

BSC (HONOURS) IN COMPUTING



Duration: CAO Points 2021:

Four Years
Full-Time 271

NFQ Level: CAO Code

Level 8 NC003

With specialisations in:

1. Games Programming
2. Software Development
3. Cybersecurity
4. Blockchain
5. Artificial Intelligence/Machine Learning/Data Analytics
6. Internet of Things
7. Digital Business Transformation

About the Course

The work of the Software Engineer is visible in our smartphones, our business services, the internet and every aspect of our lives. This growing influence is also obvious in the jobs market. IT professionals are in extremely high demand with a skills shortage in the Information and Communications Technology (ICT) area. This honours degree will equip you with the knowledge and skills to take advantage of this opportunity.

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, blockchain, artificial intelligence/machine learning/data analytics, internet of things, digital business transformation. In addition, you will learn how to apply software engineering principles to develop software applications that may be deployed in the web and on mobile devices. You will also develop your problem solving, teamwork, creativity and communication skills.

Our comprehensive full-time degree will give you all the essentials of computing to provide you with the opportunity of specialising in your chosen area in your final year. You will choose modules from one of seven important areas of computer science. These specialist modules will allow you to pursue the area which most interests you and will give you a significant advantage in the jobs market. The course is delivered in state-of-the-art computer laboratories by lecturers who are working in these fields. It is practical in nature throughout and includes a full semester of work experience.

As a graduate of this course you will:

- 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.
- Analyse and interpret data to address real business problems.
- Develop your business and interpersonal skills.
- Understand the cloud computing paradigm and its implications for software, infrastructure and platforms.
- Understand how to secure software applications from malware and hacking.

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.

Work Experience

The course is industry-focused with a six-month work placement 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.

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 Cybersecurity, MSc in Cloud Computing, MSc in Data Analytics or the MSc in Fintech at National College of Ireland.

Career Prospects

On completion of the BSc (Honours) in Computing, graduates can join high-tech multinationals, tech start-ups, financial services and consultancy organisations. Graduates have worked in organisations like Microsoft, Lionbridge, Hewlett Packard, KPMG, Tapadoo, Realex Payments, Opennet, Leaseplan, Arvato, Salesforce, Facebook and Vivendi Games.

Typical roles include software developer, mobile application developer, IT support, project engineer, security analyst and games developer.

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

Who is the course for?

This full-time computing course will appeal to students who wish to consider 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.

Laptop Requirements

NCI strongly advises that all students should have access to a suitable laptop for their course. A student laptop loan scheme may be available for certain eligible students. Details of the laptop loan scheme and laptop specifications, which can be different for each course, are available on our website.



Minimum Entry Requirements

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 Mathematics and in either English or Irish. Mature applicants, applicants with a disability or those applying through the DARE or HEAR access schemes should consult pages 70 and 71.

Course Fees

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

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

A GUIDE TO COURSE CONTENT

Year 1

Semester 1

- Discrete Mathematics
- Problem Solving and Programming
- Web Design and Development
- The Computing Industry
- Computational Thinking

Semester 2

- Computer Architecture
- Introduction to Programming
- Digital Multimedia
- Introduction to Data Modelling and Databases
- Operating Systems

Year 2

Semester 1

- Data Communications and Networking
- Object Oriented Programming
- Web Application Development
- Advanced Databases

Semester 2

- Innovation and Business Entrepreneurship
- Data Structures & Algorithms
- Team Project
- Software Engineering
- Software Quality and Testing

Year 3

Semester 1

- Security Fundamentals and Development
- Advanced Computer Networking
- Artificial Intelligence Elective
 - Introduction to Artificial Intelligence and Machine Learning
 - Or
 - Business and Artificial Intelligence
- Technical Elective*
 - Advanced Programming
- Business Elective**
 - Project Management

Semester 2

Work Placement

Full six months within an organisation
OR
Academic Internship

Year 4 - Choose a Specialisation

Year 4

Games Programming*

Semester 1

- Software Project
- IT Governance, Security and Ethics
- Cloud Application Development
- Game Systems

Semester 2

- Software Project
- Mixed Reality
- Games Programming

Year 4

Software Development *

Semester 1

- Software Project
- IT Governance, Security and Ethics
- Cloud Application Development
- IoT Fundamentals and Development

Semester 2

- Software Project
- Secure Application Programming
- DevOpsSec

Year 4

Cybersecurity*

Semester 1

- Software Project
- IT Governance, Security and Ethics
- Cloud Application Development
- Secure Application Programming

Semester 2

- Software Project
- Penetration Testing
- Digital Forensics

Year 4

Blockchain*

Semester 1

- Software Project
- IT Governance, Security and Ethics
- Cloud Application Development
- Blockchain Foundations

Semester 2

- Software Project
- Blockchain Application Development I
- Blockchain Application Development II

Year 4

Artificial Intelligence/Machine Learning/Data Analytics*

Semester 1

- Software Project
- IT Governance, Security and Ethics
- Cloud Application Development
- Artificial Intelligence

Semester 2

- Software Project
- Data Application Development
- Machine Learning

Year 4

Digital Business Transformation**

Semester 1

- Software Project
- IT Governance, Security and Ethics
- Cloud Application Development
- Business Analysis

Semester 2

- Software Project
- Digital Transformation
- Strategic Management

Year 4

Internet of Things*

Semester 1

- Software Project
- IT Governance, Security and Ethics
- Cloud Application Development
- IoT Fundamentals and Development

Semester 2

- Software Project
- Data Mining and Visualisation Principles
- IoT Application Development

*Students that complete the technical elective will go on to the 4th year specialisation in Games Programming, Software Development, Cybersecurity, Blockchain, Artificial Intelligence/Machine Learning/Data Analytics and Internet of Things.

**Students that complete the business elective will go on to the 4th year specialisation in Digital Business Transformation.