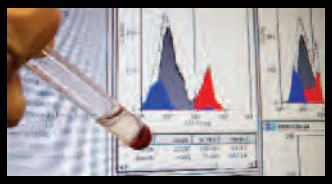
University College Dublin

Ireland's Global University

UCD Science

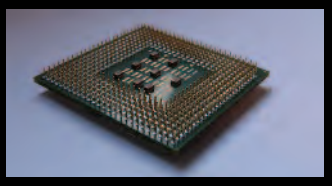
Graduate Taught Courses 2015

Biotechnology, Biomedical, Pharmaceutical and Chemical Sciences

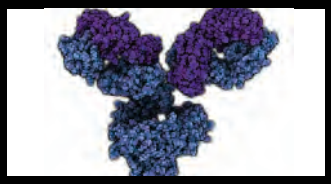


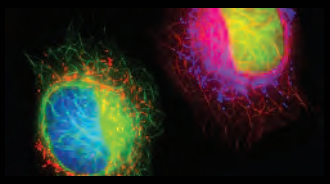
Energy, Climate and Environment

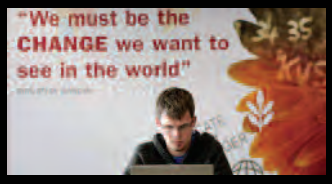
Mathematics and Finance

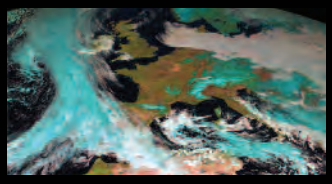


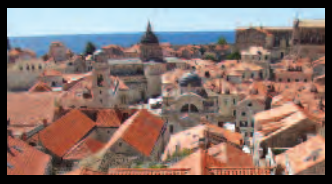
HOW TO APPLY





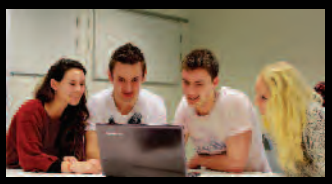






Physical & Geological Sciences

Computer Science and Informatics



Why Choose to Study at University College Dublin (UCD) in Ireland?

The UCD O'Brien Centre for Science

- **Ireland** is an English speaking country located on the western edge of Europe beside the UK. It has been voted the 6th safest country in the world and was recently voted the "world's friendliest country by Lonely Planet." Ireland is ranked in the top 10 worldwide for its higher education system.
- **Dublin** is one of Europe's youngest, most vibrant and lively cities and is one of the three most visited capital cities in Europe. Dublin was voted one of the world's best student cities in the World QS rankings. It is Europe's "tech" capital and all of the world's top 10 technology companies have a presence in Ireland. There are over 5,300 ICT companies in Ireland (multinational and indigenous).
- **UCD – Ireland's Global University.** UCD is a distinctly Irish university with a global impact and is currently ranked within the top 1% of institutions world-wide by the Times Higher Education rankings.
- Established in 1854, UCD has over 160 years of tradition and an impressive list of notable alumni. UCD's leafy 133-hectare campus provides a mix of academic facilities, research institutes, libraries, extensive accommodation options, 24-hour security and cutting-edge sports & recreation facilities including a 50-metre swimming pool and cinema in the state-of-the-art UCD Student Centre.
- As an internationally recognised and research-intensive university, UCD attracts talented students from around the world. There are currently 7,500 students enrolled in graduate study at UCD. UCD is Ireland's leader in graduate education, with 25% of all postgraduate students in Ireland studying in UCD. UCD is Ireland's most popular University for international students with more than 5,000 international students (30% of international students in Ireland study in UCD).

Why choose UCD Science for Graduate Studies?

Diverse Curriculum

Building on a long and distinguished reputation, the UCD College of Science is the largest and most dynamic science research and training facility in Ireland. UCD Science provides world-class research and learning facilities for undergraduate BSc, graduate MSc (both taught and research) and PhD students. Working with internationally recognised academics, research students in UCD Science tackle questions of vital importance in the areas of human, animal, environmental and global welfare in a supportive, creative community within key thematic areas including:

- Biotechnology, Biomedical & Pharmaceutical Sciences
- Computer Science and Informatics
- Energy and Environment
- Health and Healthcare Delivery
- Mathematics and Finance
- Nanotechnology
- Physical and Geological Sciences

UCD Science has a broad range of taught masters courses across key thematic strands, outlined above. These courses are modularised in a credit-based curriculum to facilitate choice, flexibility, access, continuing professional development and life-long learning for the student. An e-learning environment is also supported. Innovation is an important element of each course. Courses are cross disciplinary incorporating collaboration between Science and Engineering, Business and Human Sciences. The taught masters degree is awarded following completion of a programme of one to two years duration.

The research training opportunities available reflect the diversity of talent, experience and tradition available within UCD Science. Students can choose from a wide range of topics from basic science research

through applied science in our thematic areas. Research degrees are ideal for anyone interested in pursuing further in-depth study in a specialist area relevant to their primary degree.

Research degrees involve students carrying out their own research and academic study under the one-to-one supervision of an academic supervisor. The precise focus of research is agreed between the supervisor and student. Research can be carried out at Masters or Doctoral level.

World Reputation

In the 2013 QS Global Subject Area Rankings, UCD is in the top 100 in the world in Biological Sciences; in the top 150 in Computer Science & Information Systems and in the top 200 in Chemistry, Earth & Marine, Environmental Sciences, Mathematics and Physics. UCD is also 1st in Ireland for the categories of Earth & Marine Sciences & Materials Science; 2nd in the categories of Computer Science, Chemistry, Mathematics and Physics and 3rd in the category of Biological Sciences and Environmental Sciences.

World Class Facilities

UCD Science is dedicated to the creation, delivery and communication of new knowledge and innovation across the spectrum of Science. Investment in infrastructure, which is crucial to the continued excellence in research training and output, is a continuing priority of UCD's strategy and is exemplified most recently with the upgrading of the UCD Science facilities. The UCD O'Brien Centre for Science opened in September 2013 with newly designed laboratories, classrooms and active learning environments for undergraduate teaching as well as upgraded lecture theatres. This new Centre is the largest capital investment in Science in the history of the Irish State and ultimately will be home to 2,000 undergraduates, 1,500 Masters and PhD students and 1,000 researchers – the largest Science community in Ireland.

Research-Informed Courses

The UCD College of Science Schools and associated research institutes and centres engage in exciting and internationally recognised research, which is funded by a variety of agencies including Science Foundation Ireland, the European Union, the Health Research Board, the Irish Research Council and the Wellcome Trust. There are over 600 postgraduate research students and a large body of postdoctoral scientists who play a key role in the research efforts.

The seven Schools in the UCD College of Science are as follows:

- UCD School of Biology and Environmental Science
- UCD School of Biomolecular and Biomedical Science
- UCD School of Chemistry and Chemical Biology
- UCD School of Computer Science and Informatics
- UCD School of Geological Sciences
- UCD School of Mathematical Sciences
- UCD School of Physics

Research students in UCD Science are increasingly involved in multi-disciplinary programmes and themes that are supported by the Schools and associated research institutes and centres including:

- UCD Centre for Cybersecurity and Cybercrime Investigation
- UCD Conway Institute for Biomolecular and Biomedical Research
- UCD Complex and Adaptive Systems Laboratory
- UCD Centre for Synthesis and Chemical Biology
- UCD Earth Institute
- UCD Centre for BioNano Interactions
- Insight Centre for Data Analytics

Excellent Career Prospects

Sectors that employ UCD Science graduates: Science, Computer Science and Actuarial and Financial Studies graduates are employed in the following industries and sectors:

- **Pharmaceuticals, Biotechnology & Medical Devices:** Ireland is the second largest exporter of med-tech products in Europe with 15 of the world's top 20 medical technology companies based in Ireland. 12 of the world's top selling medicines are manufactured here and 9 of the world's top pharma companies are based here.
- **Conservation and Natural Resources sector:** According to Exploration and Mining News 2012, Ireland is Europe's largest producer of zinc and third largest producer of lead. Irish mines produced over 30% of European zinc output in 2012. The expertise of geologists is essential in finding and exploiting these naturally occurring minerals. Many metals and mineral commodities have recently achieved record price levels, resulting in increased employment opportunities in mineral exploration and mining. Currently there are numerous job vacancies in Africa, Canada and Australia. Gold, zinc, lead and salt are all mined in Ireland and there is also an active mineral exploration sector. There are varied job opportunities both in Ireland and with companies based here but working overseas.
- **Information and Communications Technology (ICT):** Ireland has the highest concentration of ICT activity in OECD countries and is known as the internet and games capital of Europe. Three of the world's top gaming companies are based here and Ireland is one of the top 5 exporters of software in the world with 9 of the world's top 10 technology companies based here.
- **Financial Services and Insurance:** Most of our Actuarial and Financial Studies graduates go on to qualify as actuaries working in the areas of Life, Pensions, Health and General Insurance. Some also work as business and financial analysts and 50% of the world's top banks are based in Ireland.

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MSc Biotechnology
(One Year Full Time)

Biotechnology encompasses all aspects of the industrial application of living organisms and/or biological techniques. It is a collection of technologies that capitalise on the attributes of cells and biological molecules, such as DNA to work for us. The primary biotechnology activity carried out in Ireland is research and development. Ireland has experienced massive growth across the biotechnology sector including food, environmental and pharmaceutical industries in the last decade.

Ireland is home to 9 of the top 10 global pharmaceutical and biotechnology companies, such as GlaxoSmithKline, Pfizer, Merck, Bristol-Myers Squibb and Genzyme, with 7 of the 10 world blockbuster pharmaceuticals made here. The MSc in Biotechnology is taught by leading academics in the UCD School of Biomolecular and Biomedical Science and focuses on broadening your knowledge and understanding of the current technologies and processes in the biotechnology industry, including approaches being applied to further advance the discovery and design of new and highly innovative biotech and pharmaceutical products and technologies. It also provides modules on food and environmental biotechnology, as well as industrially relevant expertise in facility design, bioprocess technology, regulatory affairs and clinical trials.

Key Fact

During the third semester you will conduct research in an academic or industrial lab. Projects will be carried out within research groups of the UCD School of Biomolecular and Biomedical using state-of-the-art laboratory and computational facilities or in Irish and multinational biotechnology companies, across the spectrum of the dynamic biotechnology industry in Ireland.

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Global community
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Global careers
Degrees with high employability; dedicated careers support; 1 year stay-back visa

Safety
Modern parkland campus with 24 hour security, minutes from Dublin city centre

Course Content and Structure

90 credits	60 credits	30 credits
taught masters	taught modules	Individual Research Project

You will gain experimental and theoretical knowledge in the following topics:

- Pharmacology and Drug Development
- Medical Device Technology
- Biomedical Diagnostics
- Recombinant DNA Technology
- Microbial and Animal Cell Culture
- Food Biotechnology
- Facility Design
- Environmental Biotechnology
- Regulatory Affairs
- Drug Development and Clinical Trials
- Bioprocessing Laboratory Technology

Assessment

- Your work will be assessed using a variety of methods including coursework, group and individual reports, written and online exams, and presentations.

Modules and topics shown are subject to change and are not guaranteed by UCD.

Course code: F059

Career Opportunities

This advanced graduate degree in Biotechnology has been developed in consultation with employers and therefore is recognised and valued by them. A key feature is the opportunity to carry out a project in industry which will allow graduates to develop connections with prospective employers, thereby enhancing chances of employment on graduation. You will also have the opportunity to become part of a network of alumni in the field of Biotechnology.
Prospective employers include Abbott; Allergan; Amgen; Baxter Healthcare; Beckman Coulter; Biotrin International Ltd.; Boston Scientific; Elan Corporation; Eli Lilly and Co.; Celltech; Glaxo SmithKline; Icon Clinical Research; Johnson & Johnson Ltd.; Kerry Group Plc.; Merck Sharp & Dohme; Quintiles; Sandoz; Serology Ltd.

Facilities and Resources

- The UCD School of Biomolecular and Biomedical Science is closely linked to the UCD Conway Institute of Biomedical and Biomolecular research which provides cutting edge core technologies including the premier Mass Spectrometry Resource in the country, NMR spectroscopy, real time PCR, electron microscopy, light microscopy, digital pathology and flow cytometry.

Apply Now

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

Entry Requirements

- Candidates are expected to have an upper second class honours grade or international equivalent in a biology or chemistry primary degree with a significant laboratory component. This includes a BSc in Biotechnology, Biochemistry, Microbiology, Genetics, Neuroscience, Pharmacology, Physiology, Medicinal Chemistry or an equivalent qualification. Graduates with equivalent qualifications in related areas of science and technology or with proven relevant industrial experience will be considered for places.
- 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.

Graduate Profile

Qinxi Ma, PhD student at University College Dublin

I am an international student from China and I am doing my PhD in Genetics, having completed my MSc Biotechnology degree at UCD. A focus on emerging issues and technologies in this programme really helped my study, while enhancing my knowledge and understanding of the biotechnology area helped me to build up an academic career path. It was a great opportunity for me to combine academic learning and practical skills. I enjoyed working with classmates from many different backgrounds. Overall, it was a fantastic, fulfilling and memorable year as a masters student in UCD.

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Fees and Scholarships

Tuition fee information is available on www.ucd.ie/fees. Please note that UCD offer a number of postgraduate scholarships for full-time, self-funding international students, holding an offer of a place on master's programmes. Please see www.ucd.ie/international/scholarships for further information.

Accommodation

UCD has accommodation for over 2,500 students across five locations. Places are limited and more information is available at www.ucd.ie/residences/
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Related Masters Programmes of Interest

- MSc Biotechnology & Business
- MSc Plant Biology & Biotechnology

EU Enquiries Dr David O'Connell : biotech@ucd.ie
www.ucd.ie/graduatestudies
www.ucd.ie/biotech
UCD School of Biomolecular and Biomedical Science, University College Dublin, Belfield, Dublin 4

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www.ucd.ie/international

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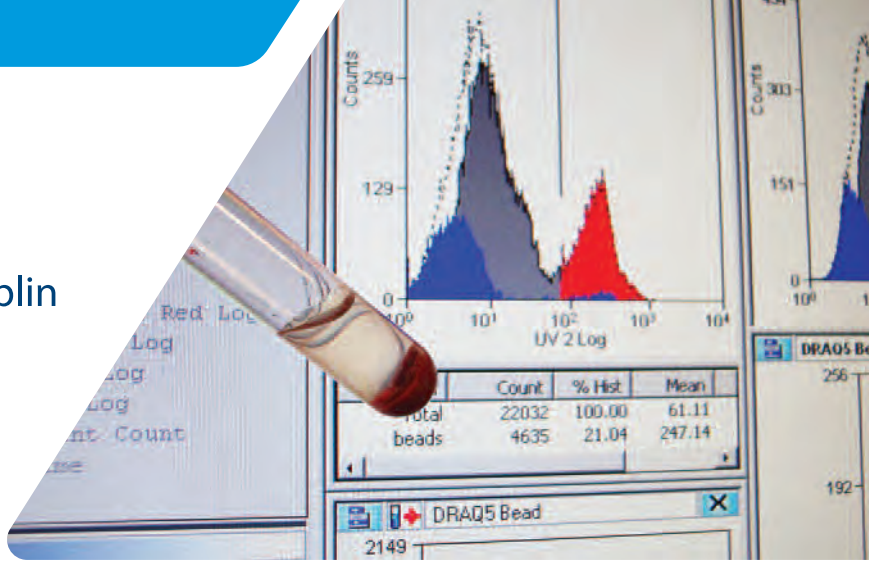

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MSc Biotechnology & Business
(One Year Full Time)

Biotechnology encompasses all aspects of the industrial application of living organisms and/or biological techniques. It is a collection of technologies that capitalise on the attributes of cells and biological molecules, such as DNA to work for us. Ireland has experienced massive growth across the Biotechnology sector including Food, Environmental and Pharmaceutical industries in the last decade. Ireland is home to 9 of the top 10 world pharmaceutical and biotechnology companies, such as GlaxoSmithKline, Pfizer, Merck, Bristol-Myers Squibb and Genzyme, with 7 of the 10 world blockbuster pharmaceuticals made here. The MSc in Biotechnology and Business is an exciting programme designed for non-business graduates who want to become managers or entrepreneurs in complex business environments in technology and science-based fields. The MSc in Biotechnology and Business provides you with a solid knowledge of techniques used in modern biotechnology including hands-on experience of bioprocessing. You will also receive a comprehensive business education. You will learn to identify and solve business problems in local and international settings, enhance your communication and leadership skills and improve your ability for independent thinking and developing creative solutions.

Key Fact

The programme is the result of a close collaboration between UCD School of Biomolecular and Biomedical Science and UCD Michael Smurfit Graduate School of Business, which is Ireland's leading business school.

Why study at UCD?

Tradition
Established 1854, with 160 years of teaching & research excellence

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Global community
Over 6,000 international students from over 120 countries study at UCD

Global careers
Degrees with high employability; dedicated careers support; 1 year stay-back visa

Safety
Modern parkland campus with 24 hour security, minutes from Dublin city centre

Course Content and Structure

90 credits	70 credits	20 credits
taught masters	taught modules	group business plan research project

You will spend 50% of your time studying biotechnology and 50% of your time studying business. You may choose optional biotechnology modules to ensure that you specialise in your area of interest.
Depending on chosen subjects you will also gain experimental and theoretical knowledge in the following topics:

- Drug Discovery
- Medical Device Technology
- Biomedical Diagnostics
- Regulatory Affairs
- Bioprocessing
- Marketing Management
- Corporate Finance
- Entrepreneurship
- Business plan development

Modules and topics shown are subject to change and are not guaranteed by UCD.

Course code: X447

Career Opportunities

This advanced graduate degree in Biotechnology and Business has been developed in consultation with employers and therefore will be recognised and valued by them. A key feature is the opportunity to carry out a business development plan which will allow graduates to develop connections with prospective employers, thereby enhancing chances of employment on graduation.

Prospective employers include: Abbott; Allergan; Alpha Technologies; Amgen; Avonmore Foods; Baxter Healthcare; Beckman Coulter; Biotrin International Ltd.; Boston Scientific; Elan Corporation; Eli Lilly and Co.; Celltech; Glaxo SmithKline; Icon Clinical Research; ImmunoGen Inc.; Janssen Pharmaceutical Ltd.; Johnson & Johnson Ltd. Kerry Group Plc.; Medtronic; Merck Sharp & Dohme; Olympus Diagnostica; Quintiles; Quest International; Sandoz.; Seroba Kernel; Serology Ltd.

Facilities and Resources

- The UCD School of Biomolecular and Biomedical Science is closely linked to the UCD Conway Institute of Biomolecular and Biomedical research which provides cutting edge core technologies including the premier Mass Spectrometry resource in the country, NMR spectroscopy, real time PCR, electron microscopy, light microscopy, digital pathology and flow cytometry.

Apply Now

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Entry Requirements

- This programme is intended for applicants with a BSc in biology or chemistry related discipline. An upper second class honours or international equivalent is required
- Graduates with equivalent qualifications in related areas of science and technology or with proven relevant industrial experience will be considered for places.
- 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.

Graduate Profile

Jennifer McKeever, Senior Analyst at Seroba Kernel Life Sciences

During the MSc in Biotechnology & Business, I broadened my knowledge in key modules including medical devices, diagnostics and regulatory affairs, while also developing core business skills in finance, marketing and management. The highlight was developing a business plan for a UCD Nova start-up company, which was an invaluable and pragmatic learning experience. I am currently working as an Investment Analyst in a life sciences venture capital firm. During the masters I was introduced to many industry contacts who are instrumental in shaping my career.

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Fees and Scholarships

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Accommodation

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Related Masters Programmes of Interest

- MSc Biotechnology
- MSc Plant Biology & Biotechnology

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www.ucd.ie/international

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MSc Plant Biology & Biotechnology
(One Year Full Time)

Government and private companies are working to develop new ways to improve existing food and animal feed crops and to develop novel crops to meet future challenges. The last decade has seen rapid developments in our understanding of plants and their significance to our wellbeing and this has been achieved through advances in a range of disciplines including genetics, genomics, cell biology, physiology, ecology and studies on climate change. Graduates of this one year MSc will be equipped with the knowledge and skills in these recent advances to rise to the future challenges in academia, industry and policy development. Innovation and entrepreneurship permeate the course as central themes and, in addition, a specific module on entrepreneurship in plant biology is delivered. This MSc covers a wide diversity of both topics and approaches and is taught by a high-profile research oriented group of academics. Students will have full involvement in active research groups and access to, and experience of, a large array of state-of-the-art facilities and technologies.

Key Fact

Researchers from the UCD School of Biology and Environmental Science represent the single largest grouping of plant scientists in Ireland with research interests ranging from genetics and molecular biology of the cell to plant physiology and ecology. They actively work with organisations such as Coillte (Forestry), Irish Agricultural and Food Development Authority (Teagasc), Department of Agriculture, Food and the Marine and industry partners.

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Course Content and Structure

90 credits	60 credits	30 credits
taught masters	taught modules	Research Project/Minor Thesis

Modules include:

- Entrepreneurship in Plant Biology
- Current Developments in Plant Biology
- Environmental Biotechnology
- Plant-Atmosphere Climate Interactions
- Plant Development
- Programmed Cell Death in Plants
- Future Crops and Sustainability
- Insect-Plant Interactions
- Biological Invasions
- Ecological Significance of Different Photosynthetic Pathways
- Plants and Stress

Modules and topics shown are subject to change and are not guaranteed by UCD.

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Career Opportunities

Graduates will have a distinct advantage when applying for PhD studentships or other more advanced graduate training in the area of plant biology and biotechnology. This MSc is ideal for graduates interested in pursuing scientific careers in academia, agriculture and plant-science based or biotechnology industries. Graduates will have opportunities to pursue postgraduate education and research and work in areas such as plant biotechnology, scientific journalism/publishing and for government agencies involved in governmental and non-governmental policy.

Facilities and Resources

- UCD Rosemount Environmental Research Station
- Controlled plant growth facility and bioreactors
- Plant Metabolomics Technology Platform
- Plant Cell and Tissue Culture Facility

Apply Now

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Entry Requirements

- This programme is intended for applicants with a BSc in an appropriate life science discipline. An upper second class honours or international equivalent is required. 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.

Staff Profiles

Dr Carl Ng, UCD School of Biology and Environmental Science, University College Dublin

My research focuses on understanding the signaling processes underlying the responses of plants and crops to abiotic stresses. The aim is to understand plant cellular strategy for adapting to changing environmental conditions and how temporally dynamic gene expression systems can confer evolutionary advantages during the colonisation of land by plants.

Dr Paul McCabe, UCD School of Biology and Environmental Science, University College Dublin

The MSc students are actively engaged in our research programmes and my research group is involved in trait selection at the single cell level. For example, somatic embryogenesis is a propagation technique that can solve problems associated with tree breeding such as long reproductive cycles. Using somatic embryogenesis to improve tree breeding has the potential to dramatically increase forest productivity. We are collaborating with Coillte on research to increase the embryogenic potential of several important commercial species.

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- MSc Biotechnology
- MSc Biotechnology & Business
- MSc Environmental Science
- MSc Environmental Sustainability

EU Enquiries Dr Carl Ng : futurecrops@ucd.ie : + 353 1 716 2250
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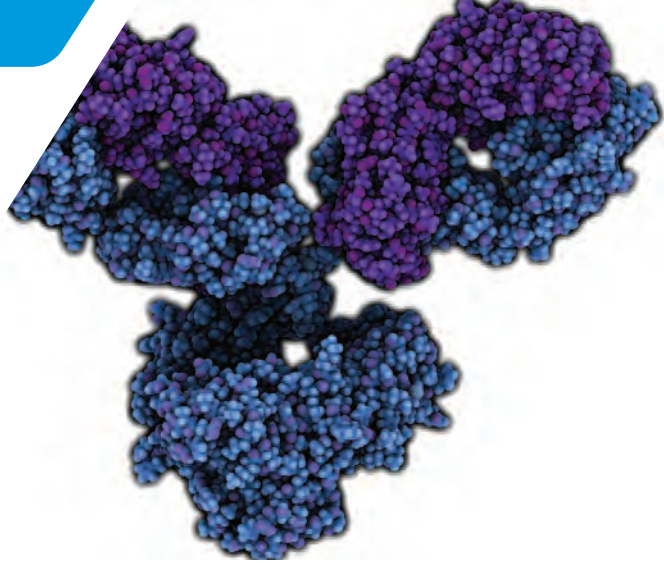

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MSc Biotherapeutics
(1 Year Full time)

The MSc in Biotherapeutics educates students on the practical uses of molecular advances in the discovery of protein and other biomolecular drug candidates and their development into biotherapeutics. It will provide students with a comprehensive understanding of the development of biotherapeutics, beginning with pre-clinical modelling and target identification together with antibody engineering, biochemical and biophysical characterisation and development issues for bioprocessing. Systems biology of biotechnological processes and approaches to the analysis of proteomics based discovery data will be covered in detail together with mathematical modelling, bioinformatics analysis and data integration strategies. Regulatory issues and innovation and commercialisation strategies will also be covered. Mammalian cell culture and bioprocess laboratory structure will be comprehensively covered in addition to novel approaches to therapeutic development. A practical drug discovery laboratory project will form a significant component of the experience of how candidates are identified and brought through the development pipeline.

Key Fact

This programme is the culmination of close collaboration between UCD School of Biomolecular and Biomedical Science, Systems Biology Ireland and the Biopharmaceutical industry in Ireland and across the world.

