

# Genetics

## BSc (Hons)

College of Science,  
Engineering and Food  
Science



University College Cork, Ireland  
Coláiste na hOllscoile Corcaigh

### Introduction

The BSc Genetics Programme aims to produce graduates who have a strong foundation in modern genetics. There is a particular emphasis on the molecular basis of the subject, but all facets of genetics are covered in the degree.

### Why Study

The BSc Genetics Programme teaches how genes work in individuals and populations. This knowledge is fundamental to all areas of biological study, as genes carry the information which largely determines what we are and how we function. There is particular emphasis on the molecular basis of genetics, but all facets are covered throughout the degree and graduates get a strong foundation in modern genetics. The final year also includes a three-month project, ten weeks of which are spent in the laboratory, during which the student receives training in the use of genetic approaches to solving a contemporary problem in Biology.

### Work Placement

While work placement is not an integrated part of the programme, the Genetics Course Team endeavour to help motivated students to find relevant summer work experience, particularly before the final year. There are also some options for undergraduate experience abroad through the ERASMUS Programme.

### Careers

The programme produces graduates with a strong foundation in modern genetics, molecular biology, and functional genomics. The practical applications of these disciplines include biotechnology, medical genetics, and forensics. Under the Research Prioritisation Exercise, the Irish Government identified many areas that draw upon genetic expertise. Irish government policy remains committed to fostering the development of indigenous biotechnology companies, which will provide further employment opportunities for genetics graduates. UCC graduates, by virtue of their broad training, will also have skills relevant for careers in the pharmaceutical industry, molecular diagnostics, medical research, science journalism, or teaching, and in genetic counseling, after further training.

## CK405

**DURATION** 4 Years

**APPROX. INTAKE** 25

**MINIMUM POINTS 2015** 455

**POINTS RANGE 2015** 455-535

**LEAVING CERTIFICATE ENTRY**

**REQUIREMENTS** HC3 in two subjects and passes in four other subjects at H or O level in the Leaving Certificate from Irish, English, Mathematics, one Laboratory Science subject (i.e. Chemistry, Physics, Biology, Physics with Chemistry (joint) or Agricultural Science) and two other subjects recognised for entry purposes.

**ADDITIONAL REQUIREMENT** HC3 in Biology (meets the Laboratory Science requirement)

**FETAC LINKS** [www.ucc.ie/en/study/undergrad/fetac/sefs](http://www.ucc.ie/en/study/undergrad/fetac/sefs)

**MATURE PLACES** 3

**COURSE PAGE ONLINE** [www.ucc.ie/en/ck405](http://www.ucc.ie/en/ck405)

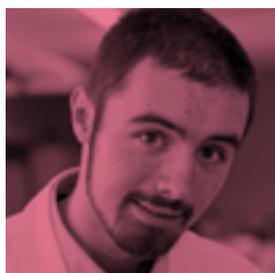
### CONTACT INFORMATION

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## TIMOTHY O'FLYNN

*"I had the opportunity to work on cutting-edge projects and be involved in new movements occurring in biology, namely iGEM and IndieBio. I plan to do a masters and eventually to teach genetics and biology at a third level."*

#uccmakeyourmark

## KEY FACTS

- multidisciplinary course team
- 3-month lab project
- small classes
- versatile multi-skilled graduates

### Further Study

Graduates of the UCC genetics programme are eligible to compete for entry into MSc and PhD programmes in Ireland and overseas, in many disciplines including biochemistry, medical genetics, microbiology, medicine, neuroscience, plant science, zoology, and ecology. Graduates will also be eligible to compete for entry to genetic counselling training programmes.

- PhD Biochemistry
- PhD Genetics
- PhD Medicine
- PhD Microbiology
- MSc Biochemistry
- MSc Biotechnology
- MSc Food Microbiology
- MSc Genetic Counselling
- MSc Microbiology
- MSc Molecular Cell Biology with Bioinnovation
- HDip Statistics
- Graduate Entry Medicine



### Year 1 Modules

**BC1001** Introduction to Biochemistry and the Biological Basis of Disease (5 credits); **BL1002** Cells, Biomolecules, Genetics and Evolution (5 credits); **BL1005** Introduction to Ecology (5 credits); **BT1001** Biotechnology (5 credits); **GN1006** Principles and Methods in Genetics (5 credits); **MA1001 & MA1002** Calculus for Science 1 & 2 (5 credits each); **MB1003** Microbiology in Society (5 credits); **CM1200** Fundamentals of Modern Chemistry Part 1 (10 credits); **PY1010** Physics for Biological and Chemical Sciences (10 credits)

### Year 2 Modules

**CORE:** Biomolecules; Principles of Metabolic Pathways; Fundamentals of Modern Chemistry; Current Perspectives in Genetics; Fundamentals of Microbiology; Principles of Microbiology; Introductory Molecular Biology; Introduction to Plant Biotechnology; Introduction to Biostatistics; Vertebrate Diversity

**ELECTIVES:** Fundamentals of Ecology; Mammalian Cell and Tissue Structure;

### Year 3 Modules

Structural Biochemistry; Cell Signalling; Molecular Biology; Principles of Medical Genetics; Bioinformatics; Literature Project on Genetics; Population and Evolutionary Genetics; Genetic Engineering and Molecular Biotechnology; Molecular Genetics and Genomics; Immunology: Host Response to Pathogens; Plant and Animal Genetics; Biostatistics

### Year 4 Modules

**CORE:** Research Project; Developmental Genetics; Genomics and Applications; Genetics and Society; Computational Biology; Eukaryotic Molecular Genetics; Molecular Biology and Physiology of Bacteria; Biostatistics

**ELECTIVES:** Programming in Python; Medical Microbiology; Advanced Medical Microbiology; Advanced Virology; Advanced Cell Biology; Cancer Biology; Advanced Immunology; Genetic Manipulation of Plants



**JILLIAN CASEY** RESEARCH ASSOCIATE  
TEMPLE STREET CHILDREN'S HOSPITAL, AND AN ASSOCIATED MEMBER OF  
THE UCD ACADEMIC CENTRE ON RARE DISEASES [BSC (GENETICS) 2007,  
PHD (MEDICAL GENETICS) 2011]

*“The research component is a great opportunity to determine whether a PhD and career in academia is for you or not. The course is detailed enough for you to identify and develop your interests, and diverse enough to allow for specialisation in a variety of areas.”*