Technologies and Processing
- Gene Therapy and Vaccine Technologies and Processing
- GMP Manufacturing of Advanced Therapeutics

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Career Opportunities

The Professional Certificate is suitable for Science and Engineering graduates currently working in the biopharmaceutical industry or looking to move into the sector, who wish to expand their skill set to take advantage of the growth in the vaccine, and cell and gene therapies space. The number of companies active in this area is currently growing with Pfizer, Takeda, WuXi, MeiraGTx, VLE, Avectas, Onk and Orbsen Therapeutics leading the way.

Industry Testimonial

David Connolly

Head of MS&T, MSD Dunboyne

Industry will need strong technical capabilities, and in-depth good manufacturing practice (GMP) know-how, to be ready for advanced therapeutics manufacturing within the next 3-5 years. Having a stackable approach to building the skills required, will benefit many experts and leaders currently working in biopharma. The offerings in cell therapy technology, gene therapy, vaccine technology and advanced manufacturing platforms have come at the right time to accelerate upskilling in this exciting area.

Applicant Profile

- Applicants must hold an honours undergraduate degree (NFQ level 8) with a minimum upper second class honours or international equivalence in a relevant Engineering, Science or Technology programme. However, all applicants will be assessed on a case-by-case basis and relevant or extensive work experience will be taken into account.
- Applicants whose first language is not English must also demonstrate English language proficiency of IELTS 6.5 (no band less than 6.0 in each element), or equivalent.

Tuition Fees

Tuition fee information is available on www.ucd.ie/fees.

Facilities & Resources

Teaching will take place in parallel in-person on the UCD campus and online. Students will have an opportunity to tour the NIBRT facility which is a purpose-built, multi-functional building replicating the most modern industrial bioprocessing facility. The total building area is approximately 6,500 m² over two floors.

Related Masters Programmes of Interest

- MEngSc Biopharmaceutical part-time
- MEngSc Biopharmaceutical full-time
- MEngSc Chemical Engineering

CONTACT US

Katie O'Neill, Marketing Manger - **E**: katie.oneill@ucd.ie **T**: +353 1 7161781 **W**: www.ucd.ie/eacollege
Dr Jessica Whelan, Programme Director, **E:** jessica.whelan1@ucd.ie **T**: +353 1 716 1894

APPLY NOW

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University College Dublin
Ireland's Global University

Course code: T396 / T397

Professional Certificate in Digital Facility Layout Planning

9 Months Full time (Sep/Jan start)

Introduction

The Professional Certificate in Digital Facility Layout Planning (DigitalPlan) will offer a learning path that will equip engineering and manufacturing employees, especially from SMEs, as well as engineering students and professionals to understand in depth the theory and practice related to facility layout design and planning, using digital manufacturing solutions. The digitalisation of manufacturing activities goes hand in hand with improved management practices and corporate performance but a vast majority of the engineering and manufacturing workforce lacks the necessary digital skills.

This Professional Certificate is an opportunity for academic / technological institutions and companies to upskill students and staff towards expanding their digital manufacturing capabilities. The flexible nature of this professional certificate makes it a perfect fit for applicants with rather tight or inflexible workload, especially industrial practitioners.

Online Delivery

This is a fully online flexible professional certificate where learners will receive the content fully online via **skillsmove.eu** learning platform (managed by European Institute of Innovation and Technology (EIT)). Upon completing the designated learning paths on **skillsmove.eu** platform, the learners will apply the acquired knowledge on a case study which will help them sharpen their skills further.

Course Content and Structure

The Professional Certificate in Digital Facility Layout Planning comprises 10 credits (two modules). These modules are offered across the Autumn and Spring Trimesters.

The learners of this Professional Certificate will be able to complete both modules in an online format. This means there are no class times for this Professional Certificates and the learners can complete it with full flexibility.

Students can opt for either a September or January start.

Modules Offered:

- Digital Facility Layout Planning and Optimisation *(to be accomplished online on skillsmove.eu)*
- Practical Case Application* *(to be completed online under an academic supervisor guidance)*

* Please note that accomplishing the first module is a pre-requisite to being registered to the second. Each module will be done in a separate trimester (either Spring or Autumn).

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Career Opportunities

The short-term advantage of this Professional Certificate will be educating the current and future manufacturing workforce to design/redesign manufacturing facilities. Utilising such a digital decision support system will result in constantly reducing product development lead times, engineering and manufacturing costs, while improving production performance, product quality and eventual customer satisfaction.

In the long term, participating in this Professional Certificate will increase the digital capabilities of the manufacturing workforce, in line with Industry 4.0 strategies, making learners a quite attractive candidate for manufacturing job market.

Applicant Profile

- Applicants must hold a bachelors degree with a minimum of 180 ECTS credits or equivalent academic qualifications from an internationally recognized university with a minimum 2:2 degree GPA. Degrees in Mechanical Engineering, Electrical Engineering, Computer Engineering, Computer Science, Information Technology or Industrial Engineering are preferred but applicants from related Science, Technology, Arts and Mathematics backgrounds will be considered on a case-by-case basis.
- Applicants whose first language is not English must also demonstrate English language proficiency of IELTS 6.5 (no band less than 6.0 in each element), or equivalent.

Tuition Fees

Tuition fee information is available on www.ucd.ie/fees.

Related Masters Programmes of Interest

- MEngSc Engineering Management FT
- ME Manufacturing Engineering FT
- Master of Engineering Management PT
- ProfDip Operations Excellence PT

Programme offered as part of the

THE ADVANCE CENTRE
for Graduate Professional Education
www.advancecentre.ie

Programme Director

Dr Pezhman Ghadimi

This programme will equip you with the ability to design/redesign manufacturing facilities. Utilising such a digital decision support system will result in constantly reducing product development lead times, engineering and manufacturing costs, while improving production performance, product quality and eventual customer satisfaction. You will be able to troubleshoot facility layout inefficiencies, analyse what to change and validate improvements. You will be able to add value to your organisation, whether an SME or a multinational, manufacturing or service, to stay ahead of the competition. Through the online content, you will learn the theoretical content and can apply it to a practical case study in your organisation or a given case by your academic supervisor. Finally, the fully online nature of the programme provides you with the flexibility to work and study.

CONTACT US

Katie O'Neill, Marketing Manger - **E**: katie.oneill@ucd.ie **T**: +353 1 7161781 **W**: www.ucd.ie/eacollege
Dr Pezhman Ghadimi, Programme Director, **E:** pezhman.ghadimi@ucd.ie **T**: +353 1 716 1716
Joanna Kozielec, Manager, ADVANCE Centre for Professional Development, **E:** joanna.kozielec@ucd.ie

APPLY NOW

This programme receives significant interest so please apply early online at **www.ucd.ie/apply**


UCD
DUBLIN

RISING TO THE FUTURE
UCD Strategy 2020-2024

UCD ENGINEERING

Ms Katie O'Neill
+353 1 716 1781
katie.oneill@ucd.ie
eamarketing@ucd.ie

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