HIGHER DIPLOMA IN

# SCIENCE IN COMPUTING (with specialisations)

## Factfile

**Location**
IFSC Campus

**Application**
Apply online at
www.ncirl.ie

**Start Date**
Sept 2020

**Fees**
€4,500
(Fees revised annually)

**Part-time Schedule**

**Classroom Schedule**

**Indicative Schedule**
Three evenings per week
18.00 - 22.00 and a number
of Saturdays 09.00 - 18.00

**Duration**
This course is 3 semesters
delivered over 1 calendar
year

**Online Schedule**

**Indicative Schedule**
Three evenings per week
18.00 - 22.00 and a number
of Saturdays 09.00 - 18.00

**Duration**
This course is 4 semesters
delivered over 2 calendar
years


## Course Description

The course teaches students the computing fundamentals, complemented with detailed knowledge, problem-solving and specialised technical skills required for analysing, designing and developing technical software solutions. The course offers specialisations in the second semester to choose from. The stream element is a focused set of modules to bring the learners quickly to the industry entry standard for the chosen specialisation.

The streams/specialisations (subject to availability) are: Software Development, Cloud Computing, Internet of Things, Cybersecurity, Artificial Intelligence and Machine Learning, Blockchain, and Web Development.

The **Software Development** stream provides learners detailed knowledge, problem-solving and technical skills in the area of software development using a modern programming language, such as Java, and application development framework(s).

The **Cloud Computing** stream provides learners a rigorous yet highly practical education in core technical topics of cloud computing including Software as a Service (SaaS) and DevOpsSec.

The **Internet of Things** stream provides learners a through pathway from IoT novice to a graduate who can take up a key position in this rapidly expanding area. Learners will be imparted firm foundation knowledge of the technology which underlies the IoT and it is augmented by highly practical project development and implementation.

The **Cybersecurity** stream provides detailed knowledge, problem-solving and specialised technical skills required for application security development, forensics investigation, application/service vulnerability detection and incident detection.

The **Artificial Intelligence and Machine Learning** stream provides learners an understanding and application development of AI-powered products by leveraging expertise in machine learning and computational methods.

The **Blockchain** stream explores the development of blockchain applications and their implications in other fields by providing a practical understanding of blockchain application development, blockchain foundations and distributed ledger systems.

The **Web Development** stream provides learners technical and development skills in core topics of web programming covering topics such as advanced client side development, cloud application development and DevOpsSec.

## Who is the course for?

This course will appeal to graduates with a level 8 degree from different backgrounds who would wish to change their non-ICT qualification into the computer science field through a level 8 award in computing.
It will also appeal to technical and non-technical professionals who would like to upgrade their skills in one of the specialisations provided by this course, helping them to progress faster in their employment or to apply the knowledge in their current role.

## Award and Progression

The Higher Diploma in Science in Computing is awarded by QQI at level 8 on the National Framework of Qualifications (NFQ). Students who successfully complete this course may be eligible to progress to a major award at level 9 on the NFQ.

As graduates from other disciplines and with work experience, learners will have life skills and experiences that they bring with them on to the programme and into a new subject domain. Therefore, they are eligible for a number of roles. They could work in positions that are in- line with their skills but in the ICT sector, or apply ICT knowledge gained through this programme to their current role.

Graduates may also avail of entry-level ICT-related positions, depending on the selected stream, such as software developer; cloud application developer; cloud solutions architect; DevOps engineer; application developer; IoT software developer; entry-level cybersecurity engineer; cybersecurity tester; computer forensics examiner; software tester; technical data analyst; front-end developer, web developer.

## Entry Requirements

A level 8 degree or its equivalent in a non-cognate discipline. Non-standard applications will be also considered on an individual basis. The college operates a Recognition of Prior Experiential Learning (RPEL) scheme meaning applicants who do not meet the normal academic requirements may be considered based on extensive relevant work and other experience. This may be assessed using a portfolio of learning, demonstration of work produced, and interview.

## Assessment

The course will be assessed with a blend of continuous assessments and/or project work and exams. This varies between modules but typically assessment is split 50:50 or 60:40 between continuous assessment and/or project and exam. Please note that in some instances exams may take place in the daytime and at weekends.

# COURSE CONTENT

**Semester 1**
- Software Development
- Object Oriented Software Engineering
- Introduction to Databases
- Web Design and Client Side Scripting

**Semester 2**
- Computer Architecture Operating Systems and Networks
- Domain Skills for Computing (Elective) (subject to being offered)

AND Choose one of the streams laid out below:

**Software Development Stream**
- Data Structures
- Algorithms and Advanced Programming
- Distributed Systems

**Cloud Computing Stream**
- Cloud Application Development
- Edge and Fog Computing
- DevOpsSec

**Internet of Things Stream**
- IoT Fundamentals and Development
- IoT Application Development
- Fundamentals of Mobile Communication

**Cybersecurity Stream**
- Security Principles and Secure Programming
- Network and Web Penetration Testing
- Digital Forensics

**AI/ML Stream**
- Artificial Intelligence
- Machine Learning Fundamentals
- Statistics

**Blockchain Stream**
- Blockchain Foundations
- Blockchain Application Development
- Distributed Systems

**Web Development Stream**
- Cloud Application Development
- Advanced Client Side Development
- DevOpsSec

**Semester 3**
- Project

**Note:** The prospective students are required to specify the specialisation they would like to follow when they apply for a place within the Higher Diploma in Science in Computing programme.

**Note:** streams/specialisations will run subject to student numbers.