BSC (HONS) GENETICS - CK405

Overview

NFQ Level 8, Major Award

Students entering Second Genetics from First Genetics (CK405) can proceed to a BSc (Hons) Degree in Genetics.

In exceptional cases only, and with the approval of College, students may transfer into degree programmes in Biochemistry or Microbiology - subject to the quota regulations outlined in the Biological Sciences section and subject to having the necessary points for Admission to Biological and Chemical Sciences.

Selection of Modules

Students are encouraged to consider module balance by Semester when choosing electives, and those running concurrently with the Fourth Year Project in Semester 1.

Notes

1. Students who, for special reasons, wish to take modules not specifically allowed by the regulations, must make an application to the College.
2. Individual elective modules may occasionally not be offered in some calendar years.

BSc Ordinary Degree - NFQ Level 7, Major Award

Students who pass Third Year may choose not to proceed to Fourth Year and may opt instead to be conferred with a BSc Ordinary Degree (https://ucc-ie-public.courseleaf.com/programmes/bscpas/).

Programme Requirements

For information about modules, module choice, options and credit weightings, please go to Programme Requirements (p. 1).

Programme Requirements

Code	Title	Credits
Year 1		
Students take **60** credits as follows:		
Core Modules		
BC1001	Introduction to Biochemistry and the Biological Basis of Disease	5
BL1002	Cells, Biomolecules, Genetics and Evolution	5
BT1001	Introduction to Biotechnology	5
CM1200	Fundamentals of Modern Chemistry Part 1	10
GN1001	Principles and Methods in Genetics	10
MB1003	Microbiology in Society	5
MA1001	Calculus for Science Part 1	5
MA1002	Calculus for Science Part 2	5
PY1010	Physics for Biological and Chemical Sciences	10
Year 2		
Students take **60** credits as follows - all listed core modules (**55** credits) and **5** credits of elective modules:		
Core Modules		
Biochemistry		
BC2001	Biomolecules	5
BC2002	Principles of Metabolic Pathways	5
Chemistry		
CM2201	Fundamentals of Modern Chemistry Part 2b	10
Genetics		
GN2001	Current Perspectives in Genetics	5
Microbiology		
MB2005	Fundamentals of Microbiology	5
MB2006	Principles of Microbiology	5
Molecular Biology		
ML2001	Introductory Molecular Biology	5
Plant Science		
PS2001	Introduction to Plant Biotechnology	5
Statistics		
ST2001	Introduction to Biostatistics	5
Zoology		
ZY2000	Vertebrate Diversity	5
Elective Modules		
Students take modules to the value of **5** credits from the following:		5
Anatomy/Neuroscience		
AN2020	Introduction to Neuroscience, the Brain and Behaviour (5)	
Plant Science		
PS2002	Ecological Plant Physiology (5)	
Year 3		
Students take **60** credits as follows:		
Core Modules		
Biochemistry		
BC3001	Structural and Experimental Biochemistry	5
BC3004	Cell Signalling	5
BC3006	Molecular Biology	5
BC3007	Principles of Medical Genetics	5
BC3010	Bioinformatics	5
Plant Science		
PS4006	Genetic Manipulation of Plants	5
Genetics		
GN3002	Literature Project on Genetics	5
GN3003	Population and Evolutionary Genetics	5
Microbiology		
MB3006	Genetic Engineering and Molecular Biotechnology	5
MB3007	Molecular Genetics and Genomics	5
MB3008	Immunology: Host Response to Pathogens.	5
Statistics		
ST3001	Biostatistics I	5
Year 4 [1]		
Students take **60** credits as follows - all listed core modules (**35** credits), a Research Project (**15** credits) and **10** credits of elective modules:		
Core Modules		
Biochemistry		
BC4009	Cancer Biology	5
Genetics		
GN4001	Developmental Genetics	5

GN4003	Genomics and Applications	5
GN4004	Genetics and Society	5
Microbiology		
MB4019	Computational Biology	5
MB4025	Eukaryotic Molecular Genetics	5
Statistics		
ST4001	Biostatistics II	5
Research Project		
GN4002	Research Project	15
Elective Modules		
Students take modules to the value of **10** credits from the following:		10
Molecular Microbiology		
MB3001	Medical Microbiology (5)	
MB4030	Advanced Medical Microbiology and Immunology (5)	
MB4031	Advanced Virology and Antiviral Immunity (5)	
Molecular Oncology		
BC4001	Advanced Cell Biology (5)	
Total Credits		**240**

[1] **Note:** Specialisation in specific areas is possible.

Examinations

Full details and regulations governing Examinations for each programme will be contained in the *Marks and Standards Book* and for each module in the *Book of Modules*.

Programme Learning Outcomes

Programme Learning Outcomes for BSc in Genetics (NFQ Level 8, Major Award)

On successful completion of this programme, students should be able to:

- Apply the principals of Mendelian and non-Mendelian inheritance patterns to rationalize the patterns of gene flow and gene expression in microbes, plants and animals;
- Explain the phenotype conferred by a given gene in the context of cell and organismal biology, and gene-environment interaction;
- Apply knowledge of cellular and molecular genetics to develop concepts and solutions to problems and processes in biotechnology;
- Analyze and predict patterns of gene distribution in populations, and identify factors which affect the frequency of alleles;
- Explain how genes may be located, identified and characterized by genetic mapping and functional genomics, and identify appropriate practical and bioinformatic approaches;
- Analyze and summarize primary data and literature reports in biology and genetics, and communicate findings effectively verbally and in writing;
- Develop an hypothesis to answer a practical question in genetics, and apply theoretical and practical approaches to test the hypothesis.