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Safety
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Course Content and Structure

90 credits taught masters	45 credits taught modules	45 credits credits project

The structure of the programme is as follows:

Semester 1
- Biotherapeutic Discovery and Development I
- BIOC40180 Professional Career Development
- MICR40010 Recombinant DNA Technology
- BMOL40120 Business of Biotechnology & Science
- BIOC40110 Biomedical Diagnostics
- CELB40160 HCS Microscopy
- BIOC40170 Pharmacology & Drug Development

Semester 2 & 3
- Biotherapeutic Discovery and Development II
- Systems Biology in Drug Development
- BIOC40180 Professional Career Development
- CHEN40090 Bioprocessing Laboratory
- MICR40100 Emerging Issues in Biotechnology
- CHEN40220 Regulatory Affairs
- MICR40020 Microbial & Animal Cell Products
- Project – Biotherapeutic Development

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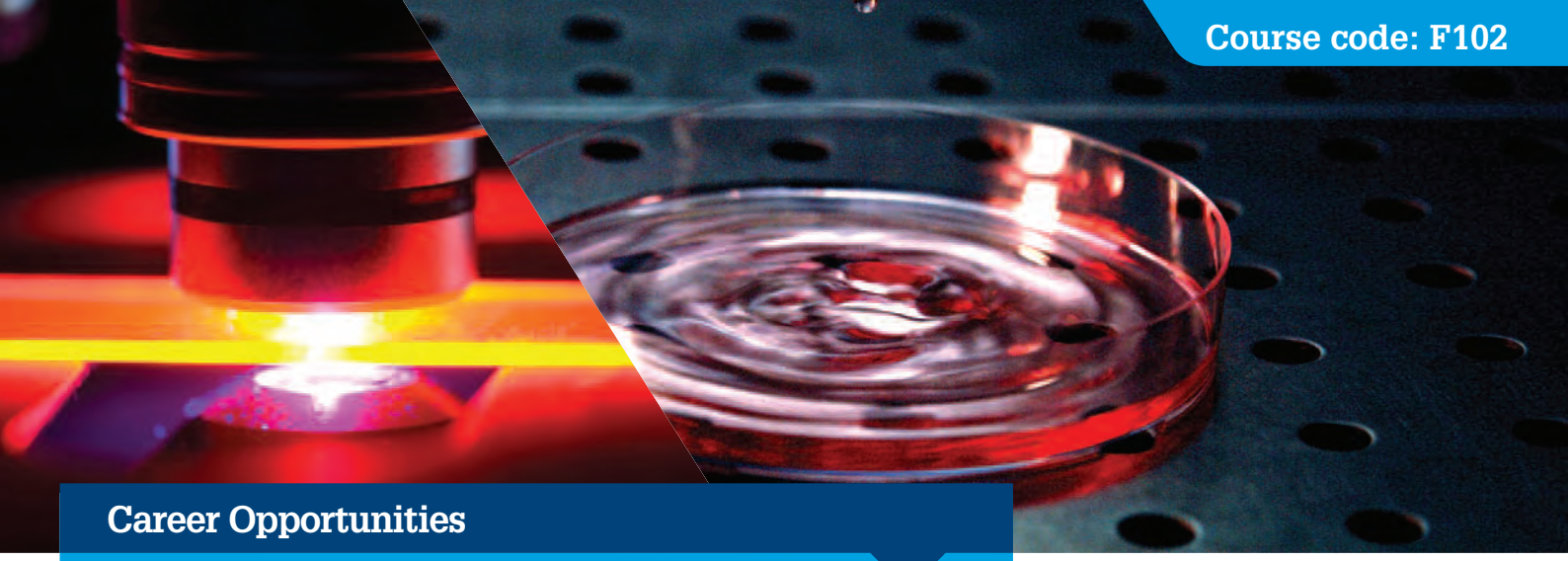

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Career Opportunities

This advanced graduate degree in Biotherapeutics has been developed in consultation with the Biopharmaceutical industry and is recognised and valued by them. A key feature is the undertaking of a significant drug discovery and development laboratory project which is reviewed by industry partners. This engagement is designed to help graduates identify opportunities in the industry at the earliest stage.
Prospective employers include: Novartis, Glaxo SmithKline, Eli Lilly, Johnson & Johnson, Pfizer, Janssen Biologics, AstraZeneca, MSD, Bristol Myers Squibb, Abbott, Sanofi.

Facilities and Resources

Students on this programme will benefit from the use of a research skills laboratory in the prestigious UCD Conway Institute, as well as state-of-the-art teaching and laboratory facilities in the new O' Brien Centre for Science.

Apply Now

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

Entry Requirements

- This programme is intended for applicants who have an Upper Second Class Honours Degree, or the international equivalent, in a biological or chemical science.
- This includes a B.Sc. in Biotechnology, Biochemistry, Microbiology, Genetics, Neuroscience, Physiology, Pharmacology, Medicinal Chemistry or an equivalent qualification.
- 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.

Staff Profile

Dr David O'Connell. Lecturer in Biochemistry & Pharmacology and Director of MSc Programme.

My core research focus is on the activity of calcium binding proteins involved in homeostatic mechanisms in the cell using an integrated platform of proteomic technologies. I have patented a novel affinity tag platform for improved protein immobilisation for purification, biophysical analysis and detection in multiple biopharmaceutical applications and together with Biopharma companies in the UK, Sweden and Switzerland we are validating this technology in the industrial context and assessing the impact on the biotherapeutics discovery and development pipeline.

Fees and Scholarships

Tuition fee information is available on www.ucd.ie/fees. Please note that UCD offer a number of postgraduate scholarships for fulltime, self-funding international students, holding an offer of a place on master's programmes.
Please see www.ucd.ie/international/scholarships for further information.

Accommodation

UCD has accommodation for over 2,500 students across five locations. Places are limited and more information is available at www.ucd.ie/residences/
For information and advice on living off campus, please contact the UCD Residences Off-Campus Office or the UCD Student Union Accommodation Services. Please visit www.ucd.ie/residences/accommodation-booking-support/ for further details.

Related Masters Programmes of Interest

- MSc in Biotherapeutics and Business
- MSc Biotechnology
- MSc Biotechnology and Business
- MSc in Toxicology

EU Enquiries Dr. David O'Connell
: Biotech@ucd.ie : +353 1 716 6725
www.ucd.ie/graduatestudies
UCD School of Biomolecular and Biomedical Science, University College Dublin, Belfield, Dublin 4.

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www.ucd.ie/graduatestudies

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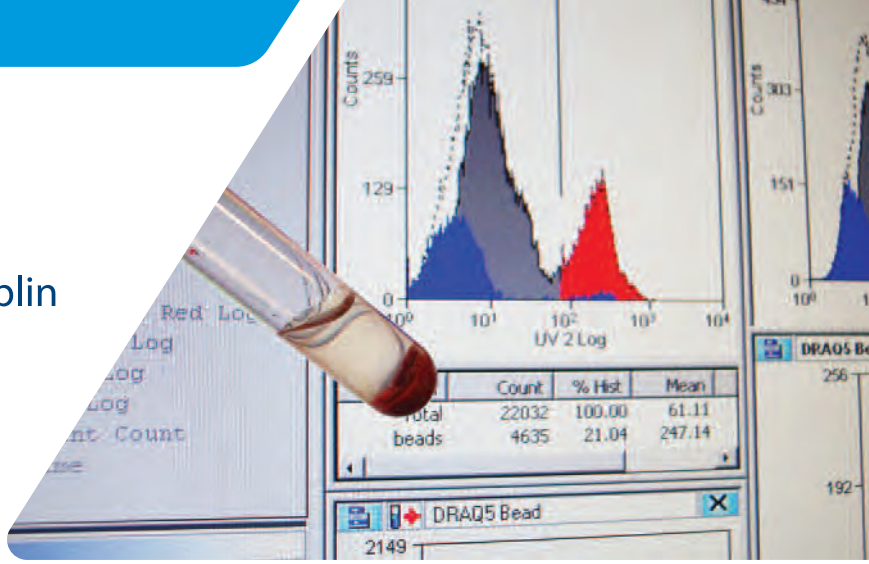

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MSc Biotherapeutics & Business
(1 Year Full time)

The MSc in Biotherapeutics and Business educates students on the practical uses of molecular advances in the discovery and of protein and other biomolecular drug candidates and their development into biotherapeutics. It will provide students with a comprehensive understanding of the development of biotherapeutics, beginning with pre-clinical modelling and target identification together with antibody engineering, biochemical and biophysical characterisation and development issues for bioprocessing. Systems biology of biotechnological processes and approaches to the analysis of proteomics based discovery data will be covered in detail together with mathematical modelling, bioinformatics analysis and data integration strategies. Regulatory issues and innovation and commercialisation strategies will also be covered. Mammalian cell culture and bioprocess laboratory structure will be comprehensively covered in addition to novel approaches to therapeutic development. You will also receive a comprehensive business education. You will learn to identify and solve business problems in local and international settings, enhance your communication and leadership skills and improve your ability for independent thinking and developing creative solutions.

Key Fact

The programme is the result of a close collaboration between UCD School of Biomolecular and Biomedical Science and UCD Michael Smurfit Graduate School of Business, which is Ireland's leading business school.

Why study at UCD?

Tradition
Established 1854, with 160 years of teaching & research excellence

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

Global community
Over 6,000 international students from over 120 countries study at UCD

Global careers
Degrees with high employability; dedicated careers support; 1 year stay-back visa

Safety
Modern parkland campus with 24 hour security, minutes from Dublin city centre

Course Content and Structure

90 credits	45 credits	45 credits
taught masters	taught modules	credits project

The structure of the programme is as follows:

Semester 1
- BIOC40180 Professional Career Development
- BMGT44310 Management & Org. Behaviour
- FIN41440 Corporate Accounting & Finance
- Business of Biotechnology & Science
- Biotherapeutic Discovery and Development I
- MICR40010 Recombinant DNA Technology
- BIOC40110 Biomedical Diagnostics
- CELB40160 HCS Microscopy
- BIOC40170 Pharmacology & Drug Development

Semester 2
- BMOL40130Feasibility and Business Plan Development
- BIOC40180 Professional Career Development
- Biotherapeutic Discovery and Development II
- Systems Biology in Drug Development
- CHEN40090 Bioprocessing Laboratory
- MICR40100 Emerging Issues in Biotechnology
- CHEN40220 Regulatory Affairs
- MICR40020 Microbial & Animal Cell Products

Semester 3
- BMOL40130 Feasibility and Business Plan Development
- BMOL40140 Biotherapeutics Case Study

Modules and topics shown are subject to change and are not guaranteed by UCD.

Course code: F103

Career Opportunities

This advanced graduate degree in Biotherapeutics and Business has been developed in consultation with employers and therefore will be recognised and valued by them. A key feature is the opportunity to carry out a business development plan which will allow graduates to develop connections with prospective employers, thereby enhancing chances of employment on graduation.
Prospective employers include: Abbott; Allergan; Amgen; Baxter Healthcare; Eli Lilly and Co.; Dignity Sciences; Glaxo SmithKline; Icon Clinical Research; ImmunoGen Inc.; Janssen Pharmaceutical Ltd.; Johnson & Johnson Ltd.; Merck Sharp & Dohme; Quintiles; Quest International; Sandoz; Seroba Kernel.

Images © UCD Research

Facilities and Resources

Students on this programme will benefit from the use of a research skills laboratory in the prestigious UCD Conway Institute, as well as state-of-the-art teaching and laboratory facilities in the new O' Brien Centre for Science.

Apply Now

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Entry Requirements

- This programme is intended for applicants who have an Upper Second Class Honours Degree, or the international equivalent, in a biological or chemical science.
- This includes a B.Sc. in Biotechnology, Biochemistry, Microbiology, Genetics, Neuroscience, Physiology, Pharmacology, Medicinal Chemistry or an equivalent qualification.
- 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.

Staff Profile

Dr David O'Connell.
Lecturer in Biochemistry & Pharmacology and Director of MSc Programme.

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Fees and Scholarships

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- MSc in Biotherapeutics
- MSc Biotechnology and Business
- MSc Biotechnology
- MSc in Toxicology

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www.ucd.ie/international

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MSc Biological & Biomolecular Science (Negotiated Learning) (12 months, Full time)

The number of industries requiring highly skilled graduates in the biological and biomolecular sciences is rapidly expanding and remains based on the principle that employable graduates should possess a range of key skills. The MSc in Biological and Biomolecular Science by Negotiated Learning will afford students the flexibility to broaden their understanding of biological and biomolecular science against a backdrop of learning core technical, methodological and innovation skills relevant to industry and academia.

Several innovative specialisations are available from a carefully chosen range of modules from the relevant disciplines within the UCD School of Biomolecular & Biomedical Science and the UCD School of Biology and Environmental Science. These provide students with an exciting prospect of studying and researching in the interdisciplinary fields of genetics, cell biology, biochemistry, molecular biology, microbiology and biodata analysis.

This diverse offering aims to enhance and develop a student's current knowledge and skill base using a wide range of taught components and applied research skills.

Guidance from expert faculty is provided to tailor a programme that will meet the anticipated requirements of the student's objectives and career goals.

Key Fact

This MSc in Biological and Biomolecular Science is the first of its kind offered in Ireland by Negotiated Learning. This offers students a unique opportunity to combine skills and learning from several related disciplines with guidance from expert faculty staff, and to deepen their knowledge in one of our specialisations.

Why study at UCD?

Tradition
Established 1854, with 160 years of teaching & research excellence

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

Global community
Over 6,000 international students from over 120 countries study at UCD

Global careers
Degrees with high employability; dedicated careers support; 1 year stay-back visa

Safety
Modern parkland campus with 24 hour security, minutes from Dublin city centre

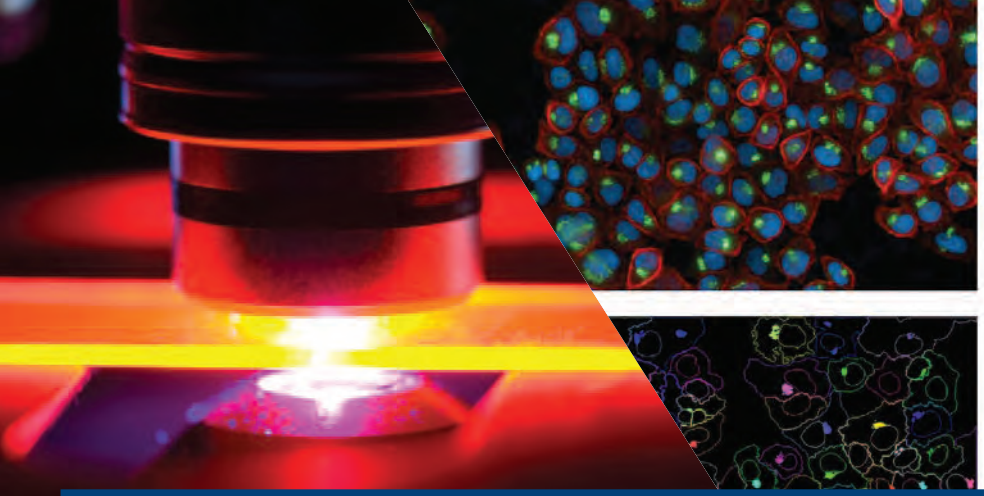
Course Content and Structure

90 credits	60 credits	30 credits
taught masters	taught modules	applied research skills

Course divided into:
Core Laboratory Research Skills (30 credits) – including techniques such as RT-PCR, western blotting and imaging studies.
Core Professional Taught Skills Modules (20 credits) – including career development, quantitative tools, science writing and communication skills.
Optional Taught modules (40 credits) – involves selecting one of the following specialisations and selecting specific modules within these that meet the student's learning objectives.

The Specialisations Available:

- **Genetics and Cell Biology:** investigates cellular signalling, architecture, imaging, trafficking and transport, genetic basis of disease, model organisms, epigenetics etc.
- **Microbiology and Infection Biology:** investigates mechanisms of pathogenic micro organisms, host response to infection, immunopathologies, host-pathogen interactions, development of diagnostics, applied microbiology etc.
- **Biochemistry and Synthetic Biology:** investigates metabolism and disease, protein-protein interactions, cell signalling, protein structure and analysis.



Course code: F104

Career Opportunities

This programme will enable you to choose from a wide range of careers and areas of postgraduate study. This multi-disciplinary course provides a solid grounding for careers in industry, health and research, such as Quality Assurance, Quality Control, Microbiology, Process control, Technical Transfer, Research and Development, and Regulatory Affairs, Scientific Editor or Writer, Lab Technician or Analyst roles.

An academic staff member will advise you on a specialisation and module choices based on the opportunities you hope to unlock.

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Facilities and Resources

Students on this programme will benefit from the use of a research skills laboratory in the prestigious UCD Conway Institute, as well as state-of-the-art teaching and laboratory facilities in the new O' Brien Centre for Science.

Apply Now

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

Entry Requirements

- This programme is intended for applicants who have at least an Upper Second class honours degree, or the international equivalent, in a life science or chemical science. Examples of an appropriate BSc subject include, but are not restricted to, Biotechnology, Biology, Biochemistry, Microbiology, Genetics, Neuroscience, Physiology, Pharmacology, Immunology, Pharmaceutical Chemistry and Medicinal Chemistry.
- 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.

Staff Profile

Gavin Stewart,
Lecturer in Comparative Physiology,
University College Dublin,
PhD in Physiological Sciences.

My research investigates epithelial membrane transporters that play a key role in the symbiotic relationship between mammals and their intestinal bacterial. I have extensive experience in utilising specific antibodies, western blotting and various imaging techniques to study these transporters at the protein level. External funders of this research include Science Foundation Ireland, The Wellcome Trust and The Kuwaiti Government. I passionately believe in combining cutting-edge biological research with the latest teaching developments to enhance student experience and development.

Fees and Scholarships

Tuition fee information is available on www.ucd.ie/fees. Please note that UCD offer a number of postgraduate scholarships for fulltime, self-funding international students, holding an offer of a place on master's programmes.
Please see www.ucd.ie/international/scholarships for further information.

Accommodation

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Related Masters Programmes of Interest

- MSc Biotherapeutics
- MSc Biotechnology
- MSc Imaging and Microscopy
- MSc Plant Biology – Future Crops

EU Enquiries Dr. Chandralal Hewage
: bio.nl@ucd.ie : +353 1 716 2131 www.ucd.ie/bioNL
UCD School of Biological & Environmental Science,
UCD School of Biomolecular & Biomedical Science, University College Dublin, Belfield, Dublin 4.

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www.ucd.ie/international

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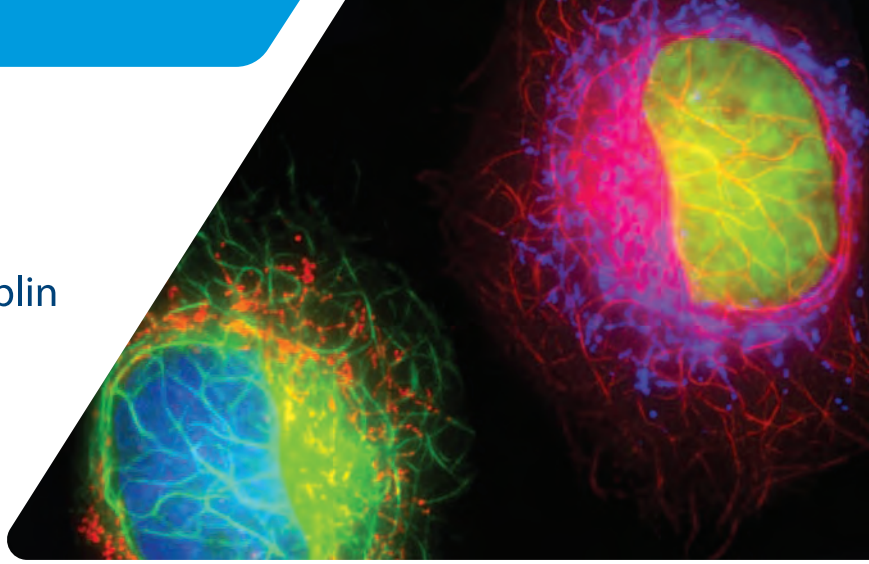

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MSc Imaging & Microscopy
(One Year Full Time)

The ability to visualise an object of interest has always been fundamental to biological and biomedical research and in recent years imaging approaches have been revolutionised through advances in computing, instrumentation and automation, novel fluorescent tools, and the ability to resolve and quantify ever smaller structures. All worldwide universities, research institutes and companies involved in biological and biomedical research use modern imaging techniques as taught in this UCD MSc programme.

This MSc will provide you with an in-depth knowledge of current imaging and microscopy technologies, with hands-on experience of their application in biology. A suite of specialised modules will cover the physics of imaging, analysis of images, use of electron microscopy, confocal microscopy, atomic force microscopy, and automated screening microscopy. Students will be provided with the opportunity to use state-of-the-art equipment in each of these areas. An extended laboratory-based project utilising knowledge gained during this programme is also a key feature of this course. This MSc provides an outstanding opportunity for students to gain extensive practical expertise in this fundamental scientific area.

Key Fact

This MSc provides outstanding access to research equipment and infrastructure, and a number of industry- and expert-led workshops. All activities are carried out in a small-group format.

Why study at UCD?

Tradition
Established 1854, with 160 years of teaching & research excellence

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Global careers
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Safety
Modern parkland campus with 24 hour security, minutes from Dublin city centre

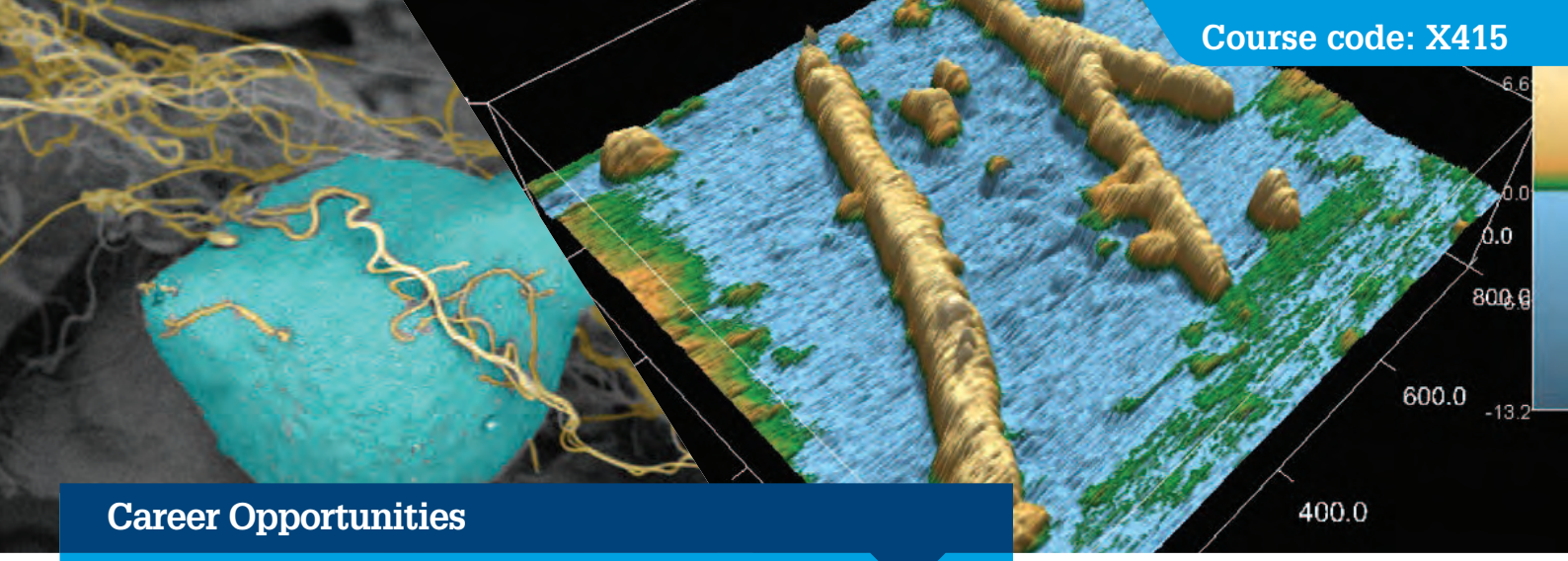
Course Content and Structure

90 credits	50 credits	40 credits
taught masters	taught modules	research project

Emphasis is placed on general experimental design, sample preparation, the practical use of imaging equipment, and image analysis.
The programme is designed around a suite of modules, including the following:

- Electron Microscopy
- Biological Atomic Force Microscopy
- High Content Screening Microscopy
- Light Sheet Microscopy
- Practical Fluorescence Microscopy
- Flow Cytometry
- Diagnostic and Medical Imaging
- Image Analysis and Processing
- BioOptics and NanoBio Imaging

Modules and topics shown are subject to change and are not guaranteed by UCD.



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Career Opportunities

This MSc in Imaging & Microscopy is ideal for graduates who are interested in a career within research or service laboratories of universities, health-related institutes or the private sector. It also provides training and skills that would be a distinct advantage when applying for PhD studentships or other graduate training programmes. This MSc will also be of great value to individuals wishing to pursue wider scientific careers in academic, health-related or bio-pharma environments.

Facilities and Resources

- Access to state-of-the-art research equipment associated with biological imaging
- Point scanning and spinning disk microscopes
- High-pressure freezing and electron microscopy infrastructure
- Automated imaging and analysis platform of the UCD Cell Screening Laboratory
- Custom light sheet microscopy systems
- Culture facilities for a wide-range of model organisms including mammalian cells, nematodes, zebrafish, and plants

Apply Now

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

Entry Requirements

- Entrance to the programme requires an upper second class honours degree (or international equivalent) in an appropriate sciences discipline; such as biology, microbiology, cell biology, molecular biology, biochemistry, genetics, pharmacology, physics.
- 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.

Graduate Profile

Sanju Ashraf, India, PhD Student, University of Edinburgh

During my BSc in India I became interested in working with microscopes and in searching for a related course I came across the MSc Imaging and Microscopy at UCD. This course was exactly what I was looking for as I got lots of valuable hands-on experience with the latest imaging and image analysis equipment and techniques across different biological disciplines. I particularly enjoyed working on my research project in Professor Simpson's lab. Staff and students were very welcoming and highly supportive and the experience of living and studying in a vibrant city and University was brilliant.

This MSc has a lot to offer academically and helped me secure a Wellcome Trust funded PhD position in the University of Edinburgh, UK.

Fees and Scholarships

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

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Related Masters Programmes of Interest

- MSc Biotechnology
- MSc Biotechnology & Business
- MSc Plant Biology & Biotechnology
- MSc NanoBio Science

EU Enquiries Professor Jeremy Simpson
: bioimaging@ucd.ie : + 353 1 716 2243
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www.ucd.ie/international

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MSc Chemistry (Negotiated Learning) (One Year Full Time)

Ireland is home to 9 of the top 10 world pharmaceutical and biotechnology companies, such as GlaxoSmithKline, Pfizer, Merck, Bristol Myer Squibb and Genzyme; with 7 of the 10 world blockbuster pharmaceuticals made in Ireland.

