DEPARTMENT OF COMPUTING

With over 100,000 people employed in ICT, Ireland is currently the world's largest exporter of computer software with unparalleled employment prospects so there are excellent career opportunities in the dynamic computer industry both at home and abroad. Indeed an ongoing shortage of computing graduates is probably the main challenge for ICT employers in Ireland and internationally. This department covers all aspects of computing from programming to games design, data analytics, computer security and digital forensics and its graduates have a fantastic employment track-record.

Contact Us

Department Administration Telephone: (074) 918 6306

Head of Department: Thomas Dowling

Telephone: (074) 918 6304

Email: thomas.dowling@lyit.ie

CAO Course Listing

CAO Code	CAO Course Title
LY708	Bachelor of Science (Hons) in Computing in Applied Computing
LY738	Bachelor of Science (Hons) in Data Science and Artificial Intelligence
LY748	Bachelor of Science (Hons) in Computer Science
LY707	Bachelor of Science in Computing with Computer Games Development
LY717	Bachelor of Science in Computing
LY737	Bachelor of Science in Computing with Computer Security & Digital Forensics

Applied Computing

Bachelor of Science (Hons) in Computing in Applied Computing

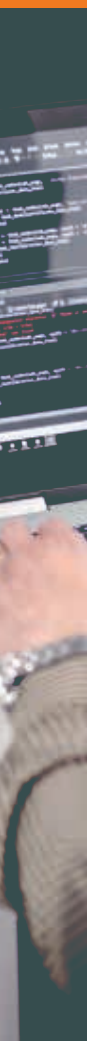
National Framework: Level 8
CAO Code: LY708
Duration: 4 years
Number of Places: 24
Reserved Quota: 10 - QQI FET Applicants

Points in Recent Years:

Year	Final	Median
2018	307	371
2019	300	348

Minimum Entry Requirements:

Minimum Six O6/H7
Maths O6/H7
English or Irish O6/H7
At least two H5



Is this course for you?

This level 8 programme is designed to give the graduate experience of a wide range of fundamental computing skills, from computer programming where you will learn to give the computer instructions to tell it what you want it to do, to computer architecture where you will learn how to install and maintain computers. In addition it will develop the students' knowledge in later years to give them a strong set of management skills required to work in and manage modern ICT organisations. All students will complete a major project which may be industry related. There is also an option to spend a semester studying in one of our partner universities in Europe or China.

Career opportunities

Successful graduates find themselves working in the following sectors:

- Software Development Houses
- Banks and Insurance Companies
- All areas of medicine, transport, education etc.

Graduate careers typically include:

- Software Developer / Programmer
- Data Analyst / Scientist
- Mobile App Developer

What will I study?

	Semester 1	Credits	Semester 2	Credits
Year 1	Computer Architecture and Operating Systems 1 (M)	5	Computer Architecture and Operating Systems 2 (M)	5
	Mathematics for Computing 1 (M)	5	Mathematics for Computing 2 (M)	5
	Introduction to Programming (M)	10	Introduction to Object Oriented Programming (M)	10
	Personal and Professional Development (M)	5	Problem Solving with Robots (M)	5
	Web Fundamentals (M)	5	Introduction to Cloud & Mobile Technologies (M)	5
Year 2	Relational Databases (M)	5	API Programming (M)	5
	Network Fundamentals (M)	5	Algorithms and Data Structures (M)	5
	Object Oriented Programming 2 (M)	10	SQL Programming (M)	5
	Interaction Design (M)	5	Network Services (M)	5
	Server Side Scripting (M)	5	Commercial Programming 1 (M)	5
			Client Side Scripting (M)	5
Year 3	Software Implementation (M)	5	Secure Programming (M)	5
	Object Oriented Systems Analysis & Design (M)	5	Project Management (M)	5
	Academic & Technical Writing Skills (M)	5	Data Analytics (M)	5
	Integrated Infrastructure (M)	5	Team Project (M)	5
	Commercial Programming 2 (M)	5	Universal Application Development 1 (M)	5
	Client Side Application Development (M)	5	Server Side Application Development (M)	5
	International Placement (E)*	30		
Year 4	Advanced Algorithms & Data Structures (E)	5	UX Design (M)	5
	DevOps (E)	5	Legal, Ethical & Social Issues in Computing (M)	5
	Software Engineering (M)	5	Development Project (M)	10
	Research in Computing with Emerging Technologies (M)	10	Digital Marketing (M)	5
	Universal Application Development 2 (M)	5	Plugin & REST API Development (M)	5
	Website Development (M)	5		

(M) = Mandatory, (E) = Elective

Note: Students may also do a summer work placement at an appropriate stage of the course to receive an additional award of a Certificate in Industry Studies.

