

CK405

DURATION 4 Years

MINIMUM CAO POINTS REQUIRED 2021 543

CAO POINTS RANGE 2021 543-590

APPROXIMATE AVAILABLE PLACES 25

LEAVING CERTIFICATE ENTRY REQUIREMENTS

Minimum grade H5 in two subjects and minimum grade O6/H7 in four other subjects. Subjects must include Irish, English, Mathematics and Biology and any two other subjects recognised for entry purposes. A minimum grade H4 in Biology is required.

APPROXIMATE MATURE STUDENT PLACES 3

APPROXIMATE QQI/FE STUDENT PLACES 2

INTERNATIONAL STUDENTS

 www.ucc.ie/ugi

QQI/FE STUDENTS

 www.ucc.ie/qqi/stem

COURSE PAGE ONLINE

 www.ucc.ie/en/ck405

CONTACT INFORMATION

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GENETICS

BSc (Honours)

WHAT IS GENETICS?

Genetics is the branch of biology that deals with the inheritance of traits and attributes such as height and eye-colour. We physically resemble our biological parents or siblings because we share a common genetic heritage through the transmission of genes. Genetics is fundamental to all areas of biological study, as genes carry the information which largely determines what we are and how we function in the environment. If this sparks your imagination, then this might be the course for you. Our BSc Genetics programme will teach you to understand how these genes work in individuals and populations, and how this genetic information is passed from one generation to the next.

WHY UCC?

This is a multidisciplinary course and includes academic staff from a number of different departments in the College of Science, Engineering and Food Science (SEFS) and project supervisors from the College of Medicine and Health. This approach will consolidate your knowledge of modern genetics and open a huge number of doors across the science sector.

WHAT WILL HELP YOU?

Biology, Chemistry, Mathematics, and Physics are helpful subjects coming on to this course. You will require H4 in Biology which meets the laboratory science requirement. If you have not studied Chemistry and/or Physics for the Leaving Certificate, you need to be aware that these subjects are mandatory modules in first year.

GRADUATE PROFILE

EMMA LYONS

"I am a 2020 BSc Genetics graduate, looking forward to pursuing a career in translational research. The genetics course was very stimulating and helped me develop an understanding of the fundamentals of biochemistry, microbiology, and genetics. While my personal interest is the field of medical genetics, I was also introduced to bioinformatics and learnt more about plant, zoological, and population genetics. The final year laboratory project was an invaluable experience and left me feeling motivated and confident about making my own contribution to science in the future. I loved my time in UCC and made many friends through clubs and societies, especially the UCC Canoe Club."



COURSE STRUCTURE

Our Genetics programme places particular emphasis on the molecular basis of genetics, and our graduates will obtain a strong foundation in modern genetics. We also cover a wide range of topics such as classical medical genetics, evolutionary and population genetics, animal breeding, and the genetic manipulation of animal and plant genomes.

During first and second year you will gain fundamental background knowledge in preparation for specialisation in genetics during third and fourth year. In your final year, you will also undertake a three-month project in the laboratory, during which time you will receive training in the use of genetic approaches to solving a contemporary question or problem in biology. These projects are based in the research labs of the schools and departments that contribute to the Genetics course and include: Biochemistry and Cell Biology; Biological, Earth and Environmental Sciences (BEES); Medicine, Microbiology, and Pathology.

FIRST YEAR MODULES

All modules are 5 credits unless otherwise stated.

BC1001 Introduction to Biochemistry and the Biological Basis of Disease, **BL1002** Cells, Biomolecules, Genetics and Evolution, **BT1001** Introduction to Biotechnology, **CM1200** Fundamentals of Modern Chemistry Part 1 (10 credits), **GN1001** Principles and Methods in Genetics (10 credits), **MB1003** Microbiology in Society, **MA1001 & MA1002**, Calculus for Science Part 1 & 2, **PY1010** Physics for Biological and Chemical Sciences (10 credits).

QUESTION TIME...

IS THERE A FINAL YEAR PROJECT?

There is a three-month project, during which you receive training in the use of genetic approaches to solving a contemporary question or problem in biology. These projects are based in the departments that contribute to the Genetics degree.

FUN FACT

In 2019 one of our graduates, All-Ireland winner Shane O'Donnell, won a prestigious Fulbright Scholarship to Harvard University to continue his studies in genetics; his PhD topic is based on the interplay of food science and genetics. Shane was a second-year genetics student when he was called to play for Clare and went on to score a thirteen-minute hat-trick that helped Clare claim the Liam McCarthy cup in 2013!

WORK PLACEMENT

As a Genetics student you will have the opportunity to take an optional Microbiology Work Placement module (MB3019) in second year and a Work Placement module (BC4021) after your third-year examinations. The placement provides students with exposure to, and experience in, a professional environment relevant to their degree for a period of at least four weeks (and preferably eight weeks). Placement is directed by a workplace manager and/or academic supervisor and students submit a placement report of 1500 words.

CAREER OPPORTUNITIES

You will graduate from this course with a strong foundation in modern genetics, molecular biology, and functional genomics. The practical applications of these disciplines include: animal breeding, biotechnology, forensics, genetic counselling, and medical genetics, making you an attractive candidate for a variety of careers. This course will also equip you with the skills to pursue careers in the pharmaceutical industry, molecular diagnostics, medical research, science journalism, and teaching. Recent graduates work in a variety of jobs including: research scientist, research assistant, laboratory technician, technical writer, quality control analyst, and medical laboratory analyst. A sample of recent employers of our graduates include Anulab CUM, Biosciences Institute, Carbon Group, Covance, Eli Lilly, and Merck Millipore in Cork.

STUDY ABROAD

There are some options for students to spend part, or all, of third year abroad.

GRADUATE STUDY OPTIONS

As a graduate, you will be eligible to compete for entry into MSc and PhD programmes, in Ireland and overseas, in many disciplines including biochemistry, ecology, medical genetics, medicine, microbiology, neuroscience, plant science, and zoology. Relevant postgraduate programmes at UCC include: MSc Biochemistry, MSc Biotechnology, MSc Food Microbiology, MSc Genetic Counselling, MSc Microbiology, MSc Molecular Cell Biology & Bioinnovation. PhD programmes include: PhD Biochemistry, PhD Genetics, PhD Medicine, PhD Microbiology and the Graduate Entry Medicine programme.

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