The MSc in Chemistry by negotiated learning is a flexible programme delivered through the UCD School of Chemistry and Chemical Biology. The programme offers a wide selection of modules and is ideal if you are considering progressing to industry or further research.

Academic advice is available to ensure that the choices you make match your career aspirations or areas of interest. For example, students wishing to broaden their understanding of chemistry could choose a range of modules from across the entire chemical science discipline, while those that are intent on progressing to a PhD programme might choose to concentrate on available modules in a specific area, e.g. chemical biology, medicinal or pharmaceutical chemistry, nanochemistry, sustainable chemistry or materials chemistry.

Key fact

The UCD School of Chemistry and Chemical Biology has vibrant research in areas such as catalysis and new transformations, bioNano interface, advanced spectroscopy, new materials for magnetic, medicinal, and electronic applications and carbohydrate chemistry.

Why study at UCD?

Tradition
Established 1854, with 160 years of teaching & research excellence

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Global careers
Degrees with high employability; dedicated careers support; 1 year stay-back visa

Safety
Modern parkland campus with 24 hour security, minutes from Dublin city centre

Course Content and Structure

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

Modules on offer cover all the major themes of chemistry including:

- Advanced synthetic organic and inorganic chemistry
- Surface science
- Materials chemistry
- Advanced spectroscopy
- Advanced crystallography
- Commercialisation of laboratory research
- Biological, medicinal and pharmaceutical chemistry
- Sustainable and environmental chemistry
- Nanochemistry
- Biophysical chemistry
- Polymer chemistry
- Computational chemistry
- Research project

During the third semester students are placed within the research groups of a member of staff in the School to carry out a 30-credit 3-month research project. The research interests of the academic staff members are at www.ucd.ie/chem/staff

Modules and topics shown are subject to change and are not guaranteed by UCD.

Course code: F042

Career Opportunities

The MSc in Chemistry through negotiated learning provides a basis for graduates to enter the chemical, pharmaceutical, bio-pharmaceutical and materials industries. Analytical services, environmental protection and primary and secondary school teaching present other possible opportunities. Furthermore, through judicious choice of modules within one particular sub-discipline of chemistry, the programme is an attractive route for some students into a PhD programme.

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Facilities and Resources

The UCD School of Chemistry and Chemical Biology is located in the state-of-the-art UCD O'Brien Centre for Science with world-class facilities in technologies such as X Ray crystallography, nanoparticle characterisation, microanalysis, NMR spectroscopy and Mass Spectrometry.

Apply Now

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

Entry Requirements

- This programme is intended for applicants with a Chemistry degree, or a degree with a significant component of chemistry. An upper second class honours or international equivalent is required.
- 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 Biotechnology
- MSc Biotechnology & Business
- MSc NanoBio Science
- MSc Plant Biology & Biotechnology

Staff Profile

Dr Xiangming Zhu, UCD School of Chemistry & Chemical Biology

This MSc in Chemistry by negotiated learning trains students to a high level of knowledge and proficiency in a specialised area of chemistry such as medicinal chemistry, chemical biology, pharmaceutical chemistry, energy and sustainable chemistry, biophysical chemistry or nanotechnology. Students participate in laboratory work based in our newly developed ergonomic, high specification, modern laboratories in the UCD O'Brien Centre for Science. Our core facilities are at internationally competitive levels, including NMR spectrometry, mass spectrometry/chromatography, X-ray crystallography and microanalysis.

EU Enquiries Dr James Sullivan, Course Director ✉ james.sullivan@ucd.ie
www.ucd.ie/graduatestudies
UCD School of Chemistry and Chemical Biology, University College Dublin, Belfield, Dublin 4.

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www.ucd.ie/international

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Professional Certificate (F052)/ Diploma in Toxicology (F053)
(Part Time)

Toxicology is the study of adverse effects of chemicals and other substances on humans, other animals, plants and the environment, and how they can be avoided or minimised. These courses provide an introduction to the principles of modern toxicology in relation to environmental, occupational, and public health in the context of the chemical, food and pharmaceutical industries.
These courses are aimed at individuals with a scientific qualification who wish to develop their skills and knowledge of toxicology and gain a recognised third level qualification in the area. Current practicing toxicologists will also benefit from undertaking individual modules for continuing professional development (CPD), as all of the modules will contribute towards maintenance of professional toxicological accreditation. The course content has been approved by the Irish Register of Toxicologists (IRT) and is recognised as accreditation for continuing professional development in this area.

Key Fact

These courses have been developed in close collaboration with the Irish Register of Toxicologists (IRT) and are also approved for accreditation towards becoming a registered toxicologist and for CPD credits towards maintaining IRT/ERT accreditation. The courses are run by European Registered Toxicologists (ERT), including guest lecturers delivering 'state of the art' contributions as practicing experts in a range of toxicological roles from basic research to national and European regulatory bodies.

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Safety
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Course Content and Structure

30 credits
professional diploma – all taught modules

- Essential Pharmacology for the Toxicologist
- Experimental Toxicology and Risk Assessment in the 21st Century
- Environmental and Occupational Toxicology
- Professional Skills for the Modern Toxicologist

Lectures are delivered by staff of international renown in their field, many of whom are practicing toxicologists. Study days and e-learning are utilized to maximise flexibility in how students manage their study time.

Modules and topics shown are subject to change and are not guaranteed by UCD.

Course code: F052

Career Opportunities

These programmes provide an introduction to toxicology, and current toxicological assessments, highlighting current issues in toxicology. Graduates will gain the required level of professional ability to operate as independent toxicologists by developing a sophisticated level of data interpretation, communication skills, excellence in problem solving, and ability to critically evaluate and form judgements on complex toxicological problems.

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Facilities and Resources

The UCD School of Biomolecular and Biomedical Science is closely linked to the UCD Conway institute of Biomedical and Biomolecular research which provides core technologies such as NMR spectroscopy, real-time PCR, electron microscopy, light microscopy, digital pathology and flow cytometry.

Apply Now

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

Entry Requirements

- This programme is a graduate programme and applicants must possess a minimum of an upper second class honours undergraduate degree or relevant experience in the area of toxicology/pharmacology.
- 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.

Fees

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

Course Highlights

- This course provides an introduction to the principles of modern toxicology in relation to environmental, occupational and public health the context of the chemical, food and pharmaceutical industries.
- Guest speakers deliver 'state of the art' contributions as practicing experts in a range of toxicological roles from basic research to national regulatory bodies
- Study days and e-learning are utilized to maximise flexibility in how students manage their study.

Staff Profile

Dr Tara McMorrow, UCD School of Biomolecular and Biomedical Science

I am a Senior Lecturer in Pharmacology and Toxicology in the UCD School of Biomolecular and Biomedical Sciences and I'm also a member of the board of the Irish Society of Toxicology and an Irish and European Registered Toxicologist. My research is in the area of kidney disease, toxicology, pharmacology and epithelial biology. I also provide expert toxicological reports for the pharmaceutical Industry and court cases.

EU Enquiries Dr Tara McMorrow ✉ : biotech@ucd.ie
www.ucd.ie/sbbs/graduatestudents/cpdtoxicology/
UCD School of Bimolecular and Biomedical Science, University College Dublin, Belfield, Dublin 4.

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www.ucd.ie/international

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MSc Applied Environmental Science
(One Year Full Time)

Several agencies at a national and international level are required to manage our environment sustainably by implementing policy and legislation. The study of Applied Environmental Science is critical for establishing policies in environmental assessment, evaluating potential change in environmental quality in response to various land-use and other activities and in the development of management and conservation strategies as well as contributing to policy formulation. This programme provides graduates with a thorough knowledge of Environmental Science and there is a heavy emphasis on practical training in fieldwork, laboratory analyses, information sourcing, data analysis, planning, reporting and communication. You will work with an interdisciplinary team of experts covering the key aspects of Environmental Science, encompassing marine, freshwater and terrestrial systems, to make this an exceptionally practical multidisciplinary programme.

Key Fact

This is the only Applied Environmental Science course in Ireland to include a major input from civil engineering relating particularly to water quality, hydrology and waste treatment processes.

Why study at UCD?

Tradition
Established 1854, with 160 years of teaching & research excellence

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

Global community
Over 6,000 international students from over 120 countries study at UCD

Global careers
Degrees with high employability; dedicated careers support; 1 year stay-back visa

Safety
Modern parkland campus with 24 hour security, minutes from Dublin city centre

Course Content and Structure

90 credits	70 credits	20 credits
taught masters	taught modules	Individual Research Project/Task

Samples of modules include:

- Water Resources Engineering
- Environmental Impact Assessment
- Core Skills for Research
- Freshwater Resources Assessment
- Global Change Ecology
- Wildlife & Resources Management
- Marine/Coastal Ecology
- Soil Ecology
- Environmental Geology
- Ecotoxicology & Air Quality Monitoring
- Vegetation Ecology
- Geographic Information Systems (GIS) and Data Analyses
- Remote Sensing
- Ecological Modelling
- Integrated Municipal Solid Waste Management
- Water, Waste & Environmental Modelling

The course gives due consideration to key legislative requirements and policy developments.

Modules and topics shown are subject to change and are not guaranteed by UCD.

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Career Opportunities

Our graduates are building successful varied careers in environmental resources assessment, management and protection. A considerable number have been employed in consultancy positions and some are also with the Inland Fisheries Ireland, Department of the Environment and the Environmental Protection Agency (EPA). Some graduates have also continued their studies at PhD level in the areas of fisheries, biomass fuels, soil, water engineering and invertebrate ecology.

Facilities and Resources

The School of Biology and Environmental Science has 14 state-of the-art research laboratories that are equipped to support a very wide range of research activities at the cellular or whole organism level. The UCD Rosemount Environmental Research Station can also support glasshouse or field based experiments.

Apply Now

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

Entry Requirements

- This programme is intended for applicants with a primary degree in science, engineering, geography, architecture or a related subject. An upper second class honours or international equivalent is required
- 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.

Fees and Scholarships

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

Accommodation

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For information and advice on living off campus, please contact the UCD Residences Off-Campus Office or the UCD Student Union Accommodation Services. Please visit www.ucd.ie/residences/accommodation-booking-support/ for further details.

Additional Course Delivery Options

- MSc Applied Environmental Science 2 Years Part Time

Related Masters Programmes of Interest

- MSc Environmental Sustainability (Negotiated learning)
- MSc World Heritage Management and Conservation
- MSc Environmental Policy
- MSc Environmental Technology

Graduate Profiles

Dr Gustavo Becerra Jurado, Research Officer, Inland Fisheries Ireland

I had a very positive experience the year I was a student of the MSc Environmental Science programme at UCD. I really enjoyed the lectures and I had the support of my project supervisor. This course equipped me with many invaluable skills that are needed in the current job market.

Dr Rachel Wisdom, Entomologist, Department of Agriculture, Food and the Marine, Ireland.

I studied environmental science and agriculture as an undergraduate. The masters degree in Applied Environmental Science at UCD was perfect as it covered a wide range of relevant topics in excellent detail. This enhanced my environmental science skills and led to my selection for a PhD in environmental science research at UCD.

EU Enquiries Dr Jan-Robert Baars : mscenvsci@ucd.ie : + 353 1 716 2243 **Non-EU Enquiries** : internationaladmissions@ucd.ie
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Ireland's Global University

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MSc/Grad Cert/Grad Dip Environmental Sustainability

(Negotiated Learning) (Online)

Dwindling natural resources and environmental quality issues are challenging businesses to work within a sustainability framework, while at the same time maximising employment provision and profitability. Consequently, there are a growing number of green technology and related enterprises that require a skilled and knowledgeable workforce. Equally, those within the regulation or policy environment must have the knowledge base to address the complexities of the 'sustainability' challenge.

The Environmental Sustainability course is taken online in your own time and at your own pace. You can choose to study for a 30-credit Graduate Certificate, a 60-credit Graduate Diploma or a 90-credit MSc degree. The course focuses on delivery of the knowledge and skills required to address sustainability challenges across a broad spectrum of activities such as agriculture, industry, green technology, resource management, environmental regulation and policy. You will be challenged to apply your scientific and technical knowledge to develop solutions to local and global problems and needs. Through discussion and research work you will learn to handle complex issues, analyse, interpret and apply scientific data and information, use your judgement and also communicate your findings and ideas.

Key Fact

This course allows the flexibility to tailor your module selection to meet your training needs or career goals. All students undergo a Training Needs Assessment with the assistance of UCD academic staff before commencing their studies, to provide the most suitable, customised course content for each applicant.

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Tradition

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Global profile

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Global community

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Global careers

Degrees with high employability; dedicated careers support; 1 year stay-back visa

Safety

Modern parkland campus with 24 hour security, minutes from Dublin city centre

Course Content and Structure

The MSc, Diploma and Certificate will provide you with the theoretical background, practical training and ancillary workplace skills needed for a successful career in your chosen field. The course will develop your capacity for self-directed learning, within a supportive framework facilitated by online fora, discussion boards and virtual tutorial/classroom sessions. For the MSc degree you will be required to undertake a research or desk-based project. You can take any combination of the following modules, depending on your specific interests and career needs. Modules available include:

- Sustainable Energy & Environment
- Green Technology Project
- Energy Systems & Climate Change
- Technical Communications
- People Information & Communication
- Managing the Interface between Science & Policy
- Water Quality Assessment, Protection & Management
- Water Resources Engineering 1 and 2
- Air Pollution
- Environmental Geoscience
- Soil Resources
- Peatlands & Global Change
- Ecology & its Application
- Genetics for Environmental Scientists
- Applied Ecotoxicology
- Impact Assessment Procedures
- Environmental Legislation & Regulation
- Management of Sustainable Fisheries
- Wildlife Management/Conservation
- Bioinvasions: Impact to Management
- Management Plan
- Natural Heritage Conservation
- Cultural Heritage Conservation
- World Heritage Legislation
- Data Analysis & Interpretation
- Design of Experiments
- GIS for Environmental Investigations
- Practicum (Research; lab/field)
- Practicum (Desk Study)
- Career Zone – non-credit bearing, free additional module offering

Modules and topics shown are subject to change and are not guaranteed by UCD.

Images © UCD Research

Career Opportunities

Successful completion of this course will provide you with the professional competitive advantage to choose from careers in the application of green energy technology, environmental engineering, environmental monitoring and protection, resource and waste management, consultancy, research, heritage, conservation and education either within regulatory bodies or in a wide range of industries, both multinational organisations as well as small- and medium-sized enterprises. The course also opens up opportunities to pursue further studies including up to PhD level.

Facilities, Resources and Support

Throughout your term of study here in UCD you will have access to our online electronic library resources, including a wide range of scientific journals and e-books. IT and Blackboard support will be available to assist with any issues you encounter. Students may also visit the library to use its resources and have the same right of access to campus facilities as our on-campus students.
This course relies on the significant teaching and research strengths across eight different Schools in UCD. This allows us to offer a multidisciplinary degree incorporating a wide range of topics, e.g. renewable energy resources, sustainable energy systems, environmental engineering and resource management, water quality assessment and conservation science.

Apply Now

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

Entry Requirements

- This programme is intended for applicants with a primary degree in science, engineering, or a related discipline. A lower second class honours degree or international equivalent is required.
- Applicants with substantial relevant work experience will also 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.

Fees

Tuition fees are charged on a 'pay as you go' basis each semester for just those modules taken. Information is available on www.ucd.ie/fees. The same fees apply to non-EU students.

Additional Course Delivery Options

- Graduate Diploma Environmental Sustainability (Negotiated Learning) (Sept Start, Jan Start)
- Graduate Certificate Environmental Sustainability (Negotiated Learning) (Sept Start, Jan Start)

Related Masters Programmes of Interest

- MSc Applied Environmental Science

Graduate Profiles

Zsuzsanna Lukacs

I have an environmental engineering degree and this was a good option as I'm also working full time and the online course works very well for me. The classes are well prepared and easy to understand even for someone whose first language is not English.

Maurice Ryan

I would describe the course as enjoyable and very flexible. I would advise prospective students not to rush the course. You have 4 years to get all 90 credits done in the case of the Masters and if you're busy with work then I recommend you use this time to get the best of both the online course and daily life. This is where the course scores fabulously for me. It's just so flexible.

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www.ucd.ie/international

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MSc Evolutionary Biology
(One Year Full Time)

In this course you will study biological evolution, an integrative subject that underpins all areas of biology. One hundred-and-fifty years after the publication of Darwin's "The Origin of Species", evolutionary theory occupies a central role in our modern society: constantly contributing to advances in areas such as medicine, environmental science, engineering and psychology. Important public debates centre upon our awareness of evolutionary processes – our understanding of the natural world and how it changes, the origin of life, and the forces that have shaped our own species. This MSc course is tailored for bright and motivated science graduates wishing to advance their career in evolutionary biology.

The main career focus is towards pursuing a career in research, with a view of studying for a PhD. The MSc can also be a starting point to build up a career in science communication, policy or conservation. The course entails taught modules, including field work and laboratory experience, data analysis, modeling and an independent research project.

Key fact

You will be taught by the strongest and broadest team of evolutionary biologists in Ireland, whose research regularly features in the world's top evolutionary journals, including Evolution, BMC Evolutionary Biology, Molecular Ecology, Molecular Biology & Evolution, Journal of Evolutionary Biology, Heredity, Palaeontology, Genetics, Genome Research, as well as Science, Nature, TREE, PNAS and the Proceedings of the Royal Society of London.

Why study at UCD?

Tradition
Established 1854, with 160 years of teaching & research excellence

Global profile
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Global community
Over 6,000 international students from over 120 countries study at UCD

Global careers
Degrees with high employability; dedicated careers support; 1 year stay-back visa

Safety
Modern parkland campus with 24 hour security, minutes from Dublin city centre

Course Content and Structure

90 credits	60 credits	30 credits
taught masters	taught modules	individual project/task

This programme will include regular guest lectures by specialists in a broad range of evolutionary biology topics. In addition there will be a field-based programme and an individual research project chosen in consultation with academic staff.

A sample of the modules available include:

- Introduction to Evolutionary Biology
- Molecular Phylogenetics
- Palaeobiology
- Evolution of Humans
- Plant-Atmosphere and Climate Interactions
- Ecological Modelling
- Developmental Plant Genetics
- Epigenetics
- Insect-Plant Interactions
- Cellular Architecture

Modules and topics shown are subject to change and are not guaranteed by UCD.

Images © UCD Research

Career Opportunities

Prospective careers include research in museums, scientific journalism/ publishing, governmental and non-governmental policy departments and wildlife management/environmental conservation. Graduates have gone on to do PhDs in the following universities: Trinity College Dublin, European Academy of Research (EURAC, Italy) and Kinderspital Zürich, Switzerland.

Facilities and Resources

- State-of-the-art experimental facilities (Programme for Experimental Atmospheres and Climate, ancient DNA laboratory, genetics laboratory, greenhouse facilities)
- High performance computing clusters
- Partnership with the National Botanical Gardens and the National Museum of Ireland

Apply Now

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

Entry Requirements

- This programme is intended for applicants with a BSc degree in a related subject such as biology, ecology, zoology, geology, palaeontology, cellular/ molecular biology, biochemistry, environmental biology, marine biology.
- A lower second class honours or international equivalent is required.
- 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.

Graduate Profiles

Niall O'Sullivan, Graduate

I work as a full time researcher of ancient DNA in Italy. I can confidently say that the skills and knowledge I gained during the Evolutionary Biology masters at UCD directly led to my employment after graduation. The masters gave me a great opportunity to experience full time research. The research aspect was particularly useful for improving my career horizons. My supervisor and I even published the results of our research in a scientific journal shortly after I graduated.

Rebecca Higgins, Graduate

The modules offered on the MSc in Evolutionary Biology are very diverse and don't limit you. This led me to start applying for PhDs that I wouldn't have been qualified for before the MSc. The lab experience, presentation and critical thinking skills I gained were essential in finding a PhD position in a topic I love. I now work in Zürich, Switzerland studying the genetics of dermatological diseases in children.

Fees and Scholarships

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

Accommodation

UCD has accommodation for over 2,500 students across five locations. Places are limited and more information is available at www.ucd.ie/residences/
For information and advice on living off campus, please contact the UCD Residences Off-Campus Office or the UCD Student Union Accommodation Services. Please visit www.ucd.ie/residences/accommodation-booking-support/ for further details.

Related Masters Programmes of Interest

- MSc Applied Environmental Science
- MSc Global Change: Ecosystem Science & Policy
- MSc Plant Biology and Biotechnology
- MSc Archaeology

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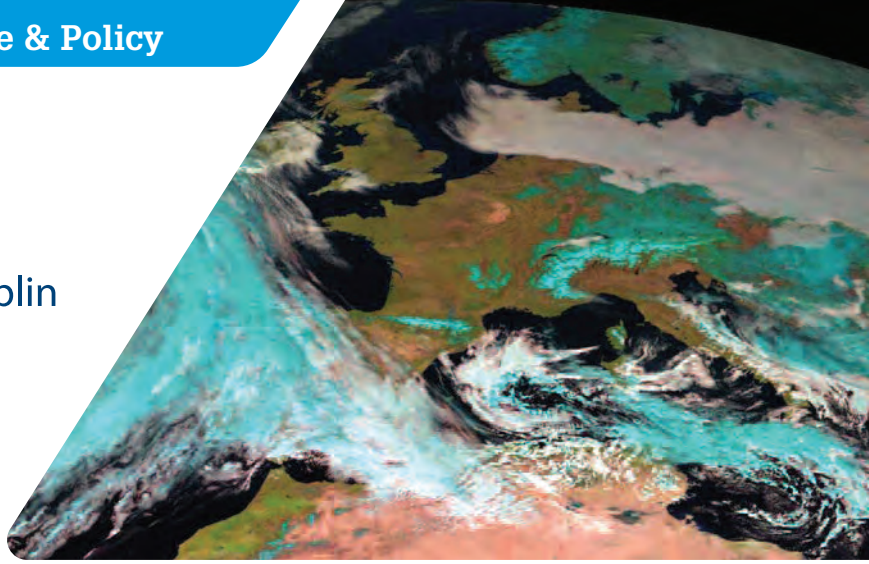

Front approaching Ireland and snow over the Alps (Eumetsat RGB composite image).

MSc Global Change: Ecosystem Science & Policy

(16 Months Full Time)

Global change refers to planetary-scale changes occurring in complex socio-ecological systems which are affected by climatic and non-climatic drivers (e.g. changes in human society). Understanding the intricate, medium to long-term changes in our land, air and water requires advanced scientific knowledge in measurement, modelling and prediction.

This joint international MSc course between the UCD School of Biology and Environmental Science and Justus-Liebig University (JLU) Giessen, Germany is the response to these global change challenges and will suit skilled motivated science graduates wishing to develop a scientific career in ecosystem research as well as those aiming to contribute to evidence-based environmental policy.

You will be involved in active research groups in both countries, contributing to their ongoing ecosystem studies in order to experience the process of creating scientific knowledge in ecosystem science. In addition to acquiring skills in measuring, analysing and understanding what is behind scientific data you will have the opportunity to develop your analytical, presentation and communication skills to enable you to participate in the policy making process.

Key Fact

Graduates will receive a joint international degree from two well-established universities combining their complementary and multidisciplinary research profiles and cutting-edge expertise.

Why study at UCD?

Tradition

Established 1854, with 160 years of teaching & research excellence

Global profile

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

Global community

Over 6,000 international students from over 120 countries study at UCD

Global careers

Degrees with high employability; dedicated careers support; 1 year stay-back visa

Safety

Modern parkland campus with 24 hour security, minutes from Dublin city centre

Course Content and Structure

120 credits	70 credits	30 credits	20 credits
taught masters	taught modules	Individual Research Project	Work Placement

The first semester is based at UCD, followed by a 6 week work placement in a company or institution of your choice. The second taught semester is based in JLU and the third semester is devoted entirely to the individual research project which can be undertaken in either UCD or JLU. Samples of topics available include:

- Global change (soil, air, water): introduction and advanced techniques
- Plant-soil-atmosphere interactions
- Science and policy
- Environmental law
- Core skills for research including modelling for geo-ecology
- Policy consultancy
- Economics and environmental management
- Biodiversity informatics
- Palaeo-climatology

For more information visit http://globalchange.ucd.ie/

Modules and topics shown are subject to change and are not guaranteed by UCD.

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Career Opportunities

Graduates may pursue roles as policy advisers, scientific analysts or researchers in government, international organisations, NGOs, research institutes or consulting companies. There are also many opportunities for further studies. The skills you acquire, particularly through the completion of the minor thesis provides a strong foundation for PhD research.
Prospective employers include the Environmental Protection Agency, Governmental Departments, European Commission; European Environment Agency, International organisations (e.g. Intergovernmental Panel on Climate Change; United Nations Environment Programme; International Union for the Conservation of Nature).

Facilities and Resources

- A climate change station at JLU hosts one of the world-wide longest-running Free Air Carbon dioxide (FACE) experiments.
- The Program for Experimental Atmospheres and Climate (PEAC) at UCD is a state-of-the art plant growth room facility to investigate past and future climatic scenario.
- The UCD Earth Institute is a centre for resource and environment research aimed at leading Ireland's response to climate change and the global energy crisis.

Apply Now

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

Entry Requirements

- This programme is intended for applicants with a degree in an appropriate life sciences discipline, such as biology, agriculture or environmental science (including zoology, ecology, biochemistry, geology and physics). A lower second class honours (GPA 2.48 and above) or international equivalent is required.
- 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.

Graduate Profile

Aggrey Ntakimanye, Uganda, Graduate

The MS in Global Change had the best "packaging" that suited my career aspirations and interests. The most stimulating and valuable aspect of the course was the work placement, where I learned work-related skills through excellent professional mentoring. Living in both Ireland and Germany was also enriching at a personal level.

Fees and Scholarships

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

Accommodation

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Related Masters Programmes of Interest

- MSc Applied Environmental Science
- MSc Environmental Sustainability (Online)

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Non-EU Enquiries : internationaladmissions@ucd.ie
www.ucd.ie/international

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MSc World Heritage Management & Conservation
(One Year Full Time)

At present, the Convention concerning the Protection of the World Cultural and Natural Heritage is considered one of the most effective global instruments to protect natural and cultural properties. With increasing globalisation of heritage, the conservation and management of World Heritage has emerged as an interdisciplinary field of study creating new opportunities for inclusive heritage debate and dialogue both locally and globally, requiring common tools and understanding. This MSc in World Heritage Management & Conservation is for applicants motivated to protect and conserve world natural and cultural heritage.