* In year 3, Semester 1 students choosing the International Placement Elective may choose to study in one of our international partner universities. Students choosing this option can apply for financial assistance to study in Europe or China.

Follow-on courses

Graduates who wish to diversify their skills into other areas or who wish to specialise further in their chosen field may go on to do a full range of taught Masters programmes (see prospectus) and Research programmes such as Level 9 (MSc) and Level 10 (Doctoral) studies at Letterkenny Institute of Technology and other institutions and universities at home and abroad.

Data Science

Bachelor of Science (Hons) in Data Science and Artificial Intelligence

National Framework: Level 8
CAO Code: LY738
Duration: 4 years
Number of Places: 24 NEW WP
Reserved Quota:
5 - Mature Applicants
5 - QQI FET Applicants
5 - Internal Progression from Access Studies

Is this course for you?

This four year Honours degree programme encompasses a year-long placement in year 3. Students will discover the world of Data Science, also known as Big Data Analytics. This is the process of examining large amounts of data of a variety of types (big data) to uncover hidden patterns, unknown correlations and other useful information. Such information can provide competitive advantages over rival organisations and result in business benefits, such as more effective marketing and increased revenue. Data Science has in turn been the big enabler for the expansion of Artificial Intelligence (AI) as a truly mass-market technology. AI relies on the patterns found in data to make decisions. The bigger and better the quality of the data the better the decisions the AI makes.

Career opportunities

Successful graduates find themselves working in the following sectors:

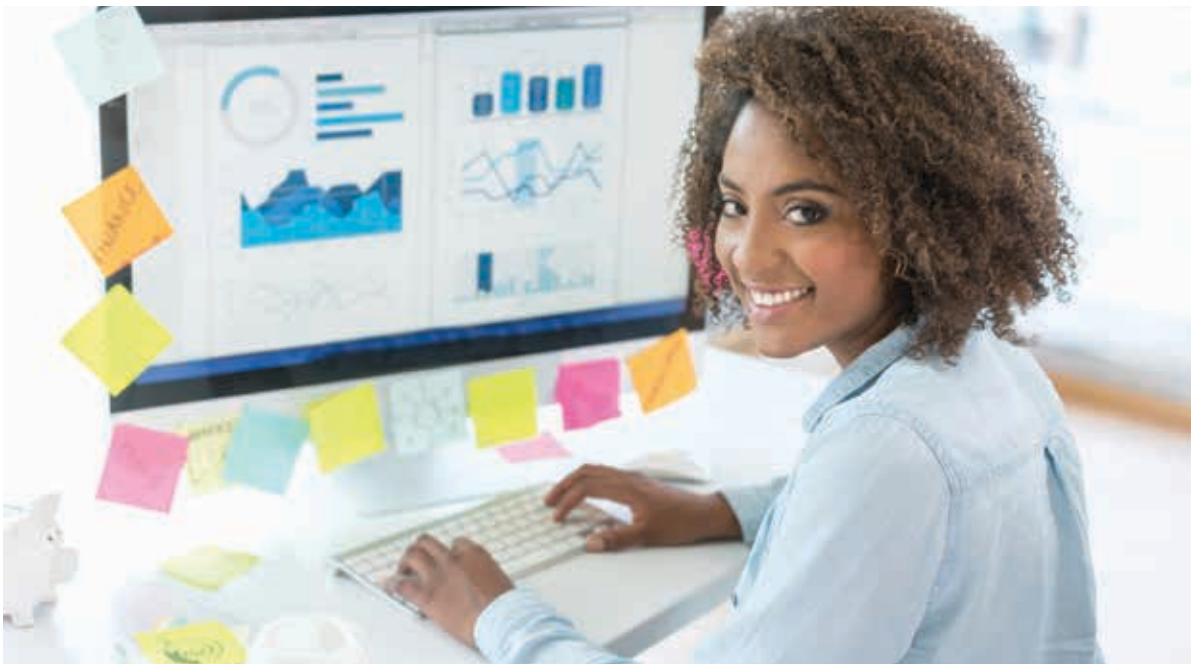
- Software Houses
- Financial Services
- Health Care
- Research Centers

Graduate careers typically include:

- Data Analyst
- Machine Learning Engineer
- Artificial Intelligence Manager
- Data Storage & Security Manager
- Programmer
- System Designer
- Project Manager
- Data Storage Manager

Minimum Entry Requirements:

Minimum Six O6/H7
Maths O4/H7
English or Irish O6/H7
At least two H5



What will I study?

