BSC (HONOURS) IN **COMPUTING**

Duration:
Four Years
Full-Time

CAO Code:
NC003

CAO Points Guide:*
270

NFQ Level:
Level 8

SUSI

*For each course we have given a guideline based on our points over the past three years. This is a guide only, points vary each year.

About the Course

NCI's innovative BSc (Honours) in Computing will provide you with programming and advanced problem-solving skills, to create software applications that solve real-world problems. This exciting course will expose you to areas like games programming, software development, cybersecurity, Networking & Cloud Infrastructure, AI & Machine Learning and digital business transformation.

The course is industry-focused with options for students to gain real world experience through Service Learning, Work Placement or International Exchange (Erasmus) for work or study in the third year. NCI students are highly sought after and complete their work experience in companies such as Microsoft, O2, ESB, Wells Fargo, Dotmobi, Datalex and Intel.

Graduates of this course can create software applications on mobile devices, in the cloud, on the web and in gaming, using the latest technologies; understand how to incorporate multimedia into software applications; can analyse and interpret data to address real business problems; understand the cloud computing paradigm and its implications for software, infrastructure and platforms; and can secure software applications from malware and hacking.

Who is the course for?

This full-time computing course will appeal to students interested in the possibilities created by information and communications technology. The course is for school leavers, mature students and graduates of QQI level 5/6 programmes who wish to embark on a course of full-time study.

Career Prospects

Graduates of this course can perform a number of roles, including software developer, mobile application developer, IT support, project engineer, security analyst and games developer. Previous employers have included Microsoft, Lionbridge, Hewlett Packard, KPMG, Tapadoo, Arvato, Salesforce, Facebook and Vivendi Games. This

course is also suitable for those who wish to pursue a career in teaching as it is recognised by the Teaching Council to teach computing.

Course Structure and Award

This undergraduate course is a four-year honours degree. The course is run over eight semesters with continuous assessments held throughout the course and examinations at the end of each semester. On completion, you will receive a QQI BSc (Honours) Degree in Computing at level 8 on the National Framework of Qualifications. The course also prepares students for industry-recognised certification in leading technologies.

Further Study Options

Upon successful completion of the BSc (Honours) in Computing, graduates can progress to postgraduate courses at level 9 on the National Framework of Qualifications such as the MSc in Cloud Computing, MSc in Cybersecurity, MSc in Data Analytics, MSc in Open Data Practice, MSc in Fintech or the MSc in Artificial Intelligence at NCI.

Course Fees

This course qualifies under the Free Fees Initiative and Student Grant Scheme.

Admission Requirements and Policies

Minimum entry requirements are a grade H5 or above in two higher level subjects together with a minimum of O6/H7 in four other subjects. A minimum of grade O6/H7 must be obtained in English or Irish. A grade O6/H7 must be obtained in Mathematics. Applicants from a PLC/further education course must have a full level 5/6 award, three distinctions and meet the CAO points requirement. Applicants who have successfully completed the QQI Level 6 Software Development (6M0691) or QQI Level 6 Networking Technologies (6M0695) courses may be eligible for advanced entry to year 2 of this programme. Further details are available on the NCI website. Mature applicants, applicants with a disability or those applying through the DARE or HEAR access schemes should refer to our Admissions section on p56, which also includes our admission policies, including laptop requirements.

"Computing is not always easy, but it encompasses a broad range of topics and allows for an amazing amount of freedom and encourages outside the box thinking."

James McGrath
BSc Hons in Computing

Graduates have worked in organisations like **Microsoft, Lionbridge, Hewlett Packard, KPMG, Tapadoo, Realex Payments, Opennet, Leaseplan, Arvato, Salesforce, Facebook and Vivendi Games.**

COURSE CONTENT

Year 1

Semester 1
- Discrete Mathematics
- Introduction to Data Science & AI
- Computational Thinking
- Programming Concepts
- Web Design & Development

Semester 2
- Computer Architecture
- Operating Systems
- Introduction to Data Modelling & Databases
- The Computing Industry
- Introduction to Programming

Year 2

Semester 1
- Data Communications & Networking
- Advanced Databases
- Data Programming
- Object Oriented Programming
- Web Application Development

Semester 2
- Innovation & Business Entrepreneurship
- Software engineering
- Software Quality & Testing
- Team Project
- Data Structures & Algorithms

Year 3

Semester 1
- Security Fundamentals & Development
- Advanced Computer Networks

Choose one of the following elective groups:

- **Technical Electives***
  - Artificial Intelligence
  - Advanced Programming
- **Business Computing Electives****
  - Business & AI
  - Project Management
- **Networking Electives*****
  - Artificial Intelligence
  - System Administration & Virtualisation

* Students who complete the Technical electives may choose to progress to one of the following specialisations: Software Development, AI & ML, Cybersecurity or Games Programming.

**Students who complete the Business Computing electives will progress into the Digital Business Transformation specialisation.

***Students who complete the Networking Electives will progress to the Networking and Cloud Infrastructure specialisation.

Semester 2

Students will choose one of the following options:
- Work Placement
- Academic Internship
- Service Learning
- International Exchange

Year 4 - Choose a Specialisation

Year 4

Games Programming

Semester 1
- Final Year Project (year-long module)
- Governance, Ethics, Security & Sustainability
- Cloud Application Development
- Game Systems

Semester 2
- Mixed Reality
- Games Programming
- Metaverse
- Final Year Project

Year 4

Cybersecurity

Semester 1
- Final Year Project (year-long module)
- Governance, Ethics, Security & Sustainability
- Cloud Application Development
- Secure Application Programming

Semester 2
- Penetration Testing
- Digital Forensics
- DevOpsSec
- Final Year Project

Year 4

Digital Business Transformation

Semester 1
- Final Year Project (year-long module)
- Governance, Ethics, Security & Sustainability
- Cloud Application Development
- Business Analysis

Semester 2
- Digital Transformation
- Strategic Management
- Business Process Automation
- Final Year Project

Year 4

Software Development

Semester 1
- Final Year Project (year-long module)
- Governance, Ethics, Security & Sustainability
- Cloud Application Development
- Secure Application Programming

Semester 2
- IoT Fundamentals & Development
- DevOpsSec
- Blockchain
- Final Year Project

Year 4

AI/Machine Learning

Semester 1
- Final Year Project (year-long module)
- Governance, Ethics, Security & Sustainability
- Cloud Application Development
- Statistics & Machine Learning

Semester 2
- Applied Deep Learning
- AI & Sustainability
- Data Application Development
- Final Year Project

Year 4

Networking & Cloud Infrastructure

Semester 1
- Final Year Project (year-long module)
- Governance, Ethics, Security & Sustainability
- Cloud Application Development
- Cloud Scale Infrastructure

Semester 2
- Software Defined Networks
- DevOpsSec
- Cloud Security
- Final Year Project

* Electives and specialisations may include prerequisites, are subject to change, and availability is subject to class sizes.