



UCC

Coláiste na hOllscoile Corcaigh, Éire
University College Cork, Ireland



Masters Degree in BIOTECHNOLOGY

University College Cork

University College Cork is one of Ireland's oldest institutions of higher education. UCC was originally founded in 1845, and more than 160 years later, the University is internationally acclaimed as Ireland's foremost research institution.

University College Cork's internationally recognised science departments, biomedical research laboratories, and proximity to the largest concentration of pharmaceutical and biotechnology facilities in Ireland, place this programme at the forefront of biopharmaceutical and biotechnology education in Ireland.

Overview of Programme

The Masters in Biotechnology is a 12-month full-time course designed to provide highly motivated graduates with the appropriate skills for leadership in the critically important industries of biotechnology, biopharmaceutical and agrochemical.

The programme is suitable for graduates with an honours degree in Biotechnology, Biochemistry, Biology, Chemistry, Microbiology, or similar science-based subjects. The MSc Degree in Biotechnology is awarded to successful candidates after passing written examinations across taught course units, the continuous assessment of practical work and completion of a six-month research project, which has to be written up in the form of a dissertation and approved by an external examiner.

Entry and Eligibility

Candidates must have obtained at least a Second Class Honours Grade 2 degree or equivalent in a subject(s) related to that of the Masters in Biotechnology programme. Graduates with equivalent qualifications in related areas of science and technology, or with proven and relevant industrial experience can be considered for places following interview and assessment by the Director of the Masters in Biotechnology Programme.

Candidates must be approved by the Masters in Biotechnology course team and/or the Director of the Masters in Biotechnology



Programme. The number of places is limited and decisions on entry to the programme will be made on the basis of the candidate's performance in his/her primary degree or interview.

Career Opportunities

The Masters in Biotechnology is designed to provide graduates with the appropriate skills for leadership positions in academics and industry. Past students have secured scholarships and gained entry into funded PhD programmes or gained employment in a diversity of industry sectors including; Quality Assurance, Quality Control, Microbiology, Analytical Chemistry, Research and Development and Regulatory Affairs.



Programme Structure

Strongly interdisciplinary, this innovative degree programme draws its faculty and course content from University College Cork's Biochemistry, Microbiology, Chemistry, Plant Science, Pharmacy and Process Engineering departments.

The programme will consist of lectures, tutorials, and set practical sessions, with an emphasis on training in modern techniques of biotechnology, and a research dissertation based on individual research and development in a selected field of modern science.

Candidates can carry out their research in the research laboratories of University College Cork or an approved academic or industrial partner, under the supervision of a University staff member.





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Students study the following modules and complete a six-month research project:

The programme consists of the following modules including associated lab-practical's, guest lectures, and Biotechnology facility tours.

Biopharmaceuticals & Quality Assurance. This course will provide candidates with an overview of the process for development of a pharmaceutical by a biotechnology company. Emphasis will be placed on formulation and processing approaches, product development process, regulatory (FDA and EMEA) requirements and intellectual property considerations.

Bioprocess Engineering. The aim of this course is to develop an understanding of microbial and enzyme bioreactors and how they are designed, with a particular emphasis on batch stirred tank reactors. Candidates will also develop an understanding of important concepts and design aspects of a number of separation processes commonly used in bioprocessing sector.

Modern Methods in Analytical Chemistry. This course provides an introduction to separation science, liquid-liquid extraction and chromatography [HPLC, GC]. Chemical equilibria [redox, acid-base, precipitation, extraction and complexation]; Spectroscopic methods [UV/visible, fluorescence, IR, near IR, Raman, NMR and atomic spectroscopy]; Electroanalytical techniques; Potentiometry; Voltammetry; Conductometry; and Quality Control.

Cell and Molecular Biology. This course provides candidates with a comprehensive overview of the key concepts in cellular biology. Students will also review and develop an appreciation of scientific papers and research in biotechnology.

Genetic Engineering. This course provides the candidates with a comprehensive overview of the key concepts in molecular biology and will cover both basic and applied concepts in molecular biology.

Functional Foods for Health. The aim of this course is to provide candidates with an insight into the role of functional foods in promoting good health in humans.

Research Project and Industry Placement

Each candidate is required to complete a six-month project based on individual research in a selected field of modern science. Candidates carry out their research in the laboratories of the University or an approved international academic or industrial partner. It provides students with practical experience in a real working environment where relevance of individual work in an industrial or commercial context can be seen. When students complete their research project in an industrial setting it provides the company with an opportunity to assess student skills and abilities and to screen potential future full-time employees. Students who secure employment upon graduation fit into the organisation and contributes productively much sooner than other graduates.

All research results have to be reported in a typed and bound dissertation, which must include (i) a literature survey of the field, (ii) the experimental results and a discussion and evaluation section.



Graduate Profiles

Prasad. I chose the Masters in Biotechnology at UCC because of its six-month research project. In this programme, students can choose to complete their research work in academics or industry, I liked that I was not limited to one career option. During my degree, I had the opportunity to gain six-month research experience in the Department of Biochemistry. I then applied for and was awarded a PhD scholarship from the Irish Research Council for Science, Engineering and Technology (IRCSET). Since graduating with my PhD, I am a Postdoc at the University at Albany, New York, USA.

Srinivas. I chose the Masters in Biotechnology at UCC because it is a versatile degree, and I could choose my own learning pathway. During my MSc Biotechnology degree, I gained six-month research experience in the Department of Microbiology. This experience made me more competitive and enabled me to secure a PhD position in the Department of Microbiology at UCC. I graduated with my PhD in 2010, and am now employed as a Postdoc at Georgia Institute of Technology, USA.

Phanindra. It was when I entered the Masters in Biotechnology programme at UCC that I began to discover skills and interests I hadn't really expected to find in myself. From quite early on, I noticed an instinctive pull towards the business side of the whole enterprise. Since graduating, I have completed a PhD at the University of Limerick, Ireland and secured a position as Research Officer, at Teagasc, the agricultural and food development authority in Ireland.

Scholarships and Applications

University College Cork offers several Scholarships for international students: <http://www.ucc.ie/calendar/scholarship/>. There are two levels of UCC Scholarship in Biotechnology, for non-EU Postgraduate Indian students; ten scholarships to the value of €5,000 and ten scholarships to the value of €2,000 will be awarded for the purpose of payment of non-EU fees in the Masters in Biotechnology degree. All applications for taught postgraduate programmes are submitted online through <http://www.pac.ie>. Applications for entry into the programme are accepted up until the closing date for receipt of applications, 1st June.

Further Information

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Application Procedures

International Education Office
T: +353 (0)21 490 4734
E: isoffice@ucc.ie
W: <http://www.ucc.ie/en/study/international/>

Fees

Finance Office
W: <http://www.ucc.ie/en/financeoffice/fees>