	Semester 1	Credits	Semester 2	Credits
Year 1	Introduction To Data Science (M)	5	Relational Databases (M)	5
	Personal and Professional Development (M)	5	Introduction to Object Oriented Programming (M)	10
	Introduction to Programming (M)	10	Mathematics and Statistics (M)	10
	Computer Architecture and Operating Systems 1 (M)	5	Computer Architecture and Operating Systems 2 (M)	5
	Mathematics for Computing 1 (M)	5		
Year 2	SQL Programming (M)	5	Data Warehousing for Business Analytics (M)	5
	Network Fundamentals (M)	5	Algorithms & Data Structures (M)	5
	Object Oriented Analysis and Design (M)	5	Machine Learning (M)	10
	Object Oriented Programming 2 (M)	10	Big Data Architecture (M)	10
	Scripting (Python) (M)	5		
Year 3	Placement (Year Long) (M)	40	Placement (Year Long) (M)	40
	Data Ethics and Governance (Online) (M)	5	Reporting and Visualisation (Online) (M)	5
	Project Management (Online) (M)	5	Academic and Technical Writing Skills (Online) (M)	5
Year 4	Software Engineering (M)	5	Legal, Ethical & Social Issues in Computing (M)	5
	Natural Language Processing (M)	10	Computer Vision (M)	10
	Research in Computing with Emerging Technologies (M)	10	Project Development (M)	10
	Applied Data Analytics (M)	5	Predictive Modelling (M)	5

(M) = Mandatory

Follow-on courses

Graduates who wish to diversify their skills into other areas or who wish to specialise further in their chosen field may go on to do a full range of taught Masters programmes (see prospectus) and Research programmes such as Level 9 (MSc) and Level 10 (Doctoral) studies at Letterkenny Institute of Technology and other institutions and universities at home and abroad.

Computer Science

Bachelor of Science (Hons) in Computer Science

National Framework:	Level 8
CAO Code:	LY748
Duration:	3 years
Reserved Quota:	10 - QQI FET Applicants
Number of Places:	24 NEW

Is this course for you?

This three year Honours degree programme is designed for students who have completed the Leaving Certificate Computer Science subject (with an O4 or H6) or a GCE in Computing (or equivalent e.g. BTech in Computing) in addition to the normal entry requirement for a level-8 course. Certain other equivalent qualifications such as a QQI FET Level 5 award in Computing will also be considered. The opportunity to deliver the course in 3 years is based on the ability of students, who already have a background in computing, to "get up to speed" quickly on the core curriculum and rapidly progress to more advanced topics. In addition to the opportunity to get an Honours degree in 3-years students may also choose to do a specialised MSc in the 4th year of study.

This is a broad-based computing course which covers a full range of core topics including programming, databases, networking, machine learning and AI and data science apps. The graduate opportunities are superb.

Career opportunities

Successful graduates find themselves working in the following sectors:

- Finance Companies of all types
- Health Care Providers
- Research Centres
- Media Companies
- Software Companies
- Security Companies

Graduate careers typically include:

- Programmer
- Systems Designer
- Storage and Security Manager
- Project Manager
- Data Analyst
- Data Storage Manager
- Database Administrator
- IT Consultant
- IT Manager
- Systems Developer
- Artificial Intelligence Manager
- Systems Administrator
- Machine Learning Engineer
- Software Analyst

Minimum Entry Requirements:

Minimum Six O6/H7
Maths O4/H7
English or Irish O6/H7
At least two H5
Computer Science 04/H6

What will I study?

	Semester 1	Credits	Semester 2	Credits
Year 1	Operating Systems (M)	5	IT Infrastructure (M)	5
	Object Oriented Programming (M)	10	Algorithmic Programming (M)	10
	Social and Digital Communications (M)	10	Database Technology (M)	5
	Mathematics & Computer Science 1 (M)	5	Cloud & Mobile Technologies (M)	5
Year 2	Advanced IT Infrastructure (M)	5	Cybersecurity (M)	5
	Academic & Technical Writing Skills (M)	5	Team Project (M)	5
	Software Implementation (M)	5	Secure Programming (M)	5
	Object Oriented Systems Analysis and Design (M)	5	Project Management (M)	5
	AI & Machine Learning (M)	5	Data Analytics (M)	5
	Scripting (M)	5	Server-Side Scripting (M)	5
Year 3	DevOps (M)	5	Legal, Ethical & Social Issues in Computing (M)	5
	Research in Computing with Emerging Technologies (M)	10	Project Development (M)	10
	Software Engineering (M)	5	UX Design (M)	5
	Data Science 1 (M)	5	Data Science 2 (M)	5
	Client-Side Scripting (M)	5	Computer Science (M)	5