This MSc provides graduates with a thorough knowledge of the World Heritage Convention and its application in solving heritage conservation problems. It will equip you with the theoretical knowledge and practical skills necessary to develop a career or to up-skill your professional experience in the development of management and conservation strategies for the protection of heritage. The programme will examine remedial action and preparedness strategies in response to threats to heritage such as unsustainable tourism activities, inappropriate uses and development pressures, climate change and natural disasters as well as invasive species and habitat fragmentation.

Key Fact

This UCD MSc is the only World Heritage Management course in Ireland and was one of the first of its kind in the world.

Why study at UCD?

Tradition
Established 1854, with 160 years of teaching & research excellence

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

Global community
Over 6,000 international students from over 120 countries study at UCD

Global careers
Degrees with high employability; dedicated careers support; 1 year stay-back visa

Safety
Modern parkland campus with 24 hour security, minutes from Dublin city centre

Course Content and Structure

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

Topics include:

- Heritage and Environmental Interpretation
- International Strategies and the World Heritage Convention
- Sustainable Development
- Project Development, Management & Marketing
- Conflict Resolution and Conservation
- Cultural Heritage
- Global Biodiversity and Heritage
- Conservation Biology
- Remote Sensing
- Climate Change
- Archaeology & World Heritage Management
- Cultural Landscapes

The research project is carried out in the field and is designed to explore and resolve a practical management problem at a World Heritage Site or equivalent reserve in your home country or abroad. Every effort is made to develop a project which takes account of the background, interests and long-term aspirations of individual students.

Modules and topics shown are subject to change and are not guaranteed by UCD.

Career Opportunities

Our graduates are building successful careers in the inter-disciplinary field of heritage protection, management and research in Australia, Canada, China, Democratic Republic of Congo, England, Ethiopia, France, Georgia, Ireland, Italy, Uganda and the USA. Employers include international organisations, national authorities and in the private sector. They have secured positions in World Heritage properties, National Parks and Museums, in senior government positions and positions in education. Examples of roles graduates have obtained and sectors they work in include World Heritage and Protected Area Manager, Heritage Officer and Education Officer, positions in government, Natural Resources Manager, Consultancy firms and Research and International Conservation agencies.

Facilities and Resources

This programme gives you the opportunity to visit Ireland's most iconic World Heritage Site, Bru na Boinne, as well as Doñana World Heritage property and Seville city in the South of Spain, giving you unparalleled access to the management strategies of these unique properties.

Apply Now

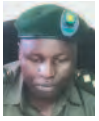
This programme receives significant interest so please apply early online at www.ucd.ie/apply

Entry Requirements

- Applicants are normally expected to have a minimum of a lower second class honours degree. However, in special circumstances, relevant work experience may be taken into account. Applicants with diverse academic backgrounds including Archaeology, Architecture, Geography, Biology, Arts, Agriculture, Engineering and Economics 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

Graduate Profile

Eiru Olinga Moses, Uganda Wildlife Authority



The World Heritage Management course is an interdisciplinary programme which enhances interaction between nature, culture and man. Through this course, I was able to develop practical skills, pedagogic proficiency and theoretical insights on aspects that make up this interaction. The course included approaches to working in and sharing experiences with other students. This has improved my communication skills and enhanced my ability to craft solutions to various conservation challenges.

Fees and Scholarships

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

Accommodation

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Additional Course Delivery Options

- MSc World Heritage Management & Conservation 2 Year Part Time

Related Masters Programmes of Interest

- Graduate Diploma World Heritage Conservation
- Graduate Certificate World Heritage Conservation

EU Enquiries Dr Claire Cave Course Director
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www.ucd.ie/graduatestudies
www.ucd.ie/bioenvsci
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Non-EU Enquiries : internationaladmissions@ucd.ie
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MSc World Heritage Conservation
(Three Years Part Time) (Online)

The World Heritage Convention is designed to encourage all countries to meet certain standards in protecting natural and cultural heritage, and is considered one of the most effective global instruments to protect heritage properties. With 191 States Parties to the World Heritage Convention and all heritage properties facing conservation challenges, there is a growing need for professionals who understand how the Convention operates in terms of nomination, monitoring, conservation reporting and mitigation of threats.

The MSc, Graduate Diploma and Graduate Certificate in World Heritage Conservation are part-time, online, distance learning courses designed to equip you with current thinking and professional understanding of the UNESCO World Heritage Convention. The programme will provide you with the knowledge base, skills and confidence to address World Heritage issues and to advance your career in this field.

The 30-credit 1-year Graduate Certificate will give you a competitive advantage as a heritage professional working on projects relating to World Heritage properties and heritage conservation in general.

The 60-credit 2-year Graduate Diploma and the 90-credit 3-year MSc builds on knowledge and skills gained in the first year, developing more comprehensive knowledge and further specialisation in World Heritage Conservation.

Key Fact

This UCD course is the first online Distance Learning programme in World Heritage Conservation in the world.

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Tradition
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Global careers
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Safety
Modern parkland campus with 24 hour security, minutes from Dublin city centre

Course Content and Structure

90 credits	80 credits	10 credits
taught masters	taught modules	research project

Through independent learning, project work and discussion forums you will receive a comprehensive curriculum designed to provide you with knowledge and understanding of the following topics:

Graduate Certificate/ Diploma/Masters
- The World Heritage Convention and international strategies for conservation
- Cultural heritage, sustainable development and diversity
- Global biodiversity and heritage

Graduate Diploma/Masters
- Management plans
- Conservation strategies, best practices and case studies
- Project writing, critical reviews and reporting

Masters
- Sustainable strategies
- Project Management and marketing
- A research topic of your choice

Modules and topics shown are subject to change and are not guaranteed by UCD.

Career Opportunities

Reflecting the spirit of the Convention, to safeguard natural and cultural heritage through an integrated approach, this programme provides graduates with a unique multidisciplinary perspective addressing conservation issues of both natural and cultural heritage. We give you the opportunity to develop the knowledge and skills necessary to understand the working of the Convention and for decision making in areas related to the nomination and conservation of World Heritage properties.
Areas that graduates can find work in include the advancement in international conservation for managerial and policy positions in government, agencies, private practices and NGOs. The qualifications will contribute to career development for heritage custodians and stewards, ranging from national heritage and conservation officers to international conservation agencies.

Apply Now

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

Entry Requirements

- This programme is intended for applicants from a diverse academic background, including Archaeology, Architecture, Geography, Biology, Arts, Agriculture, Engineering, Environmental Science and Economics. We welcome a diverse group of participants with a wide range of experience in different areas of cultural and natural heritage, to provide for a dynamic forum for discussion and interaction.
- Applicants are normally expected to have a lower second class honours degree, or equivalent work experience.
- 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.

Fees

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

Additional Course Delivery Options

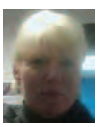
- Graduate Diploma World Heritage Conservation 2 Years Part Time Online
- Graduate Certificate World Heritage Conservation 1 Year Part Time Online

Related Masters Programmes of Interest

- MSc World Heritage Management & Conservation

Graduate Profile

Margaret Gowen, Archaeologist and Cultural Heritage Consultant and member ICAHM/ ICOMOS and occasional advisor to the WH Centre ICOMOS Paris



The Distance Learning offers any graduate with an interest in the world, its heritage, cultures and natural environment, the scope to engage in study of World Heritage at a variety of levels and from a range of perspectives. The course documents are succinct and comprehensive, and are backed up by an extensive array of recommended and referenced reading and AV material. "Way-finding" to web resources and access to the treasury of online libraries is one of the great pleasures of the course, as is the discretion to read and record and reflect on one's discrete responses to the recommended reading in the Study Journal as the course progresses.

EU Enquiries Dr Claire Cave Course Director
: worldheritage@ucd.ie : + 353 1 716 2256
www.ucd.ie/bioenvsci
www.ucd.ie/graduatestudies

Non-EU Enquiries : internationaladmissions@ucd.ie
www.ucd.ie/international

UNESCO World Heritage Centre: http://whc.unesco.org/en/list
IUCN World Heritage programme: www.iucn.org/worldheritage/
UCD School of Biology and Environmental Science, University College Dublin, Belfield, Dublin 4.

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Ireland's Global University

MSc Actuarial Science
(One Year Full Time)

The MSc in Actuarial Science is designed for students from quantitative disciplines who ultimately wish to train as an actuary upon completion of the programme. The MSc can help fast track your career as an actuary by supporting you through the initial examinations of the Institute and Faculty of Actuaries in the UK and is fully accredited by the Institute and Faculty. The programme provides a solid foundation in mathematics, statistics, economics and finance for future actuarial studies. You will also have the opportunity to undertake a dissertation in a topical area of actuarial science under the supervision of a member of the UCD School of Mathematical Sciences. The dissertation will allow you to develop an understanding of how the theory and principles covered in the Core Technical subjects are applied in practice. The programme is suitable for students with no prior exemptions and for students who wish to add to any exemptions they already have. In addition you may also be able to take advanced courses in finance at the world class UCD Michael Smurfit Graduate School of Business.

Top school among Irish universities

UCD established degrees in actuarial science over 20 years ago and has by far the greatest experience of all Irish universities in delivering high calibre graduates to the actuarial profession. The UCD School of Mathematical Sciences, to which the discipline of Statistics and Actuarial Science belongs, has the highest global ranking of all such University Schools in Ireland.

Why study at UCD?

Tradition
Established 1854, with 160 years of teaching & research excellence

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

Global community
Over 6,000 international students from over 120 countries study at UCD

Global careers
Degrees with high employability; dedicated careers support; 1 year stay-back visa

Safety
Modern parkland campus with 24 hour security, minutes from Dublin city centre

Course Content and Structure

90 credits	70 credits	20 credits
taught masters	taught modules	research project

The MSc in Actuarial Science covers the Core Technical subjects 1 to 8 (CT 1-8) and Core Applications subject 1 (CA1) of the examinations of the Institute and Faculty of Actuaries (UK).

The Core Technical subjects are:

- Financial Mathematics (CT1)
- Finance & Financial Reporting (CT2)
- Probability and Mathematical Statistics (CT3)
- Models (CT4)
- Contingencies (CT5)
- Statistical Methods (CT6)
- Business Economics (CT7)
- Financial Economics (CT8)

Depending on your subject choices in semesters 1 and 2 you may also undertake advanced modules in finance at the UCD Michael Smurfit Graduate School of Business. Module topics may include regulation, corporate governance, ethics in finance, asset valuation, and financial management.

Modules and topics shown are subject to change and are not guaranteed by UCD.

Course code: F034

Career Opportunities

As a graduate of the MSc in Actuarial Science you can look forward to a career ranging from the traditional areas of insurance and pension consultancy to the rapidly expanding areas of investment and risk management. Throughout your actuarial career you can rely on the support and guidance of the actuarial profession and upon qualification you can expect a rewarding career that will continue to offer opportunities for further development.

The actuarial profession is a global profession with actuaries in demand in Europe, America, Asia and Australia. Prospective employers include Accenture, AIB, AIG, Barclays, Canada Life, Deloitte, Ernst and Young, KPMG, Lloyds, Paddy Power, Santander, SIG, Swiss Re and Zurich.

Images © UCD Research

Facilities and Resources

- Students have access to a full Bloomberg terminal as part of their studies in Financial Economics.
- Students are given the opportunity to acquire official certification at Expert level in Microsoft Excel.

Apply Now

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

Entry Requirements

- This programme is intended for applicants with degree in a quantitative area such as mathematics, statistics, computer science, engineering or economics and/or finance. An upper second class honours or international equivalent is required.
- We will however consider applications from prospective students who do not meet these entry requirements provided they can demonstrate an ability and commitment to study actuarial science.
- 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.

Fees and Scholarships

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

Accommodation

UCD has accommodation for over 2,500 students across five locations. Places are limited and more information is available at www.ucd.ie/residences/ For information and advice on living off-campus, please contact the UCD Residences Off-Campus Office or the UCD Student Union Accommodation Services. Please visit www.ucd.ie/residences/accommodation-booking-support/ for further details.

Related Masters Programmes of Interest

- MSc Statistics
- MSc Data Analytics (Online)
- MSc Mathematics

Graduate Profile

Troy Tyson, Trainee actuary in the Product Management department of New Ireland Assurance

This course gave me the opportunity to acquire exemptions from the professional examinations of the Institute and Faculty of Actuaries, which are mandatory to become a fully qualified actuary. The research placement portion of the year for me was extremely beneficial with regards to my career as an actuary. It gave me an insight into the typical day of an actuary working in the life insurance sector, and also allowed me to show my enthusiasm toward the profession and my willingness to work hard to achieve my goals. I would highly recommend the UCD MSc in Actuarial Science to those in search of a challenging yet rewarding year and looking for the perfect launching pad to their career as an actuary.

EU Enquiries Dr. Adrian O'Hagan ✉: adrian.ohagan@ucd.ie
www.ucd.ie/graduatestudies
UCD School of Mathematical Science, University College Dublin, Belfield, Dublin 4.

Non-EU Enquiries ✉: internationaladmissions@ucd.ie
www.ucd.ie/international

University College Dublin
Ireland's Global University

Graduate Diploma Actuarial Science
(Nine Months Full Time)

The Graduate Diploma in Actuarial Science is designed for students from quantitative disciplines who ultimately wish to train as an actuary upon completion of the programme. The Graduate Diploma can help fast track your career as an actuary by supporting you through the initial examinations of the Institute & Faculty of Actuaries (UK).

The programme provides a solid foundation in mathematics, statistics, economics and finance for future actuarial studies. The Graduate Diploma in Actuarial Science offers potential exemptions from the Core Technical subjects 1 to 8 (CT1-8) of the examinations of the Institute & Faculty of Actuaries (UK). If you have prior actuarial exemptions you may choose to study all or part of the syllabus for the Core Applications 1 (CA1) subject of the examination of the Institute and Faculty of Actuaries. The programme is therefore suitable for students with no prior exemptions and for students who wish to add to any exemptions they already have. On completing this programme, you will be able to apply a variety of complex statistical and financial models in appropriate settings, model cash flows and summarise economic activity through the use of a variety of metrics, quantify risks associated with complex financial contracts and understand how to mitigate them and calculate the value of complex financial contracts, allowing for mortality and morbidity.

Key Fact

UCD established degrees in actuarial science over 20 years ago and has by far the greatest experience of all Irish universities in delivering high calibre graduates to the actuarial profession. The UCD School of Mathematical Sciences, to which the discipline of Statistics and Actuarial Science belongs, has the highest global ranking of all such University Schools in Ireland.

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Global careers
Degrees with high employability; dedicated careers support; 1 year stay-back visa

Safety
Modern parkland campus with 24 hour security, minutes from Dublin city centre

Course Content and Structure

60 credits graduate diploma	60 credits taught credits

There is no option to complete the Graduate Diploma on a part-time basis. The Graduate Diploma in Actuarial Science covers the Core Technical subjects 1 to 8 (CT 1-8) and Core Applications subject 1 (CA1) of the examinations of the Institute and Faculty of Actuaries (UK). Depending on your background and subject to the approval of the programme director, you may select between five and seven subjects to study.
The Core Technical subjects are:

- Financial Mathematics (CT1)
- Finance & Financial Reporting (CT2)
- Probability and Mathematical Statistics (CT3)
- Models (CT4)
- Contingencies (CT5)
- Statistical Methods (CT6)
- Business Economics (CT7)
- Financial Economics (CT8)

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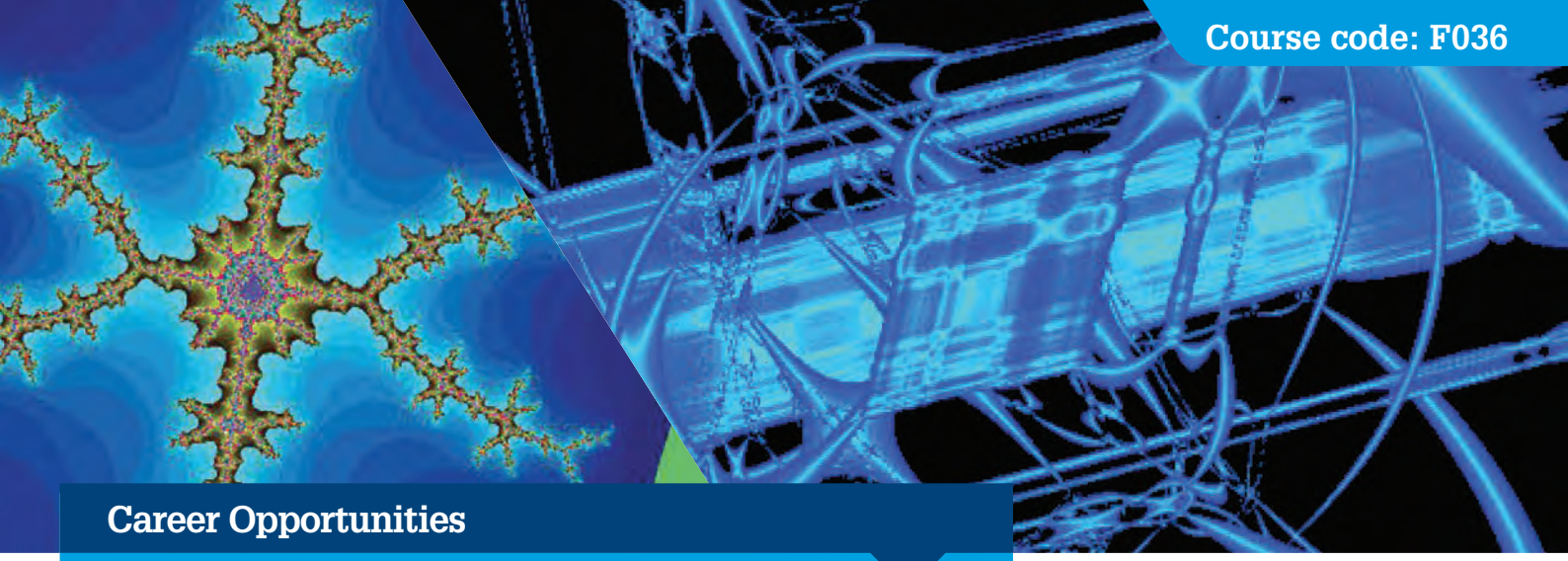

Images © UCD Research

Career Opportunities

Upon successfully completing the Graduate Diploma in Actuarial Science you can look forward to a career ranging from the traditional areas of insurance and pension consultancy to the rapidly expanding areas of investment and risk management. Successful graduates can expect early responsibility in their chosen career and the opportunity to work in a variety of challenging roles. Throughout your actuarial career you can rely on the support and guidance of the Actuarial Profession and upon qualification you can expect a rewarding career that will continue to offer opportunities for further development. The Actuarial Profession is a global profession with actuaries in demand in Europe, America, Asia and Australia.

Prospective employers include Accenture, AIB, AIG, AllState, Anglo-Irish, Bank of Ireland, Barclays, Canada Life, Deloitte, Ernst and Young, Hibernian, ING, Irish Life, Kiln, KPMG, Lloyds, New Ireland, Paddy Power, Permanent TSB, Santander, SIG, Swiss Re, Towers-Watson and Zurich.

Facilities and Resources

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Apply Now

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Entry Requirements

- This programme is intended for applicants with a degree in a quantitative area such as mathematics, statistics, computer science, engineering or economics and/or finance. An upper second class honours or international equivalent is required.
- We will however consider applications from prospective students who do not meet these entry requirements provided they can demonstrate an ability and commitment to study actuarial science.
- 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.

Graduate Profile

Alex Clarke, Actuarial Trainee, Lloyd's, London

"I chose to study the Higher Diploma in Actuarial Science in UCD because I felt that it would give me an edge when applying for actuarial jobs, rather than having only my mathematics undergraduate degree. The agreement between The Institute and Faculty of Actuaries and UCD means that a diligent student has an excellent opportunity to get the first series of Core Technical (CT) qualifying exam under their belt in just one year. In practice this usually translates to a higher starting salary when joining the workforce. The quality of the education was excellent, arising from the level of experience and dedication of the lecturers. Within 3 weeks of completing my final exam I had 4 job offers and chose what I felt was the most interesting area for me."

Fees

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

Accommodation

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For information and advice on living off campus, please contact the UCD Residences Off-Campus Office or the UCD Student Union Accommodation Services. Please visit www.ucd.ie/residences/accommodation-booking-support/ for further details.

Related Masters Programmes of Interest

- MSc Actuarial Science
- MSc Statistics
- MSc Data Analytics (online)

EU Enquiries Dr. Adrian O'Hagan ✉ : adrian.ohagan@ucd.ie
Web: www.ucd.ie/graduatestudies
UCD School of Mathematical Sciences, University College Dublin, Belfield, Dublin 4.

Non-EU Enquiries ✉ : internationaladmissions@ucd.ie
www.ucd.ie/international

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MSc/Professional Diploma Data Analytics
(Three Years/ Nine Months Part Time) (Online)

The MSc and Professional Diploma in Data Analytics from the UCD School of Mathematical Sciences will help you to analyse and understand the large data sets that are being created via the huge growth in online information. The value of these data sets is being increasingly recognised in business circles, with many companies seeking to recruit individuals with skills in data analytics to extract the valuable insights contained therein. Data Analytics is at the crossroads between statistics and computer science, and our courses contain elements of both. We will give you the tools to apply advanced skills from these fields to maximum effect in any work-related, "big data", environment.

There are no lectures to attend as the courses are delivered completely online-students will be given videos, demonstrations, and interactive games to enhance their learning, with regular feedback and interaction with lecturers. This provides flexibility to students who can learn wherever and whenever they like, as well as at a pace that suits them.

Key Fact

The UCD School of Mathematical Sciences has a strong research track record through its interdisciplinary approach to research with academics involved in UCD Complex Adaptive Systems Laboratory (CASL) and the Claude Shannon Institute for Coding, Cryptography and Discrete Mathematics. Members of the School are also heavily involved in the Insight Consulting Unit for Data Analytics, which was created in 2013 with a combined €88m of government and industry funding.

Why study at UCD?

Tradition
Established 1854, with 160 years of teaching & research excellence

Global profile
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Over 6,000 international students from over 120 countries study at UCD

Global careers
Degrees with high employability; dedicated careers support; 1 year stay-back visa

Safety
Modern parkland campus with 24 hour security, minutes from Dublin city centre

Course Content and Structure

90 credits
taught masters (online) – all taught modules

20 credits
professional diploma (online) – all taught modules

This first year of both programmes is designed to introduce you to statistical and mathematical concepts in Data Analytics and Data Mining, and to start you on statistical programming with data. The second year of the MSc is split between understanding the theory behind statistical models for data via predictive analytics, and dealing with data sets at scale using multivariate techniques. The final year of the MSc covers some advanced statistical modelling methods. A provisional list of topics is as follows:

Statistics modules:
Data Mining
Predictive Analytics
Multivariate Analysis
Time Series Analysis
Stochastic models
Bayesian Analysis

Computing modules:
Monte Carlo
R
C
Java
Python
SAS

Modules and topics shown are subject to change and are not guaranteed by UCD.

Course code: T084

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Career Opportunities

Data Analysts are in strong demand from industry; those who are successful in completing the course are highly employable in fields as diverse as: pharmaceuticals, finance and insurance, as well as cloud computing. Prospective employers include any company that requires detailed, robust analysis of data sets; some examples include:

- ICT companies (e.g. Google, eBay, Facebook, Amazon, Paddy Power),
- The pharmaceutical industry (e.g. Jansen, Merck, GSK),
- The financial services industry (e.g. Bank of Ireland, AXA, EY, Accenture, Deloitte)

Apply Now

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

Fees

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

Related Masters Programmes of Interest

- MSc Mathematics
- MSc Mathematical Science
- MSc Statistics

Entry Requirements

- This programme is intended for applicants with a degree in a numerate subject. An upper second class honours or international equivalent is required.
- Those without this requirement, but with equivalent experience in industry, will also 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.

Graduate Profile

Mr Ben Deans FIA, Manager – Pricing and Actuarial Business Support, AXA

I originally registered for the course as I was keen to develop my understanding of certain analytical techniques including classification trees and clustering techniques. I developed the skills to implement these techniques and many more in my day-to-day work environment. A further advantage of this course is that it is taught completely online – having a busy home and work life, this enabled me to tailor my study to the times that suited my schedule. Overall I found the course challenging and most enjoyable and would happily recommend it.

Staff Profile

Dr James Sweeney, UCD School of Mathematical Sciences

Several of our course lecturers have extensive applied industrial experience in the area of Data Analytics. My background is in the exploration of solutions to complex, computationally challenging statistical modelling problems, chiefly involving large multivariate datasets. I am particularly interested in statistical algorithms for dimension reduction and the identification of clusters of individuals in large complex datasets.
My expertise in these areas has been applied to problems in fraud detection and pattern identification in high throughput financial transaction data.

EU Enquiries Dr James Sweeney
: DataAnalyticsOnline@ucd.ie
www.ucd.ie/online/dataanalytics/
UCD School of Mathematical Sciences, University College Dublin, Belfield, Dublin 4.

Non-EU Enquiries : internationaladmissions@ucd.ie
www.ucd.ie/international

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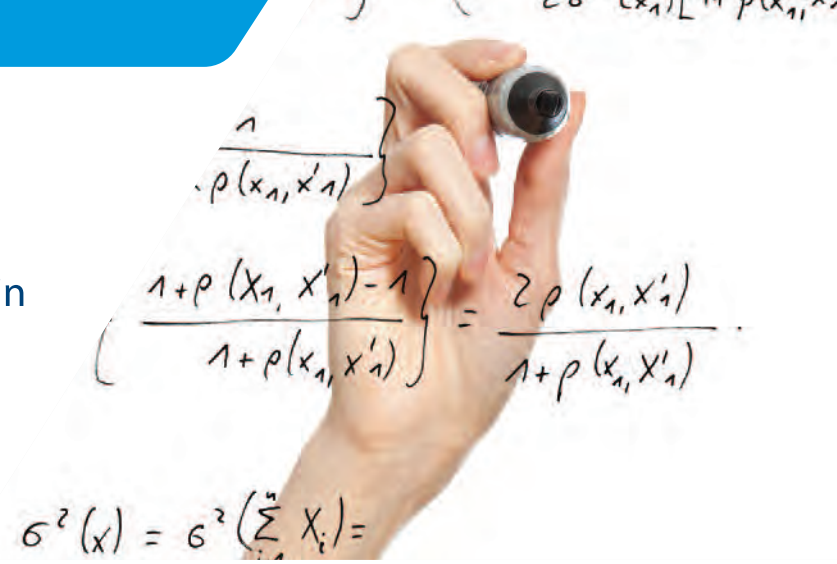

MSc Mathematics
(One Year Full Time)

The MSc in Mathematics is designed for mathematics graduates with a passion for their subject and a desire to to up skill to a level required to embark on a career in research. On completion of this course, you will have the knowledge, experience and confidence to pursue a PhD in Mathematics or a related discipline. The MSc in Mathematics combines a taught masters and a dissertation. This course is for graduates who have demonstrated a flair for mathematics, completed a primary degree or higher diploma in mathematics, are interested in applying their mathematical creativity in a specialist area and want a career that relies on a quality mathematical training.

Key fact

The UCD School of Mathematical Sciences is the largest of its kind in Ireland. It is a dynamic, multi-disciplinary department spanning the three disciplines of Mathematics, Applied and Computational Mathematics and Statistics and Actuarial Science.

Why study at UCD?

Tradition
Established 1854, with 160 years of teaching & research excellence

Global profile
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Global community
Over 6,000 international students from over 120 countries study at UCD

Global careers
Degrees with high employability; dedicated careers support; 1 year stay-back visa

Safety
Modern parkland campus with 24 hour security, minutes from Dublin city centre

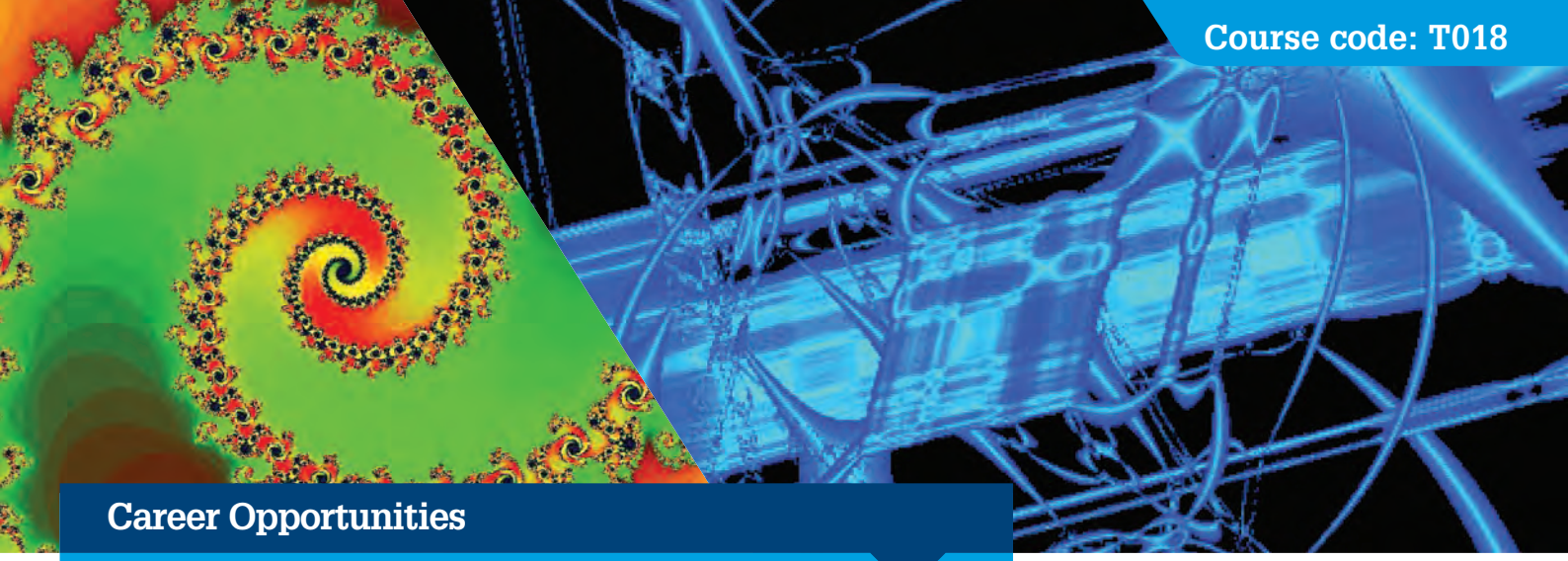
Course Content and Structure

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

A representative list of modules offered includes:

- Topics in Combinatorics
- Quadratic Forms and Wireless Communications
- Cryptography and Elliptic Curves
- Graduate Analysis
- Modular Forms of One Variable
- Fractal Geometry
- Matrix Theory
- Mathematical Theory of PDEs
- Potential Theory
- Problems in Hilbert Space
- Representation Theory of Finite Groups
- Wavelet Analysis

Modules and topics shown are subject to change and are not guaranteed by UCD.



Career Opportunities

Studying for a degree within the mathematical sciences gives you the opportunity to develop numeracy, organization and problem solving skills, which are required in a variety of sectors, from the trading floor of an investment bank, to the mathematics classroom and to predicting the weather.

Some of the careers chosen by our graduates include: research mathematicians in academia and in industry, actuarial consultants, risk analysts, meteorologists, systems biologists, IT consultants, second and third level teachers. Prospective Employers include Aquamarine Power, Alcatel-Lucent, Bureau Veritas, Campbell Scientific, IBM, IFSC, Intel, Google, Lloyds, Marine Institute, Met Eireann, Microsoft, Nokia, Norkom, Numerica Corporation, OpenHydro, Paddy Power, Phillips, RIM, Simula Research and the Tyndall Institute.

Apply Now

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

Entry Requirements

- This programme is intended for applicants with a degree in Mathematics. An upper second class honours or international equivalent is required.
- Those with an upper Second Class honours or better in the Higher Diploma in Mathematical Science (Mathematics Stream) are eligible to apply.
- 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.

Staff Profile

Professor Gary McGuire, UCD School of Mathematical Sciences, Director of the Claude Shannon Institute for Coding Cryptography and Discrete Mathematic

I have taught Elliptic Curve Cryptography in the MSc, which takes students from the mathematical theory of elliptic curves to its real-world applications in cryptography. I am the director of the Claude Shannon Institute, where we have a team doing cutting-edge research in cryptography and coding theory, and some students have gone on to do their PhDs with us.

Fees and Scholarships

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

Accommodation

UCD has accommodation for over 2,500 students across five locations. Places are limited and more information is available at www.ucd.ie/residences/
For information and advice on living off campus, please contact the UCD Residences Off-Campus Office or the UCD Student Union Accommodation Services. Please visit www.ucd.ie/residences/accommodation-booking-support/ for further details.

Additional Course Delivery Options

- MSc in Mathematics 2 Year Part Time

Related Masters Programmes of Interest

- MSc Mathematical Science
- MA Mathematics
- Higher Diploma Mathematical Science

EU Enquiries Programme Administrator
: pgstudies@maths.ucd.ie : +353-1-716 2580
http://www.ucd.ie/graduatestudies/
www.ucd.ie/mathsciences/graduatestudents/
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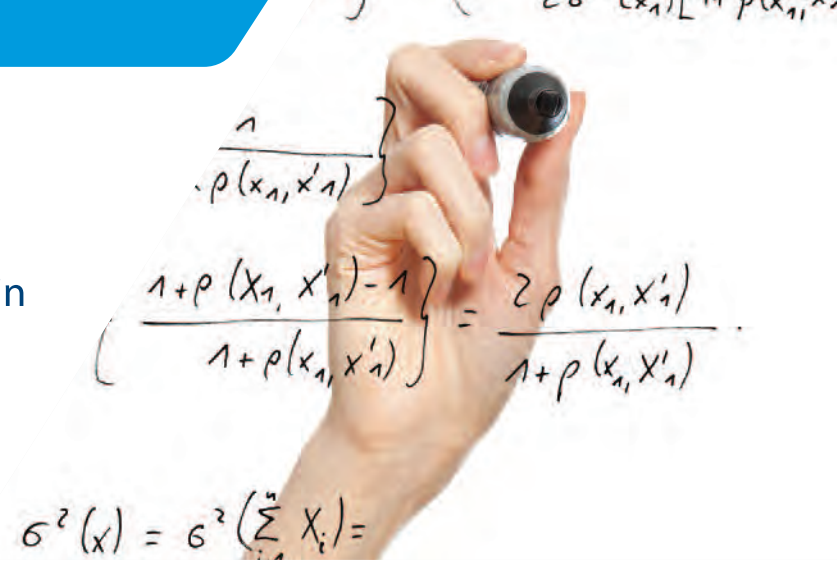

MA Mathematics
(16 Months Full Time)

The MA in Mathematics is designed for graduates who wish to obtain a masters degree in Mathematics but who have not completed a four year honours BSc in Mathematics. It combines components of the Higher Diploma in Mathematical Sciences and the MSc in Mathematics to offer an opportunity for a student to complete an MA in Mathematics within a 16-month period. This is an attractive alternative to the more standard 24-month pathway of the Higher Diploma followed by the MSc in Mathematics. On successful completion of the programme you will have the knowledge, experience and confidence to pursue a PhD in mathematics, or a related discipline, have attained an advanced and modern mathematical training, developed excellent presentation skills and acquired a much sought after qualification that can be applied to a wide variety of careers in the quantitative, financial, and IT sectors.

Key Fact

The UCD School of Mathematical Sciences is a dynamic, multidisciplinary school spanning the disciplines of Mathematics, Applied and Computational Mathematics, Statistics and Actuarial Science. The School engages in research of international renown and teaches students across all disciplines. As well as having a strong commitment to basic research, several members in the school are involved in the UCD Complex Adaptive Systems Laboratory (CASL) and the INSIGHT Centre for Data Analytics.

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Safety
Modern parkland campus with 24 hour security, minutes from Dublin city centre

Course Content and Structure

120 credits	90 credits	30 credits
taught masters	taught modules	project work

Modules offered change from year to year. A representative list of courses offered is as follows:

- Calculus of Several Variables
- Linear Algebra 2
- Groups, Rings and Fields
- Functions of One Complex Variable
- Metric Spaces
- Ring Theory
- Functional Analysis
- Combinatorics
- Modules and Rings
- Coding Theory
- Cryptography and Elliptic Curves
- Finite Group Theory
- Functions of Several Complex Variables
- Modular Forms of One Variable
- Number Theory
- Matrix Theory
- Mathematical Theory of PDEs
- Fractal Geometry
- Potential Theory
- Problems in Hilbert Space
- Topics in Combinatorics
- Wavelet Analysis

Modules and topics shown are subject to change and are not guaranteed by UCD.

Course code: F081

Career Opportunities

The MA in Mathematics will give you the opportunity to develop numeracy, organization and problem-solving skills, which are required in areas such as the trading floor of an investment bank, the mathematics classroom, predicting the weather and in the insurance industry. Some of the careers chosen by our graduates include working as researchers in mathematics (both in academia and industry), actuarial consultants, risk analysts, meteorologists, IT consultants, second and third level teaching.

Prospective employers include Aquamarine Power, Alcatel-Lucent, Bureau Veritas, Campbell Scientific, IBM, IFSC, Intel, Google, Lloyds, Marine Institute, Met Eireann, Microsoft, Nokia, Norkom, Numerica Corporation, OpenHydro, Paddy Power, Phillips, RIM, Simula Research and the Tyndall Institute.

Apply Now

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

Entry Requirements

- This programme is intended for applicants who hold a degree with high mathematical content such as Mathematics, Mathematics & Education, or Economics & Finance. An upper second class honours degree or international equivalent is required
- 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.

Staff Profile

Professor Gary McGuire, UCD School of Mathematical Sciences

Gary McGuire is the director of the Claude Shannon Institute for Coding Cryptography and Discrete Mathematics, which is part of the Security and Trust cluster of CASL.
I have taught Elliptic Curve Cryptography, which takes students from the mathematical theory of elliptic curves to its real-world applications in cryptography. I am the director of the Claude Shannon Institute, where we have a team doing cutting-edge research in cryptography and coding theory.

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Related Masters Programmes of Interest

- MSc Mathematics
- MSc Mathematical Science
- Higher Diploma Mathematical Science

EU Enquiries Programme Administrator
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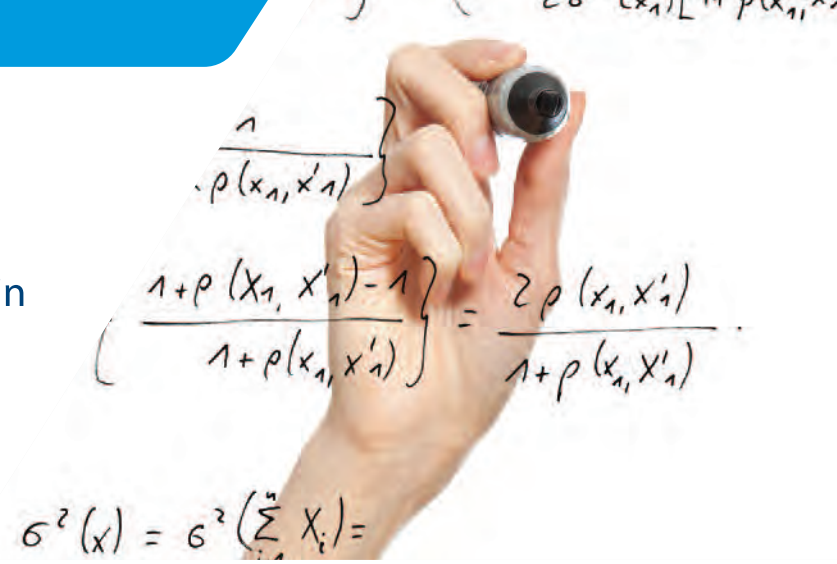


MSc Mathematical Science
(One Year Full Time)

The UCD MSc in Mathematical Science is designed for mathematics and applied mathematics graduates with a passion for their subject and a desire to up skill to a level required to embark on a career in research. This MSc programme combines a taught masters and a dissertation. It is an extremely versatile programme, giving students the opportunity to choose from a range of modules and projects from the different disciplines of Mathematics, Applied and Computational Mathematics and Statistics within the UCD School of Mathematical Sciences.
On successful completion of the programme you will have the knowledge, experience and confidence to pursue a PhD in mathematics, applied mathematics, statistics, or a related discipline, have attained an advanced and modern mathematical training, developed excellent presentation skills and have acquired a much sought after qualification that can be applied to a wide variety of careers.

The UCD School of Mathematical Sciences is a dynamic, multidisciplinary school spanning the disciplines of Mathematics, Applied and Computational Mathematics, Statistics and Actuarial Science. The school engages in research of international renown and teaches students across the university.

Key Fact

As well as having a strong commitment to basic research, several members in the UCD School of Mathematical Sciences are involved in the UCD Complex Adaptive Systems Laboratory (CASL) and the Insight Centre for Data Analytics.

Why study at UCD?

Tradition
Established 1854, with 160 years of teaching & research excellence

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

Global community
Over 6,000 international students from over 120 countries study at UCD

Global careers
Degrees with high employability; dedicated careers support; 1 year stay-back visa

Safety
Modern parkland campus with 24 hour security, minutes from Dublin city centre

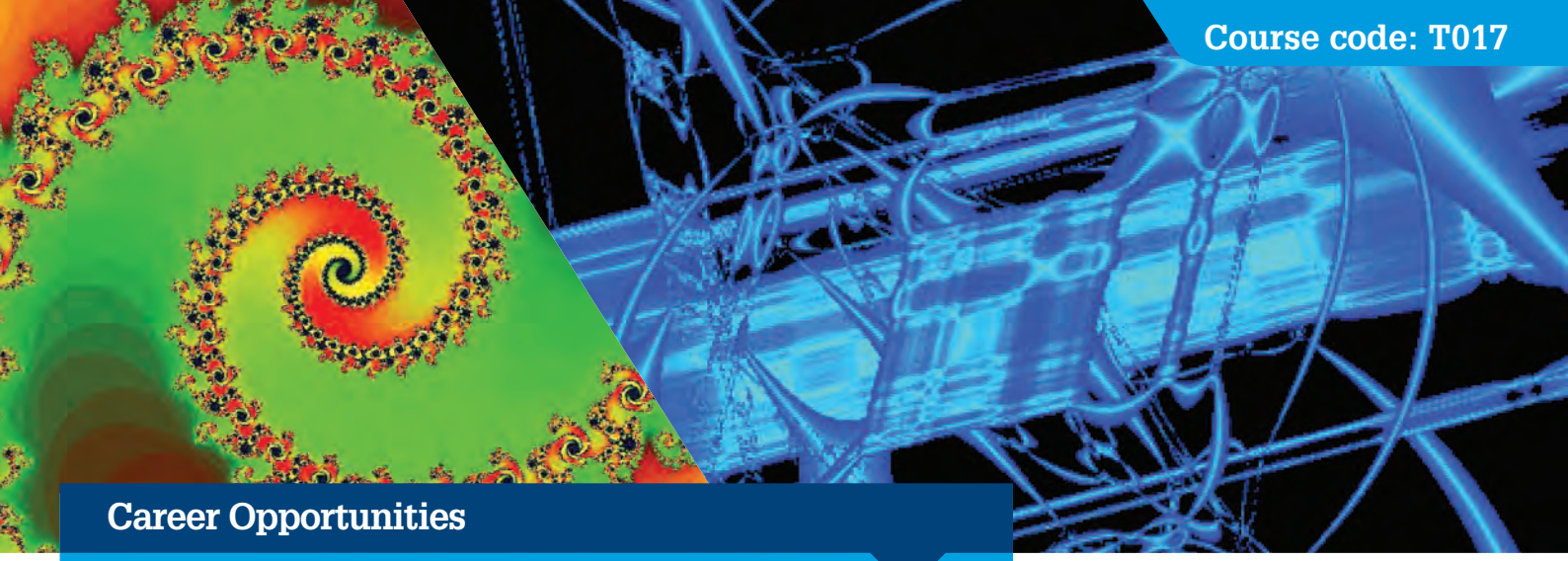
Course Content and Structure

90 credits	60 credits	30 credits
taught masters	taught modules	project work and dissertation

A representative list of courses offered is as follows:

- Numerical Algorithms
- Advanced Fluid Mechanics
- Introduction to C Programming
- Parallel Algorithm Design & Analysis
- Numerical Methods of PDEs
- Mathematics for Research
- Case Studies in Simulation
- Science
- Fractal Geometry
- Graduate Analysis
- Modular Forms
- Mathematical Theory of PDEs
- Cryptography & Elliptic Curves
- Topics in Combinatorics
- Actuarial Statistics
- Survival models
- Monte Carlo Inference
- Stochastic Models
- Time Series
- Mathematical Statistics
- Bayesian Analysis
- Applied Statistical Modelling
- Statistical Data Mining

Modules and topics shown are subject to change and are not guaranteed by UCD.



Images © UCD Research

Career Opportunities

Numeracy, organization and problem-solving skills are required in areas such as the trading floor of an investment bank, the mathematics classroom, predicting the weather and in the insurance industry. Some of the careers chosen by our graduates include working as researchers in mathematics (both in academia and industry), actuarial consultants, risk analysts, meteorologists, IT consultants, second and third level teaching.

Prospective employers include Aquamarine Power, Alcatel-Lucent, Bureau Veritas, Campbell Scientific, IBM, IFSC, Intel, Google, Lloyds, Marine Institute, Met Eireann, Microsoft, Nokia, Norkom, Numerica Corporation, OpenHydro, Paddy Power, Phillips, RIM, Simula Research and the Tyndall Institute.

Apply Now

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

Entry Requirements

- This programme is intended for applicants with a degree in Statistics, Mathematics, Mathematical Physics, Applied Mathematics, or Theoretical Physics. An upper second class honours or international equivalent is required
- Applicants who have been awarded an upper second class honours or higher in the Higher Diploma in Mathematical Sciences are eligible for the 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.

Staff Profile

Professor Frederic Dias, France, ERC Advanced Grant Awardee and Science Foundation Ireland Principal Investigator in the UCD School of Mathematical Sciences

We study the formation of extreme waves on the surface of the ocean. These waves can be damaging and are a threat to navigation and possibly to wave energy converters in the future when they are operational. Better forecasting extreme waves is a key focus for my research. This area of research requires knowledge in statistics, fluid mechanics, wave motion, partial differential equations and numerical modeling.

Fees and Scholarships

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

Accommodation

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Additional Course Delivery Options

- MSc in Mathematics 2 Year Part Time

Related Masters Programmes of Interest

- MSc Mathematics
- MA Mathematics
- Higher Diploma Mathematical Science

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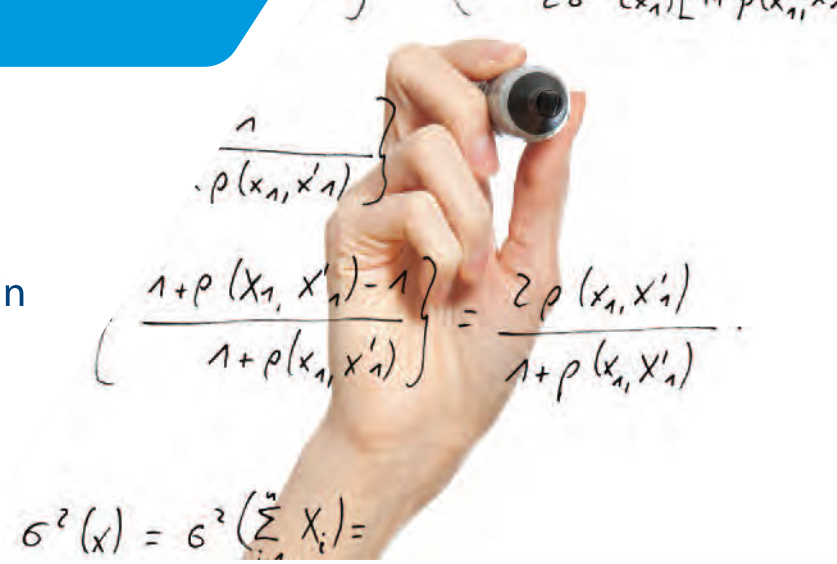

Higher Diploma Mathematical Science
(One Year Full Time)

This Higher Diploma in Mathematical Science offers the opportunity for graduates with a degree in a subject other than mathematics to achieve a more advanced mathematical training.

Taking the Higher Diploma in Mathematical Science will allow you complete the core components of a BSc Honours Degree in Mathematics or Mathematical Science. This course would equip you with the necessary background to pursue an MSc degree in Mathematics or Mathematical Sciences. The UCD School of Mathematical Sciences is a dynamic, multidisciplinary school spanning the disciplines of Mathematics, Applied and Computational Mathematics, Statistics and Actuarial Science. The School engages in research of international renown and teaches students across all disciplines.

Key Fact

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Safety
Modern parkland campus with 24 hour security, minutes from Dublin city centre

Course Content and Structure

60 credits
higher diploma – all taught modules

Students in the Mathematical stream choose modules from a selection of Mathematics courses. Students in the Mathematical Sciences stream select modules within both the disciplines of Mathematics and Applied and Computational Mathematics. Below is a representative list of courses available to you, subject to scheduling constraints.

- Mathematical Analysis
- Calculus of Several Variables
- Graphs and Networks
- Linear Algebra 2
- Functions of One Complex Variable
- Number Theory
- Groups, Rings and Fields
- Set Theory
- Group Theory
- Intro to Coding Theory
- Metric Spaces
- Galois Theory
- Measure Theory & Integration
- Intro to Topology
- Advanced Mathematical Methods
- Dynamical Systems
- Foundations of Fluid Mechanics
- Foundations of Quantum Mechanics
- Electrodynamics & Gauge Theory
- Potential Theory and Electrostatics
- Environmental Fluids
- Mathematical Biology
- Relativistic Quantum Mechanics
- Advanced Computational Science
- Differential Geometry
- Advanced Dynamical Systems

Modules and topics shown are subject to change and are not guaranteed by UCD.

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Career Opportunities

Numeracy, organization and problem-solving skills are required in areas such as the trading floor of an investment bank, the mathematics classroom, predicting the weather and in the insurance industry. Some of the careers chosen by our graduates include working as researchers in mathematics (both in academia and industry), actuarial consultants, risk analysts, meteorologists, IT consultants, second and third level teaching.

Prospective Employers include Aquamarine Power, Alcatel-Lucent, Bureau Veritas, Campbell Scientific, IBM, IFSC, Intel, Google, Lloyds, Marine Institute, Met Eireann, Microsoft, Nokia, Norkom, Numerica Corporation, OpenHydro, Paddy Power, Phillips, RIM, Simula Research and the Tyndall Institute.

Apply Now

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

Entry Requirements

- The mathematics stream of this programme is especially intended for applicants with a degree in mathematical studies, economics & finance, a 3-year honours degree in mathematics or a cognate discipline with a high mathematical content. An upper second class honours or the international equivalent is required.
- The applied and computational mathematics stream of this programme is especially intended for science and engineering graduates who have scored highly in their mathematics, applied mathematics or mathematical physics courses. An upper second class honours or the international equivalent is required.
- Other graduates who believe that their mathematical training provides sufficient background to cope with the programme may apply for entry to the Programme Coordinator.
- 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.

Graduate Profile

Dr Alison Sneyd, Member of the Claude Shannon Institute

After completing a degree in Mathematical Studies at UCD, I decided to do the HDip in Mathematical Science because it gave me the qualification I needed to do a PhD in mathematics. The HDip increased my understanding of a wide variety of topics in mathematics and was very beneficial to my future studies. It introduced me to both the topic of my future PhD research in coding theory and to my future PhD supervisor. Overall, I think the HDip in Mathematical Science is a very good choice for anyone wishing to do a conversion course in mathematics.

Fees

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

Accommodation

UCD has accommodation for over 2,500 students across five locations. Places are limited and more information is available at www.ucd.ie/residences/
For information and advice on living off campus, please contact the UCD Residences Off-Campus Office or the UCD Student Union Accommodation Services. Please visit www.ucd.ie/residences/accommodation-booking-support/ for further details.