(M) = Mandatory

Follow-on courses

Graduates who wish to diversify their skills into other areas or who wish to specialise further in their chosen field may go on to do a full range of taught Masters programmes (see prospectus) and Research programmes such as Level 9 (MSc) and Level 10 (Doctoral) studies at Letterkenny Institute of Technology and other institutions and universities at home and abroad.

Computer Games Development

Bachelor of Science in Computing with Computer Games Development

National Framework: Level 7
CAO Code: LY707
Duration: 3 years
Number of Places: 24
Reserved Quota: 10 - QQI FET Applicants

Points in Recent Years:

Year	Final	Median
2018	198	289
2019	234	351

Is this course for you?

Do you play computer games? Ever thought about creating your own? This course has been developed with the help of computer games companies. It covers key skills, methods and techniques used in the development of computer games. Our aim is to provide tomorrow's game developers for this growing sector of the Irish economy. The global computer games industry is an area with enormous potential for development. Worldwide, the value of the computer games industry is in excess of €85 billion. Although the Computer Games industry in Ireland is still quite young, it is growing fast and this course has been developed with your future in mind.

Career opportunities

Successful graduates find themselves working in the following sectors:

- Game Companies
- Mobile Apps Development Companies
- Software Houses

Graduate careers typically include:

- Game Developer
- Mobile Apps Developer
- Computer Programmer

Minimum Entry Requirements:

Minimum Points Score 160
Minimum Five O6/H7
Maths F2/O6/H7
English or Irish O6/H7

What will I study?

	Semester 1	Credits	Semester 2	Credits
Year 1	Introduction to Programming (M)	10	Introduction to Object Oriented Programming (M)	10
	Personal & Professional Development (M)	5	Introduction to Computer Games (M)	10
	Mathematics for Computing 1 (M)	5	Mathematics for Computer Games (M)	5
	Web Fundamentals (M)	5	Computer Architecture & Operating Systems 2 (M)	5
	Computer Architecture & Operating Systems 1 (M)	5		
Year 2	Object Oriented Programming 2 (M)	10	API Programming (M)	5
	Relational Databases (M)	5	Algorithms & Data Structures (M)	5
	Network Fundamentals (M)	5	SQL Programming (M)	5
	Introduction to Games Engines (M)	5	2D Game Environments (M)	10
	Games Design Workshop Narrative & Story (M)	5	Games Design Workshop Board Games (M)	5
Year 3	Object Orientated Systems Analysis & Design (M)	5	Secure Programming (M)	5
	3D Modelling for Games (M)	5	Project Management (M)	5
	Software Implementation (M)	5	Data Analytics (M)	5
	3D Games Environments (M)	10	Team Project (M)	5
			3D Maths & Physics for Games (M)	5
	Academic & Technical Writing Skills (M)	5	3D Texturing & Animation for Games (M)	5

(M) = Mandatory

Note: Students may also do a summer work placement at an appropriate stage of the course to receive an additional award of a Certificate in Industry Studies.

Add-on Level 8 Course

Bachelor of Science (Hons) in Computing with Computer Games Development

What will I study?

	Semester 1	Credits	Semester 2	Credits
Year 4	Software Engineering (M)	5	Mobile Games (M)	5
	Research in Computing with Emerging Technologies (M)	10	Advanced Game Design (M)	5
	Advanced Algorithms & Data Structures (E)	5	Legal, Ethical & Social Issues in Computing (M)	5
	DevOps (E)	5	Development Project (M)	10
	Advanced Games Programming (M)	5		
	Game Design for the Mobile Context (M)	5	Extended Middleware Applications (M)	5

(M) = Mandatory, (E) = Elective

Follow-on courses

Graduates who wish to diversify their skills into other areas or who wish to specialise further in their chosen field may go on to do a full range of taught Masters programmes (see prospectus) and Research programmes such as Level 9 (MSc) and Level 10 (Doctoral) studies at Letterkenny Institute of Technology and other institutions and universities at home and abroad.