Related Masters Programmes of Interest

- MSc Mathematics
- MSc Mathematical Science
- MA Mathematics
- Higher Diploma Mathematical Studies

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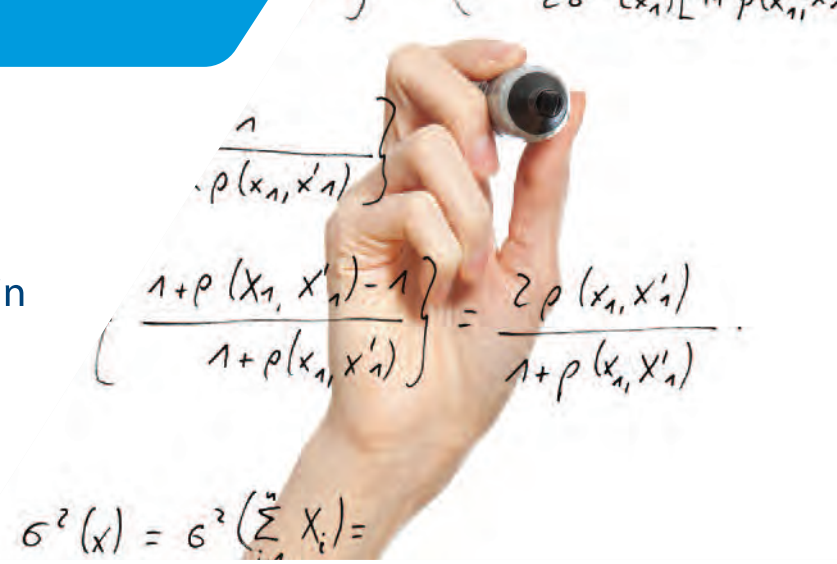

Higher Diploma Mathematical Studies
(One Year Full Time)

This programme is for you if you have a passion for mathematics, for problem solving and for deep understanding of the structures which underlie much of everyday experience. The programme may be of particular benefit to teachers or potential teachers, who would like to include mathematics among the subjects that they are eligible to teach at Leaving Certificate level.

If you have already been exposed to a limited amount of University-level mathematics and would like to find a path into teaching or more advanced studies in the subject, then this programme provides the necessary bridge. After completing the UCD Higher Diploma in Mathematical studies you will achieve a level of competence equivalent to that of a Mathematics major in a 3-year honours degree programme.
It will qualify you to continue with more advanced studies in mathematics and demonstrate the understanding and technical skills associated with advanced mathematics.

Key Fact

The programme covers the mathematics necessary to qualify the student to teach mathematics to Leaving Certificate level when combined with a Professional Master of Education (PME).

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Global careers
Degrees with high employability; dedicated careers support; 1 year stay-back visa

Safety
Modern parkland campus with 24 hour security, minutes from Dublin city centre

Course Content and Structure

60 credits
taught masters - all taught modules

Sample topics include:

- Calculus of several variables
- Number theory and combinatorics
- Algebraic structures
- Linear algebra
- History of mathematics
- Introduction to coding and/or cryptography
- Graphs and networks
- Financial mathematics
- Analysis
- Geometry
- Differential equations
- Statistics and data analysis

Modules and topics shown are subject to change and are not guaranteed by UCD.

Images © UCD Research

Career Opportunities

The programme covers the mathematics necessary to qualify the student to teach mathematics to Leaving Certificate level when combined with a Postgraduate Diploma in Education (PGDE). With further study in mathematics or a related discipline a wide range of the following careers become available:

- Financial engineer/quantitative analyst
- Computer animation
- Systems biologist
- Statistician
- Meteorologist
- Graduate entry into banking/accountancy
- Internet security, software

Prospective Employers include Bell Labs, Campbell Scientific, IBM, Intel, IFSC, Google, Met Eireann, Microsoft, Nokia, Norkom, Phillips, RIM and the Tyndall Institute.

Apply Now

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

Entry Requirements

- This programme is intended for applicants with an undergraduate degree with at least 10 credits of university level mathematics, including a course in calculus and a course in linear algebra. A lower second class honours degree or international equivalent is required.
- 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.

Staff Profile

Dr Robert Osburn, Lecturer, UCD School of Mathematical Sciences

Mathematics is a universal language which underpins science, education and industry. The Higher Diploma in Mathematical Studies at UCD is a demanding and rewarding endeavour which prepares students for careers as researchers, highly qualified teachers or innovators. The training and development of a skilled workforce in these areas are of vital importance to Ireland's growth as a competitive and dynamic economy in the EU.

Graduate Profile

Cathal Dempsey, Risk Analyst

I chose to study the Higher Diploma in Mathematical Studies as I had an interest in Mathematics and graduates with qualifications in Mathematics are in high demand. Having completed a BComm a few years previously, choosing to then study Mathematics was initially daunting and very challenging, but thankfully the design of the course and in particular the support from lecturers was excellent. The approachability of lecturers and their genuine desire to see you improve and learn was a huge help. Overall I found the course to be so interesting and enjoyable that I decided to continue on and study the UCD Higher Diploma in Mathematical Sciences, for which the Higher Diploma in Mathematical Studies is an excellent foundation.

Fees

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

Accommodation

UCD has accommodation for over 2,500 students across five locations. Places are limited and more information is available at www.ucd.ie/residences/
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Additional Course Delivery Options

- Higher Diploma Mathematical Studies 2 Year Part Time

Related Masters Programmes of Interest

- MA Mathematics

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MA Statistics
(16 Months Full Time)

Ireland is home to over 250 global financial institutions. This degree will prepare students for a career in industry, government, IT, economics and finance.

Currently students without sufficient statistical background knowledge can attain masters level proficiency by first completing the Higher Diploma in Statistics followed by the MSc in Statistics, which takes 2 years. The MA in Statistics provides an alternative pathway in 16 months and there is no comparable programme in Ireland or the UK.

This programme is intended for students with a numerate background but who may have insufficient background knowledge to gain entry to the MSc programme.
On successful completion of the programme you will be able to demonstrate in-depth understanding of statistical concepts, apply basic statistical reasoning, techniques and models in the analysis of real data and employ technical computing skills and learned from experiences gained in different contexts and how apply knowledge across discipline boundaries to solve problems.

Key Fact

The UCD MA in Statistics is fully accredited by the Royal Statistical Society.
The UCD School of Mathematical Sciences Statistics group was ranked in the top 200 in the world in the QS world university ranking, and is the only statistics group in Ireland to appear in this ranking.
The UCD School of Mathematical Sciences is a dynamic, multidisciplinary school spanning the disciplines of Mathematics, Applied and Computational Mathematics, Statistics and Actuarial Science. The School engages in research of international renown and teaches students across all disciplines.

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Global careers
Degrees with high employability; dedicated careers support; 1 year stay-back visa

Safety
Modern parkland campus with 24 hour security, minutes from Dublin city centre

Course Content and Structure

120 credits	90 credits	30 credits
taught masters	taught modules	Dissertation or data analytics project

The MA in Statistics is of 16 months durations (4 semesters) and will bring students to the same level as the MSc degree in Statistics.
Modules offered change from year to year and the list includes:

- Linear Models
- Data Mining
- Time Series
- Multivariate Analysis
- Experimental Design
- Mathematical Statistics
- Monte Carlo inference
- Actuarial Statistics
- Survival Analysis
- Stochastic models
- Bayesian analysis

Modules and topics shown are subject to change and are not guaranteed by UCD.

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Career Opportunities

Career prospects on completion of the MA in Statistics is equivalent to that of the MSc in Statistics and graduates pursue careers in the pharmaceutical industry (e.g. Elan, Quintiles), banking, finance and risk management. There is increased demand for statisticians from the IT sector (e.g. Google, Intel, data mining companies). In addition many government departments employ statisticians. Some past students embarked on a career in academia by proceeding to study for a PhD in Statistics. Former MSc and MA students are currently working for such firms as Google, Western Union, AIB, Norbrook, Ernst & Young, O2 and SPSS, while others chose to do a PhD. Demand for graduates continues to be strong both in Ireland and abroad.

Apply Now

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

Entry Requirements

- This programme is intended for applicants with a degree in mathematics, economics, finance, certain engineering degrees or similar quantitative disciplines where statistics has formed some component of the degree. An upper second class honours or international equivalent is required.
- Applicants who do not meet these requirements but can demonstrate an interest and ability in statistics may be considered.
- Alternatively students may qualify for enrolment to the Higher Diploma Statistics from which they can gain entry to the 1-year MSc in Statistics.
- 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.

Staff Profile

Dr Andrew Parnell, UCD School of Mathematical Sciences, Complex and Adaptive Systems Laboratory

My main statistical interest is in Bayesian stochastic processes and computational statistics. I am particularly interested in Gaussian processes, stochastic volatility models, compositional data analysis and monotonic processes. I have applied such models to a variety of environmental, biomedical and ecological science problems relating to: spatio-temporal climate reconstruction, stable isotope mixing models, the development of biomarker panels for prostate cancer, sea-level change and radiocarbon dating.

Fees and Scholarships

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Related Masters Programmes of Interest

- MSc Statistics
- Higher Diploma Statistics
- MSc Actuarial Science
- MSc Data Analytics (Online)

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MSc Statistics
(One Year Full Time)

Ireland is home to over 250 global financial institutions. There are opportunities for MSc in Statistics graduates in industry, government, IT, economics and finance. On completion of this MSc in Statistics, you will have skills such as the ability to demonstrate in-depth understanding of statistical concepts, apply basic statistical reasoning, techniques and models in the analysis of real data and employ technical computing skills.

The UCD MSc in Statistics is aimed at students who have an undergraduate degree in Statistics or a degree in a discipline related to Statistics and with numerate skills. It consists of a mixture of compulsory and optional modules and a major project. Compulsory modules are intended to ensure all students have appropriate basic statistical skills, knowledge and experience, while optional modules provide depth and exposure to the diverse range of statistical applications and methods. This latter aspect provides students with the opportunity to specialise in specific areas. The major project provides you with the chance to work extensively on either theoretical or practical problems.

Key Fact
The UCD MSc in Statistics is fully accredited by the Royal Statistical Society. The UCD School of Mathematical Sciences Statistics group was ranked in the top 200 in the world in the QS world university ranking, and is the only statistics group in Ireland to appear in this ranking. The UCD School of Mathematical Sciences is a dynamic, multidisciplinary school spanning the disciplines of Mathematics, Applied and Computational Mathematics, Statistics and Actuarial Science. The School engages in research of international renown and teaches students across all disciplines.

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Safety
Modern parkland campus with 24 hour security, minutes from Dublin city centre

Course Content and Structure

90 credits	60 credits	30 credits
taught masters	taught modules	research project/task

Modules offered change from year to year and the list includes:

- Mathematical Statistics
- Monte Carlo inference
- Actuarial Statistics
- Survival Analysis
- Data Mining
- Time Series
- Multivariate Analysis
- Linear Models with Complex Structure
- Experimental Design

Modules and topics shown are subject to change and are not guaranteed by UCD.

Images © UCD Research

Career Opportunities

Career prospects on completion of the MSc in Statistics are excellent. Many graduates pursue careers in the pharmaceutical industry for companies and career opportunities also exist in industries including banking, finance and risk management. There is also an increase in demand for statisticians from the IT sector. In addition, many government departments employ statisticians. Some past students embarked on a career in academia by proceeding to study to for a PhD in Statistics. Former MSc and MA students are currently working for companies such as Google, Western Union, AIB, Norbrook, Ernst & Young, O2, SPSS. Demand for graduates continues to be strong both in Ireland and abroad.

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Entry Requirements

- This programme is intended for applicants who hold a degree in Statistics or a cognate subject area. An upper second class honours or international equivalent is required.
- Those who have been awarded an upper second class honours or higher in the Higher Diploma in Statistics are eligible for the programme.
- Alternatively students may qualify for enrolment for the four semester MA in Statistics which brings them to the same level as the MSc in Statistics.
- 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.

Graduate Profiles

Stephen Sah, Biostatistician, Monaghan Mushrooms R&D Department, Ireland

The MSc degree in Statistics in UCD prepared me well for my current job. The combination of classroom work and analysis of real-world data using the current statistical tools make this course exceptional. The lecturers were more than helpful, both inside and outside the classroom, in assisting me whenever I had difficulties with my studies. I chose to study in UCD because of the interesting modules they offered. Now, my plan is to gain as much work experience as possible and hopefully obtain a doctoral degree.

Valda Murphy, Project Lead, Novartis, Basel, Switzerland

I am very glad that I decided to take the MSc in Statistics in UCD. It had a strong theoretical foundation and gave me an education in how to apply statistics. My research project inspired me to go into the area of medical statistics after graduation. The course served as a launch-pad for my career in pharmaceutical statistics where I now work as a project lead, overseeing the quantitative aspects of several drugs in development.

Fees and Scholarships

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Additional Course Delivery Options

- MSc in Statistics 2 Year Part Time

Related Programmes of Interest

- MA Statistics
- Higher Diploma Statistics
- MSc Actuarial Science
- MSc Data Analytics (Online)

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Higher Diploma Statistics
(One Year Full Time)

Ireland is home to over 250 global financial institutions and there are opportunities for Higher Diploma Statistics graduates in industry, government, IT, economics and finance. This programme is aimed at graduates whose level of statistical or mathematical training is high, but below that of the BSc Degree Honours in Statistics, and who have demonstrated numerical ability. It enables them to reach in one year a level of statistical knowledge equivalent to that of BSc Honours graduates. It provides students with a good background in statistical theory and methods, which can be used in a variety of areas of application. Students who are awarded a distinction or upper second class honours in the Higher Diploma in Statistics are qualified to enter the MSc degree in Statistics.

On successful completion of the programme you will be able to apply basic statistical reasoning, techniques and models in the analysis of real data, understand the context in which statistical work is done, select appropriate statistical models for different applications and interpret results demonstrate programming skills, report writing skills and presentation skills.

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Course Content and Structure

60 credits
higher diploma – all taught modules

Modules available include:

- Probability Theory
- Statistical Inference
- Biostatistics
- Survey Sampling
- Models – Stochastic
- Data Mining
- Linear Models
- Actuarial Statistics
- Time Series
- Categorical Data Analysis
- Multivariate Analysis

Modules and topics shown are subject to change and are not guaranteed by UCD.

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Career Opportunities

Career prospects on completion of the Higher Diploma in Statistics are excellent. Many students pursue careers in the pharmaceutical industry, banking, finance and risk management. There is an increase in demand for statisticians from the IT sector (e.g. Google, Intel, data mining companies). In addition, many government departments employ statisticians including the Central Statistics Office. Many students embarked on the MSc in Statistics programme offered by UCD, based on achieving a Second Class honours, grade 1 in the Higher Diploma in Statistics.

Prospective employers include Vodafone, Google, Irish Life, Paddy Power, ESRI, SPSS, Bank of Ireland, Quintiles, Accenture, Tesco, Ebay and Aviva.

Apply Now

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Entry Requirements

- Applicants must have a minimum of an upper second class honours degree in a numerical discipline or a cognate subject area.
- 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.

Graduate Profile

James McBride, Director of the Irish Social Science Data Archive from 2000-2012

I enrolled in the Higher Diploma of Statistics programme as a part-time student, in order to gain a more thorough grasp of the statistical techniques I was using in my political science research, and to better understand the needs of students and researchers in my role as Director of the Irish Social Science Data Archive. The range of topics offered provided a challenging and ultimately rewarding environment in which I succeeded in meeting my goals as a social scientist, while gaining a deeper understanding and respect for the role of statistics across the entire spectrum of the sciences. The material covered in the core lecture courses was underpinned by an excellent tutorial system, which further enhanced my understanding of the topics. I cannot recommend this course highly enough for anyone wishing to strengthen their statistical skills, whether to pursue a career in academic research or in the broader job market.

Fees

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

Accommodation

UCD has accommodation for over 2,500 students across five locations. Places are limited and more information is available at www.ucd.ie/residences/
For information and advice on living off campus, please contact the UCD Residences Off-Campus Office or the UCD Student Union Accommodation Services. Please visit www.ucd.ie/residences/accommodation-booking-support/ for further details.

Additional Course Delivery Options

- Higher Diploma Statistics 2 Year Part Time

Related Masters Programmes of Interest

- MA Statistics
- MSc Statistics
- MSc Actuarial Science
- MSc Data Analytics (Online)

EU Enquiries Programme Administrator
: pgstudies@maths.ucd.ie : +353-1-716 7152
www.ucd.ie/graduatestudies
UCD School of Mathematical Sciences, University College Dublin, Belfield, Dublin 4.

Non-EU Enquiries : internationaladmissions@ucd.ie
www.ucd.ie/international

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MSc NanoBio Science
(One Year Full Time)

Nanotechnology research is an emerging sector which covers many areas of product design. Manipulating matter at the nanoscale is already leading to new and improved imaging and display technologies, biomedical sensors, and solar cells for environmentally friendly energy production. The design, fabrication and control of devices with nanoscale (billionth of a metre) dimensions is an engine of innovation in almost every sector.

The MSc in NanoBio Science at the UCD School of Physics is for students excited by the prospect of studying and researching in this emerging interdisciplinary area; where physics, chemistry, engineering and life sciences all come together. Students will develop an understanding of the structure, function and regulation of biological systems at the nanoscale and in real time. This requires nanometre and femtosecond (quadrillionth of a second) technologies that will ultimately lead to devices and techniques that mimic those found in nature, such as high-efficiency solar cells based on photosynthetic processes and adaptive biocompatible materials for regenerative medicine. This MSc programme unites the technological with the biological aspects of the field in a unique way, equipping graduates with a truly interdisciplinary perspective of the field.

Access to major technology platforms

Students and staff have access to major technology platforms essential to the conduct of world-class cutting-edge research through the strength of the collaboration of the UCD School of Physics researchers with associated UCD Institutes including the UCD Conway Institute of Biomolecular & Biomedical Research, Systems Biology Ireland and the Complex Adaptive Systems Laboratory (CASL).

Why study at UCD?

Tradition
Established 1854, with 160 years of teaching & research excellence

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

Global community
Over 6,000 international students from over 120 countries study at UCD

Global careers
Degrees with high employability; dedicated careers support; 1 year stay-back visa

Safety
Modern parkland campus with 24 hour security, minutes from Dublin city centre

Course Content and Structure

90 credits	45 credits	45 credits
taught masters	taught modules	research project

You will gain experimental and theoretical knowledge in the following topics:

- Nano-Optics and Bio-Photonics
- Physics of Nano-Materials
- Spectroscopy and Lasers
- Nano-Mechanics
- Atomic Force Microscopy
- Computational Biophysics
- Biophysics at the Nanoscale
- Biomimicry
- Bio-Fluid Mechanics
- Innovation
- Journal Club and Presentation Skills

Modules and topics shown are subject to change and are not guaranteed by UCD.

Images © UCD Research

Career Opportunities

The programme prepares you for industry or further research. Career opportunities include the pharmaceutical industry, telecommunications, diagnostic imaging, green technologies and sensor applications, both in Ireland and internationally. It is also a stepping stone to PhD research in the areas of nanoscience, biophotonics and nanotechnology.

Prospective employers include Abbott, Alcon, Allergan, Bausch & Lomb, Becton Dickinson, Boston Scientific, Eblana Photonics, Intel, Pfizer, Pharma-Bio Serv, Philips, and SensL.

Facilities and Resources

Students will have access to laboratories with state-of-the-art technologies that include atomic force microscopes, optical microscopes, near-field optical microscopes, Raman microscopy, 3-D printing, continuous lasers and ultrafast lasers, adaptive optics, spectrometers and nanofabrication facilities.

Apply Now

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

Entry Requirements

- This programme is intended for applicants with a degree in Physics, Chemistry, Engineering, Material Science or a related discipline. An upper second class honours or international equivalent is required.
- 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.

Graduate Profile

JiaJun Li, PhD student in area of Biomedical Optics, UCD

I chose to study the MSc in NanoBio Science because of its huge potential. The subjects in this course cover areas from physics to biology and the cutting-edge experiments and research will benefit you in your future career. The international aspect definitely brings new ideas and gives you a chance to get to know people in your area of study from around the world. Overall, I think this is a very good choice whether you're aiming for a career in research or in applied science.

Fees and Scholarships

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

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Additional Course Delivery Options

- MSc NanoBio Science 2 Year Part Time
- Graduate Certificate NanoBio Science without research project component Full Time
- Graduate Certificate NanoBio Science without research project component Part Time

Related Masters Programmes of Interest

- MSc Physics (Negotiated Learning) Specialisation: NanoBio Science
- MSc Imaging & Microscopy

EU Enquiries Dr. Brian Vohnsen ✉ : brian.vohnsen@ucd.ie
www.ucd.ie/graduatestudies
UCD School of Physics, University College Dublin, Belfield, Dublin 4.

Non-EU Enquiries ✉ : internationaladmissions@ucd.ie
www.ucd.ie/international

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MSc Space Science & Technology
(One Year Full Time)

This programme is ideal for any graduate of Science, Engineering, Computing or Mathematics who wants to apply their expertise in the Space sector.

Why Space?
- The Space sector is growing as fast as the Chinese economy. It is driven by the increasing demands of space exploration, Earth observation, telecommunications and satellite navigation.
- It offers a huge diversity of career opportunities.
- Employers have difficulty finding graduates with "Space expertise".

Why Ireland?
- Ireland's space industry is on the rise, with currently 20-30 companies operating in the sector.
- Ireland provides strategic access to Europe for US multinationals, such as Curtiss-Wright and Moog who have bases in Dublin and Cork.
- Ireland is a long-standing member of ESA, with 70 companies participating in ESA contracts since 2000. Irish companies and researchers are involved in contracts for the Herschel and Planck Space Observatories, as well as the Rosetta mission, Solar Orbitor, Gaia and the James Webb Space Telescope.

What are the course highlights ?
- Open to all graduates of Science, Engineering, Computing and Mathematics.
- Design your own curriculum
- Unique access to senior industry practitioners in workshop sessions
- Placement opportunities with industry leaders
- Highly relevant to recruitment needs of employers

How will I benefit ?
You will enhance your CV with "Space expertise", which is much sought-after by employers in the sector. Modules are taught by a combination of experienced academic staff and senior industry practitioners to provide students with knowledge and skills which are highly relevant to recruitment needs.

Why study at UCD?

Tradition
Established 1854, with 160 years of teaching & research excellence

Global profile
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Global community
Over 6,000 international students from over 120 countries study at UCD

Global careers
Degrees with high employability; dedicated careers support; 1 year stay-back visa

Safety
Modern parkland campus with 24 hour security, minutes from Dublin city centre

Key Fact
Students are supported in organising an academic or industry placement. Past placements include Curtis-Wright, ESA, Moog, and EnBio.

Course Content and Structure

90 credits taught masters

60 credits taught modules
30 credits research project

OR

45 credits taught modules
45 credits research project

Topics available include:

Core modules:
- The Space Environment
- Applications of Space Science
- Satellite Subsystems Laboratory
- Space Sector Seminars
- Professional Development

Optional modules:
- Physics, Astrophysics and Planetary Science
- Mechanical and Materials Engineering
- Programming and Mathematics
- Project Management
- Foreign Language

Modules and topics shown are subject to change and are not guaranteed by UCD.

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Career Opportunities

Career opportunities include space research (mission specialist, payload scientist, mission planner), space-based applications (Earth observation and environmental monitoring, satellite navigation, telecommunications, space weather, radiation science, spacecraft engineering, manned space flight, space tourism), and enabling technology propulsion (simulations and testing orbital mechanics and materials). Top European employers include Airbus, Thales, Moog, Curtiss-Wright, and ESA. The MSc can also be used as a stepping stone to PhD research.

Facilities and Resources

- Laboratory facilities and equipment are available for training in Space Detectors and Small Satellites, e.g. CubeSat and CanSat, with the opportunity for students to launch their own experiment on a high-altitude balloon. Mission Design internationalises the student experience through collaboration with students from two other universities, in the design of a gamma-ray experiment modelled on ESA's concurrent design facility.

Apply Now

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

Entry Requirements

- Entrance requires an honours degree in any area of Science, Engineering, Computing or Mathematics.
- 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 IELTS 5.5, there is a pre-masters option which guarantees access to the MSc after 1 year.

Graduate Profile

Daniel Vagg MSc (2014)

"My favourite part was the Space Mission Design field trip to Tenerife. We worked in competing international teams. This was an incredible and unique experience. My industry placement was with the US multinational Curtiss-Wright, who provide data-handling for rockets such as the SpaceX Dragon capsules."
Dan is now working for a new UCD spin-out company as software systems architect for accessing data from ESA's *Gaia* satellite mission.

Graduate Profile

James Harpur, MSc (2014)

"Being able to choose modules to suit my interests meant I could happily decide on the balance between laboratory and classroom learning. I could also then study engineering courses, which were new to me and which I felt were suitable for my future career. Highlights included a week-long trip in Tenerife, and building a can-sized satellite."
James is now applying for a YGT position at ESA.

Fees and Scholarships

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

Accommodation

UCD has accommodation for over 2,500 students across five locations. Places are limited and more information is available at www.ucd.ie/residences/
For information and advice on living off campus, please contact the UCD Residences Off-Campus Office or the UCD Student Union Accommodation Services. Please visit www.ucd.ie/residences/accommodation-booking-support/ for further details.

Additional Course Delivery Options

- MSc Space Science & Technology Part Time
- Graduate Diploma Space Science & Technology Part Time
- Graduate Certificate Space Science & Technology Part Time

Related Masters Programmes of Interest

- MSc NanoBio Science
- MSc Nanotechnology
- MSc Physics by Negotiated Learning
- MSc Physics by Negotiated Learning Part Time

EU Enquiries Dr Deirdre Coffey ✉: deirdre.coffey@ucd.ie
www.ucd.ie/graduatestudies
www.ucd.ie/spacescience/
UCD School of Physics, University College Dublin, Belfield, Dublin 4.

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www.ucd.ie/international

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MSc Physics (Negotiated Learning)

Specialisation: Space Science & Technology (One Year Full Time)

Space is an exciting growth industry, driven by the increasing demands of space exploration, earth observation, and commercial services such as telecommunications and satellite navigation. The sector is highly international, multi-disciplinary and represents a global market worth US$ 277 billion (2010). The space economy with all its various downstream products and services employs hundreds of thousands of people worldwide. Focussing on Europe, there are 31,000 employees in space manufacturing alone. Major employers in the sector include Airbus, Thales and Moog.
The MSc in Physics by negotiated learning allows you to 'negotiate' your learning and tailor your studies to your own specific needs and career aspirations. The negotiated learning specialisation Space Science & Technology is ideal if you would like to apply your degree expertise in the space sector. The programme incorporates physics and space science, laboratory skills, group projects and professional development. Significant elements of the programme are delivered by world-leading international experts and industry professionals. Research in astrophysics and space science in UCD is carried out by academic staff who play a leading role in significant international collaborations with, for example, NASA, ESA, ESO and VERITAS.

Key Fact

Students are supported in organising a placement with an academic research group, or with one of our space industry partners, which include Airbus, Moog, Curtis-Wright, ESA, SensL, EnBio and Tyndall.

Why study at UCD?

Tradition

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Safety

Modern parkland campus with 24 hour security, minutes from Dublin city centre

Course Content and Structure

90 credits taught masters

45 credits taught modules
45 credits research project

OR

30 credits research project
60 credits taught modules

Topics available include:

Core modules:
- The Space Environment
- Applications of Space Science
- Satellite Subsystems Laboratory
- Space Sector Seminars
- Professional Development

Optional modules:
- Physics, Astrophysics and Planetary Science
- Mechanical and Materials Engineering
- Project Management and Technical Communication
- Programming and Mathematics
- Foreign Language

About 60% of the time is devoted to classroom or laboratory activities. The student spends the remaining time carrying out a practicum in the form of an academic research project or an industry placement.

Modules and topics shown are subject to change and are not guaranteed by UCD.

Images © ESA

Career Opportunities

Career opportunities, both in Ireland and internationally, include the following areas: launchers, earth observation, satellite navigation, space transportation, satellite communications, space science experiments, life and physical sciences and general support technology.

The MSc can also be used as a stepping-stone to PhD research in physics or engineering. Prospective employers include agencies, such as ESA and NASA, as well as Irish and international industry. See our website for details www.ucd.ie/spacescience.

Facilities and Resources

- Data and expertise from telescope missions Hubble and XMM are available. Training in satellite equipment, e.g. CubeSat and CanSat, allows students the opportunity to launch their own experiment on a high altitude ballooon. Mission Design internationalises the student experience through collaboration with students from two other universities, in the design of a gamma-ray experiment modelled on ESA's concurrent design facility.

Apply Now

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Entry Requirements

- Entrance to the programme requires a degree or equivalent in physics, engineering, computer science or a related discipline. In special circumstances, students with a strong physics background and lower second class honours degree may be accepted.
- 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.

Graduate Profile

Daniel Vagg

The subjects are generally physics based, and are introduced gradually and in a well-organised manner so that each subject complements the next. My favourite was the Space Mission Design field-trip to Tenerife, in which students designed a space mission in competing international teams. This was an incredible, unique and fun experience. I am now looking forward to a placement at the Dublin base of the US multinational, Curtiss-Wright Ltd, who provide the data-handling for rockets such as the SpaceX Dragon capsules.

After the placement, Curtiss-Wright offered me an employment contract which I was delighted to accept.

Fees and Scholarships

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

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Additional Course Delivery Options

- MSc Physics (Negotiated Learning) Specialisation: Space Science & Technology Part Time
- Graduate Diploma Physics (Negotiated Learning) Specialisation: Space Science & Technology Part Time without the research project component
- Graduate Certificate Physics (Negotiated Learning) Specialisation: Space Science & Technology Part Time without the research project component

Related Masters Programmes of Interest

- MSc NanoBio Science
- MSc Nanotechnology
- MSc Space Science & Technology

EU Enquiries Dr Deirdre Coffey ✉: deirdre.coffey@ucd.ie
www.ucd.ie/graduatestudies
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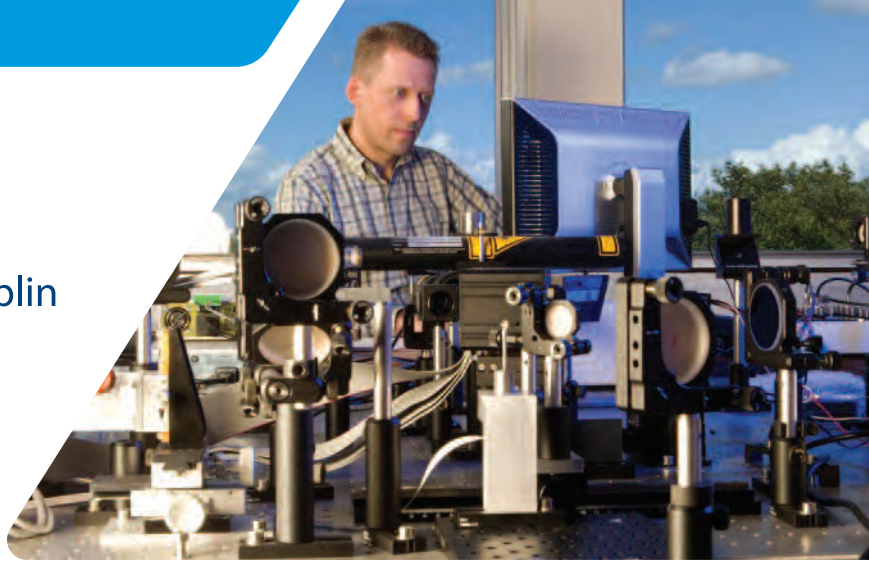

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MSc Physics (Negotiated Learning)

Specialisation: NanoBio Science (One Year Full Time)

Nanotechnology research is an emerging sector which covers many areas of product design. Manipulating matter at the nanoscale is already leading to new and improved imaging and display technologies, biomedical sensors, and solar cells for environmentally friendly energy production. The design, fabrication and control of devices with nanoscale (billionth of a metre) dimensions is an engine of innovation in almost every sector.

This course is suitable for graduates who wish to apply their degree expertise in the biological physics and nanoscale science sectors. This specialisation is for students excited by the prospect of studying and researching in an interdisciplinary area, where physics, chemistry, life sciences and engineering all come together. Lectures are delivered by staff of international renown in these fields of research. About 50% of the time is devoted to classroom or lab-based activities. The student spends the remaining time carrying out a substantial research project, chosen in consultation with academic staff.

Key Fact

Students and staff have access to major technology platforms essential to the conduct of world-class cutting-edge research through the strength of the collaboration of the UCD School of Physics researchers with associated UCD Institutes including the UCD Conway Institute of Biomolecular & Biomedical Research, Systems Biology Ireland and the Complex Adaptive Systems Laboratory (CASL).

Why study at UCD?

Tradition
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Global community
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Global careers
Degrees with high employability; dedicated careers support; 1 year stay-back visa

Safety
Modern parkland campus with 24 hour security, minutes from Dublin city centre

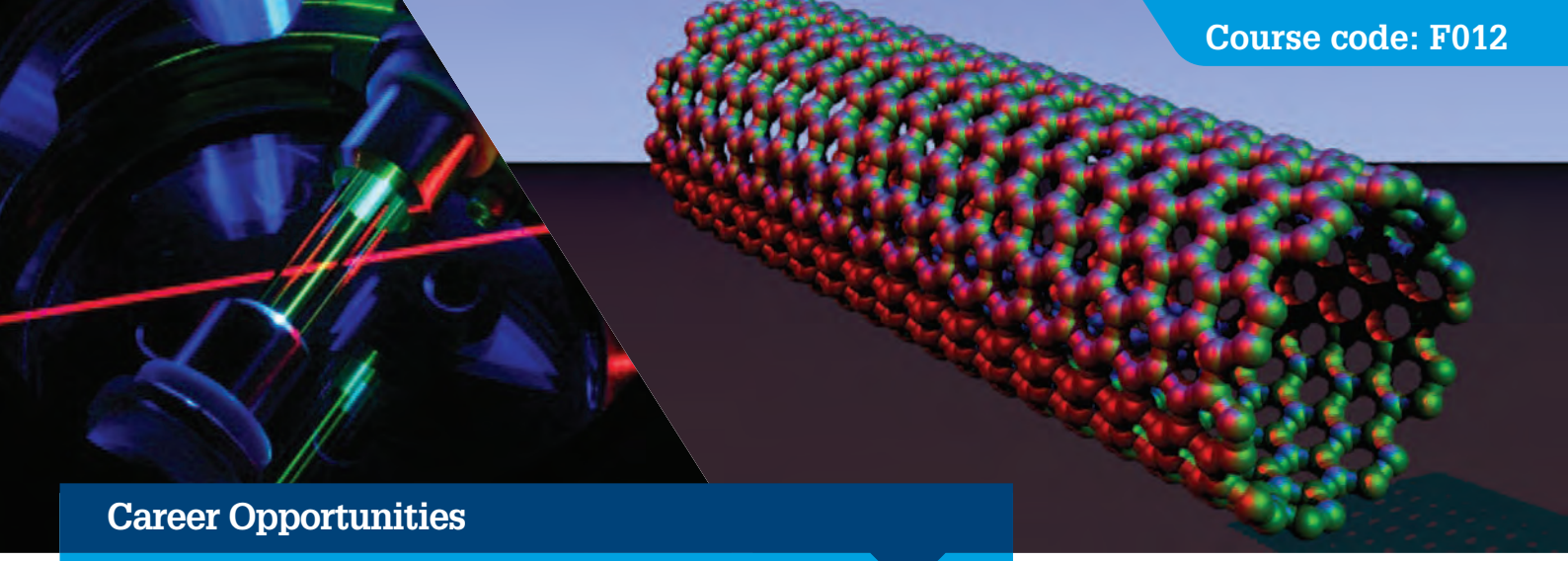
Course Content and Structure

90 credits taught masters	45 credits taught modules + 45 credits research project	OR	60 credits taught modules + 30 credits research project

This programme may also be taken as a 2-year part-time option, or as a 30 credits graduate certificate, without the research project component. You will gain experimental, theoretical and computational training in the following topics:

- Nano-Optics and Bio-Photonics
- Physics of Nano-Materials
- Spectroscopy and Lasers
- Nano-Mechanics
- Atomic Force Microscopy
- Theoretical and Computational Biophysics
- Biological Physics at the Nanoscale
- Biomimicry
- Bio-Fluid Mechanics
- Innovation
- Journal Club and Presentation Skills

Modules and topics shown are subject to change and are not guaranteed by UCD.



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Career Opportunities

The programme prepares you for industry or further PhD research. Career opportunities include the pharmaceutical industry, telecommunications, diagnostic imaging, green technologies and sensor applications, both in Ireland and internationally. It is also a stepping-stone to PhD research in the areas of biophotonics, nanotechnology and computational biological physics and nanoscience. Prospective Employers include Abbott, Alcon, Allergan, Andor, Asylum Research, Bausch & Lomb, Becton Dickinson, Boston Scientific, Carl-Zeiss Meditec, Covidien Imaging, Eblana Photonics, Intel, Intune Networks, Park Systems, Pfizer, Pharma-Bio Serv, Philips, Schering-Plough, SensL.

Facilities and Resources

- Understanding the structure, function and regulation of biological systems at the nanoscale and in real time requires modern nanometer and femtosecond quadrillionth of a second) technologies. Physical studies at these scales will ultimately lead to devices and techniques that mimic those found in nature, such as solar cells based on photosynthetic processes, adaptive biocompatible materials for regenerative medicine, nanomaterials such as nanotubes, nanoparticles and nano-fibrils, bio-molecular aggregates and new drugs, biomarkers or biosensors. This programme incorporates modern experimental and computational physics techniques and provides exposure to a variety of applications, and facilitates professional development.

Apply Now

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

Entry Requirements

- This programme is intended for applicants with a BSc degree in physics, chemistry, engineering, material sciences or a related discipline with a significant physics content. An upper second class honours or international equivalent is required. In special circumstances, students with a strong physics background and 2.2 class honours may be accepted.
- 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.

Staff Profile

Dr Brian Vohnsen, UCD School of Physics

Dr Brian Vohnsen originally comes from Denmark and is a Stokes lecturer and SFI Principal Investigator in the UCD School of Physics.

We try to image the retina in the living eye as well as we can. We send a laser beam into the eye, using the pupil as a pivot point, then the eye focuses the beam and we scan line by line across the retina. The move from bench to industry and bedside is a key focus for my research. The students learn about optics, nanophotonics, molecules, lasers and innovation and we would like them to apply their research.

Fees and Scholarships

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Additional Course Delivery Options

- MSc Physics (Negotiated Learning) Specialisation: NanoBio Science 2 Year Part Time Graduate Certificate Physics (Negotiated Learning) Specialisation: NanoBio Science Full Time without the research project component
- Graduate Certificate Physics (Negotiated Learning) Specialisation: NanoBio Science Part Time without the research project component

Related Masters Programmes of Interest

- MSc Physics NanoBio Science
- MSc Imaging & Microscopy

EU Enquiries Dr Brian Vohnsen ✉ : brian.vohnsen@ucd.ie
www.ucd.ie/nanobio
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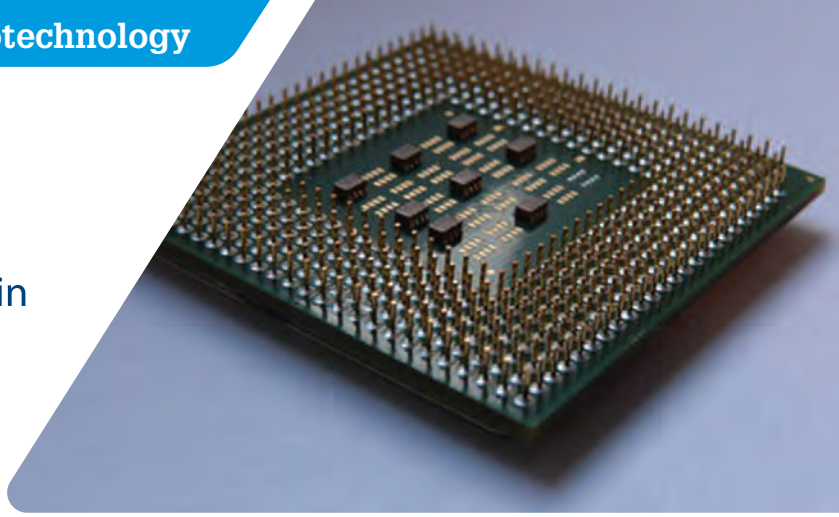

"Pentium 4 Underside Demonstrating PGA Socket" by Liam McSherry - Own work. Licensed under Creative Commons Attribution-Share Alike 3.0 via Wikimedia Commons.

MSc Physics (Negotiated Learning)

Specialisation: Nanotechnology (One Year Full Time)

Nanotechnology is an emerging sector which covers many areas of in both academic science and device design and innovation. Manipulating matter at the nanoscale has already led to new technology in many areas such as electronics, displays, sensors, and green technology. The design, fabrication and control of devices with nanoscale (billionth of a metre) dimensions, is an engine of innovation in almost every sector. This course is suitable for graduates who wish to apply their degree expertise in the nanoscale science and related sectors. This specialisation is for students excited by the prospect of studying and researching in an interdisciplinary area, where physics, chemistry and engineering all come together. Lectures are delivered by staff of international renown in these fields of research. About 50% of the time is devoted to classroom or lab-based activities. The student spends the remaining time carrying out a substantial research project, chosen in consultation with academic staff.

This course is delivered in association with Intel Ireland Ltd, who expect that the graduates from the programme will be employable in the semiconductor industry.

Key Fact

Students and staff have access to major technology platforms essential to the conduct of world-class cutting-edge research through the strength of the collaboration of the UCD School of Physics researchers with associated UCD Institutes including the Complex Adaptive Systems Laboratory (CASL), Materials Engineering, and the Innovation Alliance between Trinity College Dublin and University College Dublin.

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Safety

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Course Content and Structure

90 credits taught masters

45 credits taught modules
45 credits research project

OR

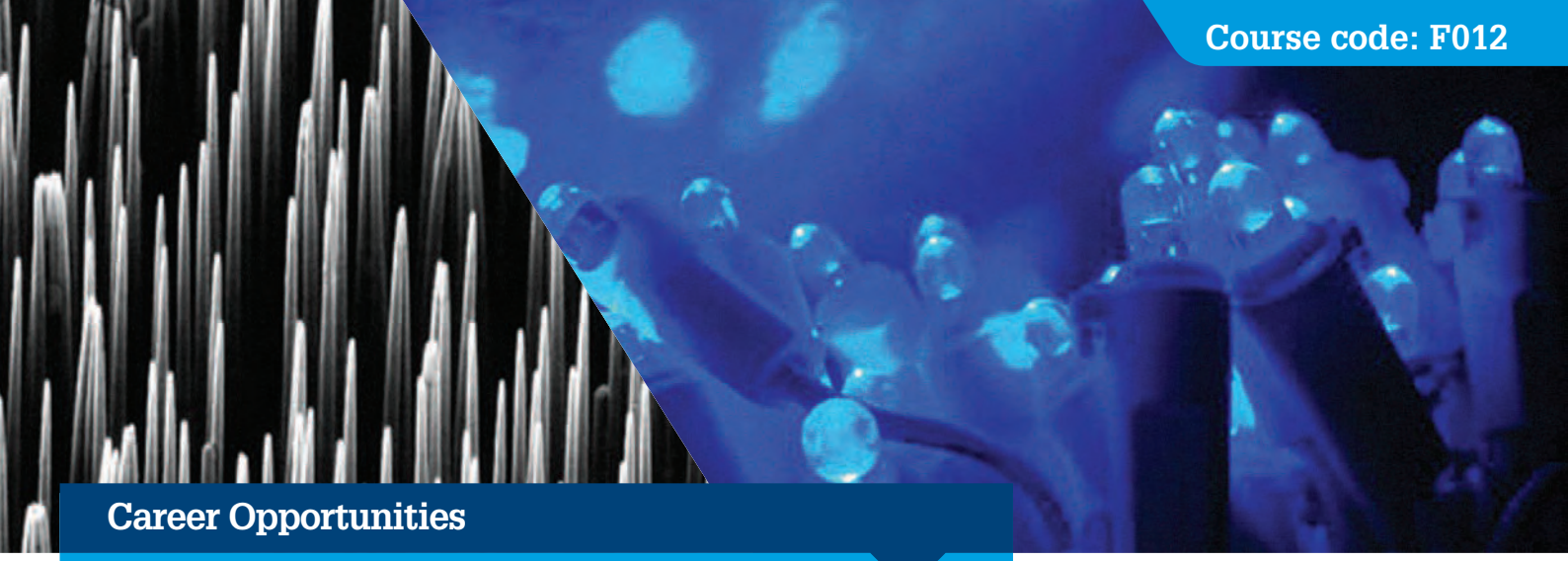
30 credits taught modules
60 credits research project

This programme may also be taken as a 2-year, part-time option, or as a 30-credit graduate certificate, without the research project component.

You will gain experimental, theoretical and computational training in the following topics:

- Nano-Optics
- Physics of Nano-Materials
- Spectroscopy and Lasers
- Nano-Mechanics
- Atomic Force Microscopy
- Theoretical and Computational Simulation
- Extreme Ultraviolet Lithography
- Innovation
- Journal Club and Presentation Skills

Modules and topics shown are subject to change and are not guaranteed by UCD.



Career Opportunities

The programme prepares you for industry or further PhD research. Career opportunities include the semiconductor industry, telecommunications, diagnostic imaging, green technologies and sensor applications, both in Ireland and internationally. It is also a stepping-stone to PhD research in the areas of photonics, nanotechnology and computational physics and nanoscience. Prospective Employers include Intel, Abbott, Allergan, Andor, Asylum Research, Becton Dickinson, Boston Scientific, Carl-Zeiss Meditec, Covidien Imaging, Eblana Photonics, Intune Networks, Park Systems, Pharma-Bio Serv, Philips, Schering-Plough, SensL.

Facilities and Resources

- Understanding the structure, function and regulation of materials at the nanoscale and in real time requires modern nanometer and femtosecond (quadrillionth of a second) technologies. Physical studies at these scales will ultimately lead to devices and techniques that possess novel properties applicable the construction of, for example, single photon sources, solar cells, nanoelectronics including nanomaterials such as nanotubes, nanoparticles and nanowires. This programme incorporates modern experimental and computational physics techniques and provides exposure to a variety of applications, and facilitates professional development.

Apply Now

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Entry Requirements

- Entrance to this programme requires a degree in physics, chemistry, engineering, material sciences or a related discipline with a significant physics content. An upper second class honours or international equivalent is required. In special circumstances, students with a strong physics background and lower second class honours degree may be accepted.
- 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.

Graduate Profile

Oisin Maguire, PhD Student in Plasma Spectroscopy, UCD School of Physics

I chose to study the MSc in Physics (Negotiated Learning) due to its flexibility and engaging topics; from nano-mechanics and nano-optics to plasma physics. A wide variety of prospective research projects will fit practically every student, regardless of their specific background and research interests. Overall, this MSc gave me the insight I needed to progress my career and the knowledge that is required to have a successful career, both in academia and industry. I fully recommend it for anybody who wants to progress in a physics-based career. On completing this programme, you are ready to start a PhD in related areas, or ready for employment in industry.

Left - "Field Emitter Array" by Johann Vetter, GSI Darmstadt. Licensed under Creative Commons Attribution-Share Alike 3.0 via Wikimedia Commons.

Right - Alexofdodd at the English language Wikipedia, via Wikimedia Commons.

Fees and Scholarships

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

Accommodation

UCD has accommodation for over 2,500 students across five locations. Places are limited and more information is available at www.ucd.ie/residences/
For information and advice on living off campus, please contact the UCD Residences Off-Campus Office or the UCD Student Union Accommodation Services. Please visit www.ucd.ie/residences/accommodation-booking-support/ for further details.

Additional Course Delivery Options

- MSc Physics (Negotiated Learning) Specialisation: Nanotechnology 2-Year, part-time
- Graduate Certificate Physics (Negotiated Learning) Specialisation: Nanotechnology part-time, without research project component

Related Masters Programmes of Interest

- MSc Physics NanoBio Science
- MSc Imaging & Microscopy

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Non-EU Enquiries ✉ : internationaladmissions@ucd.ie
www.ucd.ie/international

V1 F012 2015

University College Dublin
Ireland's Global University

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MSc Petroleum Geoscience
(One Year Full Time)

Oil and gas are expected to remain the dominant source of energy for decades to come, with the emergence of unconventional hydrocarbon reserves an important trend. Geoscience plays a pivotal role in guiding exploration for new hydrocarbon reserves and in managing efficient production from existing ones.

The MSc in Petroleum Geoscience was set up in 2013 as a direct result of a collaborative initiative between Tullow Oil plc and the UCD School of Geological Sciences. The course, the only one of its kind in Ireland, covers all aspects of exploration, appraisal and development geoscience, and includes relevant geophysical and reservoir engineering topics integrated around a geological core. Lectures are complemented by significant components of fieldwork, industry-standard software training and practical experience of industry-style work. The course is taught by staff from the UCD School of Geological Sciences who are international research leaders in a range of complementary petroleum geoscience disciplines, including basin studies, deep water sedimentology, geophysics, structural geology, reservoir modelling and geoengineering. Co-opted industry instructors will contribute to some modules.

Key Fact

The UCD School of Geological Sciences has research funding that typically exceeds €2 million per year, with research projects currently supported by more than 13 international petroleum companies and has a vibrant international community comprising researchers from over 15 countries.

Why study at UCD?

Tradition
Established 1854, with 160 years of teaching & research excellence

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

Global community
Over 6,000 international students from over 120 countries study at UCD

Global careers
Degrees with high employability; dedicated careers support; 1 year stay-back visa

Safety
Modern parkland campus with 24 hour security, minutes from Dublin city centre

Course Content and Structure

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

Samples of course modules comprise:

- Petroleum systems (5 credits)
- Introduction to seismic techniques (2.5 credits)
- Petrophysics (2.5 credits)
- Basin analysis and modelling (5 credits)
- Depositional systems and sequence stratigraphy (5 credits)
- Structural geology (5 credits)
- Fieldwork (Ireland, UK, Spain; 15 credits)
- Exploration and prospect evaluation (10 credits)
- Production geoscience and field management (10 credits)
- Individual research project chosen in consultation with staff (30 credits)

The research project is a 12-week independent project providing an opportunity to work with active research groups within the School or directly with industry in the form of a work placement.

Modules and topics shown are subject to change and are not guaranteed by UCD.

Images © UCD Research

Career Opportunities

Petroleum geoscientists are much in demand and find employment in a wide range of companies, consultancies, regulatory agencies, governmental organisations and academia. Petroleum products are important for power generation, transport and as a chemical feedstock and are likely to remain so for decades despite emerging new technologies. It is also essential for understanding and confronting many of the associated risks, safety issues and environmental concerns facing the industry.

Facilities and Resources

- The course is housed in a purpose-built teaching lab in the UCD School of Geological Sciences, with individual twin-headed workstations running the leading petroleum industry geoscience software.

Apply Now

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

Entry Requirements

- This programme is intended for applicants with a degree in Geology, Geoscience, Earth Science, Geophysics or a cognate discipline. An upper second class honours or international equivalent is required.
- In exceptional circumstances, credit will be given for those with a lower second class honours degree with relevant work experience.
- 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.

Graduate Profile

Myles Watson, Ireland, Junior Geologist with Providence Resources

"I have been a Junior Geologist with Irish oil company Providence Resources for 15 months and they supported my enrolment in the UCD Petroleum Geoscience MSc in 2013. I will return to Providence upon graduation, where I will put into practice my learnings from the course, which are wholly compatible with the aims of Providence: to find, appraise and successfully develop hydrocarbon reservoirs."

Fees and Scholarships

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

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www.ucd.ie/geology/petroleumgeoscience.htm
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www.ucd.ie/international

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University College Dublin
Ireland's Global University

MSc Computer Science (Negotiated Learning)
(One Year Full Time)

Ireland is home to the world's top 10 technology companies. It is known as the Internet and Games Capital of Europe and is among the world's most technologically developed nations. There are excellent job opportunities, with 5,000 job vacancies in the sector at present.

The UCD MSc in Computer Science is a uniquely flexible and innovative programme. It offers a negotiated learning (NL) model for students with an ICT background that allows you to customize your learning path and to tailor what you learn to your own specific needs and career aspirations. Module choices include several programming languages, cloud computing, bioinformatics, data mining, machine learning and robotics.

Once you are accepted onto the programme we will guide you through a training needs assessment to establish your prior experience, personal knowledge gaps and your career plans. You have the option to select modules with a very specific thematic focus or you may select modules from one of the pre-defined thematic streams covered by the programme.

Key Fact

Currently there are more than 100 module options offered in conjunction with the UCD Schools of Business, Physics, Information & Library Studies, Mathematical Sciences, Philosophy, Psychology, Law and The NovaUCD Innovation and Technology Transfer Centre.

Why study at UCD?

Tradition
Established 1854, with 160 years of teaching & research excellence

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

Global community
Over 6,000 international students from over 120 countries study at UCD

Global careers
Degrees with high employability; dedicated careers support; 1 year stay-back visa

Safety
Modern parkland campus with 24 hour security, minutes from Dublin city centre

Course Content and Structure

90 credits	60 credits	30 credits
taught masters	taught modules	research project/task

There is an opportunity to take a limited selection of both online and evening modules. Information on the full list of modules and their related descriptors is at www.csi.ucd.ie/module-offerings.

Samples of thematic streams include:

- Data Science
- Cloud and Distributed Computing
- Software Engineering and Distributed Computing
- Forensics and Security
- Artificial Intelligence and Cognitive Science

Modules and topics shown are subject to change and are not guaranteed by UCD.

Career Opportunities

Previous graduates are in demand and among their recent career destinations are employers Google, SAP, Intel, PayPal, Deloitte, Microsoft, Symantec, HMH, Vilicom, Murex, NYSE Technologies, Realex Payments, Version1, Salesforce, Pfizer, Ericsson, and Intune Networks. Recent graduates have secured roles in areas including: hardware design, software engineering & QA, data programming & analysis, commercialisation of technology, teaching & training, senior management & CEO roles, security & forensics consultancy, and bioinformatics R&D.

Apply Now

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

Entry Requirements

- This programme is intended for applicants with a Computer Science or ICT background. An Upper Second class honours degree, or the international equivalent, in computer science or a related area or a minimum of three years' relevant industrial work experience is required
- 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.

Graduate Profile

Rohan Singla,
Consultant, Deloitte

After working in India for a year I thought of going abroad for further studies and choosing to come to UCD, Ireland for a Masters in Computer Science (Negotiated Learning) was one of the best decisions I've ever made.
The degree has provided me with both a theoretical and practical background to apply my knowledge as a consultant with Deloitte. Apart from studies, UCD is a great campus with many activities and lots of clubs and societies.

Fees and Scholarships

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

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Additional Course Delivery Options

- MSc Computer Science (Negotiated Learning) 2 Year Part Time

Related Masters Programmes of Interest

- MSc Advanced Software Engineering
- ME Electronic and Computer Engineering
- MSc Digital Investigation &Forensic Computing
- MSc Information Systems

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Non-EU Enquiries : internationaladmissions@ucd.ie
www.ucd.ie/international

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University College Dublin
Ireland's Global University

MSc Computer Science (Conversion)
(16 months Full Time)

Ireland is home to the world's top 10 technology companies. It is known as the Internet and Games Capital of Europe and is among the world's most technologically developed nations. There are excellent job opportunities, with 5,000 job vacancies in the sector at present.

UCD offers a skills conversion graduate programme for individuals who hold a primary degree in another discipline (e.g., Arts, Commerce), and would like to enter into an IT related career. This conversion MSc introduces students to computational thinking and provides a thorough foundation in the practical aspects of modern Computer Science.

On completion of the programme you will be able to:

- apply the core principles of programming to solve real-world problems and process different types of information
- design, develop and query relational databases
- demonstrate an awareness of the roles and interactions of hardware components, operating systems and networking
- employ web application development concepts and technologies to design and create feature-rich and versatile websites

Key Fact

The UCD School of Computer Science and Informatics has significant experience in the training of non-Computer Science graduates. The curriculum for this MSc is continually updated and the coursework is practically orientated, with an emphasis on developing coding skills and competence in emerging technologies.

Why study at UCD?

Tradition
Established 1854, with 160 years of teaching & research excellence

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

Global community
Over 6,000 international students from over 120 countries study at UCD

Global careers
Degrees with high employability; dedicated careers support

Safety
Modern parkland campus with 24 hour security, minutes from Dublin city centre

Course Content and Structure

120 credits	60 credits	30 credits	30 credits
taught masters	taught modules	research practicum	taught modules

This programme has been specifically designed for graduate students of disciplines other than Computer Science. No prior knowledge of programming is assumed. During the first year, students take modules with learning outcomes aimed at providing fundamental skills required by modern technology companies. A research practicum allows students to apply the skills learned in the taught modules in a more significant project and to see where these skills can play a role in industry. In the final semester, students choose 30 credits of taught modules from the MSc Computer Science (Negotiated Learning) programme.

The structure of the programme is as follows:

Year 1 (Sept-Dec)
- Programming I (Python)
- Computational Thinking
- Relational Databases & Information Systems
- Computer Architecture
- Networks & Internet Systems
- Operating Systems

Year 1 (Jan-May)
- Programming II (Java)
- Data Structures & Algorithms
- Data Analytics
- Web Application Development
- Software Engineering

Year 1 (May-Aug)
- Research Practicum with an opportunity to engage with employers

Year 2 (Sept-Dec)
Choose* modules in areas such as
- Data Science
- Cloud & Distributed Computing
- Software Engineering
- Forensics & Security
- Artificial Intelligence & Cognitive Science

Note that there may be some limitations on the choice due to pre-requisites and timetabling.

Modules and topics shown are subject to change and are not guaranteed by UCD.

Career Opportunities

Some of the roles graduates of this MSc have worked in include the following:

- Software Engineer
- Computer Programmer
- IT Project Analyst
- Performance Engineer
- SAP Support Engineer
- Python Developer
- Web Applications Developer
- Business Analyst
- Technical Analyst
- Technical Consultant

Companies that have employed graduates include IBM, Dell, Accenture, SAP, Mastercard, Computershare Ireland, Deloitte Ireland, First Derivatives, General Motors, Bearing Point, Logentries, AIB, Eircom and Paddy Power.

Apply Now

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

Entry Requirements

- This programme is intended for applicants who do not have a Computer Science or ICT background. An Upper Second class honours degree, or the international equivalent, in another discipline is required for entry.
- Computer Science is a mathematical subject involving logical understanding and reasoning and therefore applicants must be able to demonstrate a good knowledge of mathematics.
- 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.

Fees and Scholarships

Tuition fee information is available on www.ucd.ie/fees. Please note that UCD offer a number of postgraduate scholarships for fulltime, self-funding international students, holding an offer of a place on master's programmes. Please see www.ucd.ie/international/scholarships/ for further information.

Accommodation

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Related Masters Programmes of Interest

- MSc Computer Science (Negotiated Learning)
- MSc Information Systems

Graduate Profiles

Anthony McCourt,

Software Developer at Scream Technologies

Anthony worked as a pharmacist for 10 years before starting the MSc. He had an interest in IT and software and sought a career change into this area. After graduating he went straight into working in a software start-up in the area of speech technologies.

"The biggest challenge was the huge amount of work and the associated time pressures, especially considering I had no prior IT training and was still working every weekend as a pharmacist. I would say to anyone thinking of doing the course to prepare yourself for a lot of work, but the reward is huge. The amount you will learn is incredible."

Emily Castles,

Ruby on Rails developer at Red Hills Software.

"Having studied Civil Engineering, I already had a technical background and had completed a couple of Computer Science modules involving Visual Basic and C++. I had picked up some basic programming logic from these but I'm not sure that it gave me much of an advantage over other students in the Masters. I knew I wanted to work in the area of web development. Initially, I was exploring the idea of e-commerce and multimedia courses that included development modules but in the end I decided that I would prefer to get a good base knowledge in programming before specialising into any area."

EU Enquiries : cs_conversion@ucd.ie : +353 (0) 1 716 2953
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Non-EU Enquiries : internationaladmissions@ucd.ie
www.ucd.ie/international

UCD School of Computer Science and Informatics University College Dublin, Belfield, Dublin 4.

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MSc Advanced Software Engineering (One Year Full Time)

Ireland is home to the world's top 10 technology companies and is forecast to be the third most digitally enhanced country in the world.

There are excellent job opportunities in the Irish software industry, with 5,000 job vacancies in the sector at present.

This MSc in Advanced Software Engineering is an opportunity to meet and study with senior developers and architects working in the Irish software industry. In the current climate, software engineers have to continually update their skills and qualifications in order to stay competitive in the workplace and improve their career prospects in the industry. This programme is designed for experienced software engineers who wish to advance their skillset in areas of computer science and software development that impact directly on their work. Participants are exposed to current technologies, methodologies, processes and theories as well as those still under research that may become mainstream in the future.

Key fact

Since 2010, Google has provided a coveted Excellence Award to the best project annually on the MSc in Advanced Software Engineering.

Many of the top IT companies in the world have their European headquarters in Ireland, including Google, Microsoft, Apple, Hewlett Packard, Ebay, Facebook and Paypal.

Why study at UCD?

Tradition
Established 1854, with 160 years of teaching & research excellence

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

Global community
Over 6,000 international students from over 120 countries study at UCD

Global careers
Degrees with high employability; dedicated careers support; 1 year stay-back visa

Safety
Modern parkland campus with 24 hour security, minutes from Dublin city centre

Course Content and Structure

90 credits	60 credits	30 credits
taught masters	coursework	dissertation

The module choice is a combination of specialised Advanced Software Engineering modules and general Computer Science modules. Sample modules include:

- Performance of Distributed Systems
- Design Patterns
- Managing Software in Production (in conjunction with Google)
- Mobile Application Development for Android Platforms
- Mobile Application Development using CocoaTouch
- High-Performance Computing
- Agent-Oriented Software
- Comparative Software Engineering Process Frameworks
- Knowledge-based Techniques

For more information visit http://csserver.ucd.ie/~meloc/MScASE/Introduction

Modules and topics shown are subject to change and are not guaranteed by UCD.

Course code: T183

Career Opportunities

This MSc programme aims to give industrial software engineers the skills to incorporate the new concepts, methodologies, tools and practices they learn on the course into the projects they are working on in their companies. Students may be experienced software development professionals who feel that they are missing out on certain developments, new technologies or topics in software engineering that they would not normally be exposed to in their job. Participants value the opportunity to meet other professional software engineers from different backgrounds and experiences and get a different perspective. For some, the course will open the door to the research world with opportunities to publish their work. Many participants have used this MSc as a stepping stone to significant career advancement.

Images © UCD Research

Apply Now

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

Entry Requirements

- This programme is intended for applicants with a bachelor's degree in Computer Science or a cognate discipline, with a subsequent two or more years of industry experience in software development. An upper second class honours or international equivalent is required
- Required skills include: a high degree of proficiency in object-oriented programming, a working knowledge of object-oriented design using e.g. UML, and experience in software development as part of a team.
- 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.

Graduate Profile

Paddy Fagan,

Chief Architect - Platform Group, Cúram Software, IBM Software Group, Ireland

The structure of the course, with week-long intensive modules, appealed to me. I really enjoyed the opportunity to study with a varied group of motivated people with a range of industry experience who always offered an interesting perspective to each topic on the course. The course also brought me into contact with topics in computer software that I hadn't previously been exposed to in my professional or academic experience. I found the course to be a rewarding experience, both in personal and professional terms, and feel that having completed it I have a more rounded set of experiences to draw on.

Fees and Scholarships

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Additional Course Delivery Options

- MSc Advanced Software Engineering 2 Years Part Time

Related Masters Programmes of Interest

- MSc Computer Science (Negotiated Learning)

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Non-EU Enquiries : internationaladmissions@ucd.ie
www.ucd.ie/international

V1 T183 2015

University College Dublin
Ireland's Global University

MSc Digital Investigation & Forensic Computing

(One Year Full Time or Two Years Part Time)

Cyber attacks on business and public sector networks are growing. Ever more sophisticated criminals are exploiting our smart mobile devices and online communication and data storage. These new threats call for skilled experts to monitor and secure networks, investigate attacks, and to gather evidence and present it in court. This programme is for IT specialists who need to acquire skills to prevent and investigate incidents. It introduces concepts, principles and professional practice in digital investigation, giving you information, knowledge and skills that you can apply straight away. On completion, you will be able to perform forensic analysis of a personal computer running Windows OS; understand legal issues in keeping information secure and in the conduct of investigations; understand the role and the use of digital evidence in litigation; prepare investigation reports and court testimony; analyse user activity in Windows OS; use crime scene search techniques; handle evidence and interview witnesses; perform investigations into misuse of IT in a corporate environment; investigate crime against computer systems including malware; deploy information security mechanisms and conduct independent research and convey the knowledge discovered to colleagues.

World leader in cybercrime education

This course is taught by leading academics from the UCD School of Computer Science and Informatics with international experts from industry. Since UCD established the UCD Centre for Cybersecurity and Cybercrime Investigation, we have been working closely with law enforcement agencies and industry practitioners in seeking solutions to technology-related crimes. UCD researchers and scientists continue to work on applied research and have developed a number of forensic tools.

Why study at UCD?

Tradition
Established 1854, with 160 years of teaching & research excellence

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

Global community
Over 6,000 international students from over 120 countries study at UCD

Global careers
Degrees with high employability; dedicated careers support; 1 year stay-back visa

Safety
Modern parkland campus with 24 hour security, minutes from Dublin city centre

Course Content and structure

90 credits	60 credits	30 credits
taught masters	taught modules	Digital Investigation Project

The programme is delivered in cooperation with leading experts in the field with an engaging mix of learning sessions, hands-on labs, case studies, tool demonstrations and in-depth discussions.

Modules include:

- Computer Forensic Foundations
- Law for IT Investigators
- Application Forensics
- Investigative Techniques
- Corporate Investigations
- Information Security
- Digital Investigation Project – a group research and development project on a real-world topic in digital investigation

Modules and topics shown are subject to change and are not guaranteed by UCD.

Images © UCD Research

Career Opportunities

Graduates are employed as project managers, developers and information security specialists, computer forensics and security analysts, test, audit and engineering specialists.

They work at companies such as Cisco, Dell, HP, Microsoft, Symantec, Oracle, IBM, SAP and Qualcomm as well as in law enforcement, banks and financial institutions such as Bank of America Merrill Lynch, J.P. Morgan, Bank of Ireland, Central Bank of Ireland, Deutsche Bank, Pioneer Investments and consultancies such as Deloitte, Ernst & Young and PwC.

Facilities and Resources

In addition to lectures, students perform self-study assignments during the year, using their personal computers and UCD's online computer lab. Hands-on assignments, which require laboratory equipment, take place at the end of the year during the examination period.

Apply Now

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

Entry Requirements

- This programme is intended for applicants with a degree in Computer Science or equivalent work experience. An upper second class honours or international equivalent is required.
- Understanding of programming concepts and some familiarity with Java, C or C++ programming is required.
- 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.

Fees and Scholarships

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Delivery Options

- Distance learning option (exams and workshops in Dublin)

Related Masters Programmes of Interest

- MSc Forensic Computing & Cybercrime Investigation (Law Enforcement only)
- MSc Computer Science (Negotiated Learning)

Graduate Profile

Kamil Mahajan, IT Operations Lead at Facebook, Dublin

Kamil studied part time over two years for his MSc whilst working at Facebook in Dublin and graduated in 2013.
The MSc helped him to work closely with the Infosec team at Facebook as he now has a better understanding of the IT Security area. He was motivated to take the MSc out of personal interest and for professional development.

"I can interact better with IT Security, understand and implement security aspects into my projects from the start and can educate my team on cyber security."

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www.ucd.ie/cci
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University College Dublin, Belfield, Dublin 4.

Non-EU Enquiries : internationaladmissions@ucd.ie
www.ucd.ie/international

University College Dublin
Ireland's Global University

MSc Forensic Computing & Cybercrime Investigation (Distance Learning)
(1 Year Full Time or 2 Years Part Time)

This is a distance learning degree programme for law enforcement. Over the past 10 years we brought in specialists from around the world to review and advise on content considering the needs of digital forensics investigators and computer crime specialists.
The UCD School of Computer Science and Informatics established the UCD Centre for Cybersecurity & Cybercrime Investigation (CCI) and since 1998, CCI has been working closely with law enforcement agencies and industry practitioners in seeking solutions to technology-related crimes.
CCI are special advisors to the European Cybercrime Training and Education Group (ECTEG) at Europol and its scientists continue to work on applied research and have developed a number of forensic tools. Depending on the modules taken, you will be able to conduct forensic analysis of a computer and use common network investigation techniques, investigate malware-based intrusions, perform mobile phone forensics, preserve and analyse volatile evidence contained in the main memory (RAM), use Linux forensics analysis tools and techniques, write custom tools for data analysis and build forensic applications, overcome investigative challenges of VoIP and locating mobile users, investigate money laundering and trace illicit funds and investigate cases of child sexual exploitation on the Internet.

Key Fact
To date, over 375 law enforcement officers from agencies in 52 countries have studied on the programme.
This is the only university Masters programme in this area designed exclusively for – and restricted to - law enforcement.

Why study at UCD?

Tradition
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Global community
Over 6,000 international students from over 120 countries study at UCD

Global careers
Degrees with high employability; dedicated careers support; 1 year stay-back visa

Safety
Modern parkland campus with 24 hour security, minutes from Dublin city centre

Course Content and Structure

90 credits	90 credits	80 credits	60 credits
taught masters	taught modules	taught modules and a 10 credit case study	taught modules and a 30 credit research project

Lectures are pre-recorded and provided online via a virtual online learning environment, allowing you to participate from your home or office and attend UCD only for examinations each year in Dublin, the Netherlands or the USA.

Core Modules
MSc candidates are encouraged to take the following modules in their first year:
- Computer Forensics
- Network Investigations
- Introduction to Programming for Cybercrime Investigators

Optional modules include:
- Malware Investigation
- Mobile Phone Forensics
- Live Data Forensics
- Linux for Investigators
- Advanced Scripting
- VoIP and Wireless Investigations
- Money Laundering Investigations
- Open Source Intelligence
- Investigation of Sexual Abuse of Children on the Internet
- Case Study
- Research Project

Modules and topics shown are subject to change and are not guaranteed by UCD.

Career Opportunities

For law enforcement officers, having this qualification has the additional advantage of adding credibility to their testimony as expert witnesses. Career development possibilities in this field are excellent. Graduates include senior staff at Europol and INTERPOL, members of national and regional police forces and police training colleges, government ministries and agencies with LE powers, defence forces, specialist cybercrime agencies, revenue, customs and border protection.

Apply Now

This programme receives significant interest so please apply early online at www.ucd.ie/apply. There are student intakes in January and September.

Entry Requirements

- This programme is restricted to LAW ENFORCEMENT (LE) ONLY. Applicants must be working in an investigative role in an organisation that has responsibility for the enforcement of national or local legislation, including police; revenue & customs, border security, military etc.
- Applicants to the MSc / Grad. Diploma / Grad. Certificate programme must have 5 years experience in LE
  OR
  A degree in computing / policing studies / related discipline
  OR
  2 years LE experience in Digital Forensics / Cybercrime Investigation
  OR
  Have completed 3 modules with average grade, B- or above
- 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.

Graduate Profile

Victor Völzow, Operational Forensic analyst in Polizei Hessen, Germany

It's a fantastic opportunity to meet international colleagues and have academic training that is unique in the world. That's very special for us. Colleagues on this study course have already helped me with my own investigations. We also share information on the structure of units and how we can all improve.

Graduate Profile

Cindy Murphy, Detective, WI Police Department, USA

I found the collaboration with international law enforcement one of the most useful aspects of the course. I believe that the MSc is a great credential for court, and for my professional future. My dissertation has been published in a peer-reviewed journal and has generated interest for other papers, a book chapter and international speaking opportunities. Attending UCD provided an opportunity for my work to be noticed, and to begin to make a difference, on an international level.

Fees

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

Additional Course Delivery Options

- As well as the MSc, there are Graduate Diploma, Graduate Certificate and single module options.
- There is also a January or September start.

Related Masters Programmes of Interest

- MSc Digital Investigation and Forensic Computing

EU Enquiries : cci.info@ucd.ie : +353 1 716 2947
www.ucd.ie/cci
Centre for Cybersecurity & Cybercrime Investigation, University College Dublin, Belfield, Dublin 4.

Non-EU Enquiries : internationaladmissions@ucd.ie
www.ucd.ie/international

V2 T146 2015

University College Dublin
Ireland's Global University

MSc/MA Cognitive Science
(One Year Full Time)

Cognitive Science is an interdisciplinary field that has evolved during the past few decades at the intersection of a number of existing disciplines, including linguistics, computer science, philosophy, psychology and neuroscience. Each discipline makes its own distinctive contribution to the goal of teasing out the relationships between minds, brains and behaviour.

UCD offers a range of masters in Cognitive Science that are ideal for students interested in issues relating to the understanding of the human mind from philosophical, psychological, and computational perspectives. Advanced computational skills are not a prerequisite. The course is designed as an ideal preparation for students hoping to tackle advanced research topics at PhD level. The choice of pursuing a MA or an MSc will depend on the background of the student.
Students will have the opportunity to be familiar with the problems associated with minds, brains, and behaviour and the theoretical approaches to them, know the principal 20th Century philosophical approaches to mind/brain issues, understand the principal issues, models, and concepts used in cognitive psychology, and develop an interdisciplinary perspective that links and integrates insights from multiple specialized domains.

Key Facts

The cognitive science programme is unique in Ireland and one of very few such taught programmes worldwide.

A strength of these courses is the wide range of disciplines from the UCD Schools of Computer Science & Informatics, Philosophy, Psychology and Linguistics that contribute to the programme.

Why study at UCD?

Tradition
Established 1854, with 160 years of teaching & research excellence

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

Global community
Over 6,000 international students from over 120 countries study at UCD

Global careers
Degrees with high employability; dedicated careers support; 1 year stay-back visa

Safety
Modern parkland campus with 24 hour security, minutes from Dublin city centre

Course Content and Structure

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

Modules can change from year to year but typical modules include:

- Graduate Introduction to Cognitive Science
- Philosophy of Mind
- Cognitive Psychology
- Behavioral Neuropsychology
- Connectionism and Dynamical Systems
- Cognitive Modelling
- Readings in Visual and Social Cognition
- Topics in Cognitive Science: Post-cognitive approaches

Modules and topics shown are subject to change and are not guaranteed by UCD.

Career Opportunities

This is not a vocational course. In the course of one year we cover a very broad range of material, thus greatly increasing the breadth of academic exposure of our students. Historically, about half of the students go on to do PhD studies, and many others look for work in research. This course will not make a psychologist out of a non-psychologist, or an IT specialist out of someone who is not an IT specialist upon entry. It will enable students to tackle research issues they might not have been able for before, and to do PhDs in areas that would not have been possible before. It also has the potential to enrich one's engagement with a very broad range of challenging material. Many students pursue this course because of a passionate interest in our scientific understanding of what it is to be human.
Please note that a cognitive science degree is not part of an accredited programme towards a clinical degree.

Apply Now

This programme receives significant interest so please apply early online at www.ucd.ie/apply. Applications for the MA or MSc courses are accepted up to mid-July for the September start each year.

Entry Requirements

- This programme is intended for applicants with a degree in computer science, psychology, philosophy, linguistics, neuroscience or a cognate discipline. An upper second class honours or the international equivalent is required.
- 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.

Graduate Profile

Eileen Wahl, Kentucky USA, Graduate

Eileen Wahl is from Kentucky, USA and gained her BSc in Biological Sciences from the University of Notre Dame, Indiana. She likes the interdisciplinary approach of the UCD Masters in Cognitive Science. Her favourite class was Advances in Neuroscience where every week the class read a couple of papers to read and discuss in class.

"I felt that I really grew as a scientist by being able to critique other people's papers and to think about those issues when I am doing my own science work. I would certainly recommend this programme to international students as you get to meet people from all different countries."

Fees and Scholarships

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

Accommodation

UCD has accommodation for over 2,500 students across five locations. Places are limited and more information is available at www.ucd.ie/residences/
For information and advice on living off campus, please contact the UCD Residences Off-Campus Office or the UCD Student Union Accommodation Services. Please visit www.ucd.ie/residences/accommodation-booking-support/ for further details.

Additional Course Delivery Options

Course content is identical irrespective of which stream a student is enrolled in.

- MSc Cognitive Science 2 Year Part Time
- MA Cognitive Science 2 Year Part Time

Related Masters Programmes of Interest

- MA Consciousness & Embodiment

EU Enquiries Dr Fred Cummins, UCD School of Computer Science & Informatics,
: fred.cummins@ucd.ie
Dr Maria Baghramian, UCD School of Philosophy
: maria.baghramian@ucd.ie
http://cogsci.ucd.ie
www.ucd.ie/graduatestudies
University College Dublin, Belfield, Dublin 4.

Non-EU Enquiries : internationaladmissions@ucd.ie
www.ucd.ie/international

How to apply to UCD

To apply online please go to www.ucd.ie/apply, create a user account, select "Graduate Taught Courses" as your application type from the drop-down list and then select your course.

Useful Web Addresses and Email Addresses

Description	Web Address	Email Address
UCD College of Science	www.ucd.ie/science	
International Office	www.ucd.ie/international	internationaladmissions@ucd.ie
UCD Graduate Studies	www.ucd.ie/graduatestudies	
Accommodation	www.ucd.ie/residences/	residences@ucd.ie
Fee Information	www.ucd.ie/fees	
Scholarships for International Students	www.ucd.ie/international/scholarships	

Events - Meet us in Ireland and Internationally

There are a number of events held in University College Dublin for students considering graduate studies in Science. UCD staff travel across Ireland to meet students at other institutions and at fairs such as GradIreland. In addition, staff travel internationally to meet students in the Middle East, the Indian subcontinent, Asia, South America and the USA.

All the events are detailed in our online calendar at http://www.ucd.ie/science/events.html

If you are visiting University College Dublin and are interested in a tour of the new O'Brien Centre for Science, please email us at science.events@ucd.ie.

CONTACT DETAILS
UCD Science Office
UCD O'Brien Centre for Science
University College Dublin,
Belfield, Dublin 4
Ireland

UCDScience

@UCDScience

This booklet (Version 3 for entry 2015) is intended to assist prospective UCD students and the information is given in good faith. It is not, however, an official publication of the university and does not bind the university in any way.

The information provided in this booklet is correct at the time of going to press but degree programmes are subject to continuing development and the university reserves the right to make changes at any time, before or after a student's admission.

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BACK COVER: UCD O'Brien Centre for Science

University College Dublin

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