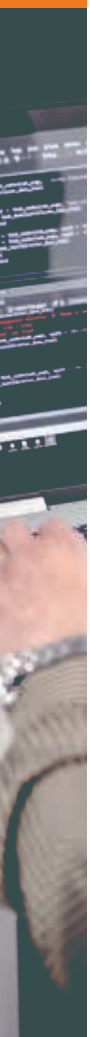
Computing

Bachelor of Science in Computing

National Framework: Level 7
CAO Code: LY717
Duration: 3 years
Number of Places: 48
Reserved Quota: 10 - QQI FET Applicants

Points in Recent Years:

Year	Final	Median
2018	165	299
2019	181	300



Is this course for you?

This programme will provide students with the range of both theoretical and practical skills required for them to participate fully in the rapidly growing computing industry. The ethos of the course is to provide a strong core set of competencies in general computing. These skills are typically required across all companies working in IT.

Ireland is the world's largest exporter of computer software. This means that there are excellent opportunities for finding well-paid employment when you graduate. Additionally, because computers are used in almost every area of modern life, the range of opportunities and types of jobs which are open to computing graduates means that the chances of having a career you enjoy are excellent.

Career opportunities

Successful graduates find themselves working in the following sectors:

- All types & sizes of Computing Companies
- Banks, Insurance Companies, Medical IT
- eCommerce & Web Development

Graduate careers typically include:

- Software Developer & Tester
- Data Analytics Engineer
- Database Designer & Developer
- Mobile Apps Developer

Minimum Entry Requirements:

Minimum Points Score 160
Minimum Five O6/H7
Maths F2/O6/H7
English or Irish O6/H7

What will I study?

	Semester 1	Credits	Semester 2	Credits
Year 1	Computer Architecture & Operating Systems 1 (M)	5	Computer Architecture & Operating Systems 2 (M)	5
	Mathematics for Computing 1 (M)	5	Mathematics for Computing 2 (M)	5
	Introduction to Programming (M)	10	Introduction to Object Oriented Programming (M)	10
	Personal & Professional Development (M)	5	Problem Solving with Robots (M)	5
	Web Fundamentals (M)	5	Introduction to Cloud & Mobile Technologies (M)	5
Year 2	Object Oriented Programming 2 (M)	10	API Programming (M)	5
	Relational Databases (M)	5	Algorithms & Data Structures (M)	5
	Network Fundamentals (M)	5	SQL Programming (M)	5
	Scripting (Python) (M)	5	Network Services (M)	5
			Automation (M)	5
	Server Side Scripting (M)	5	Client Side Scripting (M)	5
Year 3	Object Oriented Systems Analysis & Design (M)	5	Team Project (M)	5
	Integrated Infrastructure (M)	5	Project Management (M)	5
	Software Implementation (M)	5	Data Analytics (M)	5
	Secure Systems Administration (M)	5	Secure Programming (M)	5
	Client Side Application Development (M)	5	Secure Network Service (M)	5
	Academic & Technical Writing Skills (M)	5	Server Side Application Development (M)	5

(M) = Mandatory

Add-on Level 8 Course

Bachelor of Science (Hons) in Computing

What will I study?

	Semester 1	Credits	Semester 2	Credits
Year 4	Advanced Algorithms and Data Structures (E)	5	UX Design (M)	5
	DevOps (E)	5	Legal, Ethical & Social Issues in Computing (M)	5
	Software Engineering (M)	5	Development Project (M)	10
	Research in Computing with Emerging Technologies (M)	10	Data Storage (M)	5
	Secure Infrastructure (M)	5	Plugin & REST API Development (M)	5
	Website Development (M)	5		

(M) = Mandatory, (E) = Elective

Note: Students may also do a summer work placement at an appropriate stage of the course to receive an additional award of a Certificate in Industry Studies.

Follow-on courses

Graduates who wish to diversify their skills into other areas or who wish to specialise further in their chosen field may go on to do a full range of taught Masters programmes (see prospectus) and Research programmes such as Level 9 (MSc) and Level 10 (Doctoral) studies at Letterkenny Institute of Technology and other institutions and universities at home and abroad.

BSc (Hons) in Computing with Computer Security & Digital Forensics (2017)

Cyber Forensics Consultant, VM Forensics.

"Within 6 months of graduating I was in court as a technical witness. I hit the ground running."

Jackie O'Mahony

Big isn't always better, Go for the best

Communication was an unexpected skill which Computer Security and Digital Forensics graduate Jackie O'Mahony is grateful she learned at LYIT. "Within 6 months of graduating I was in court as a technical witness. I hit the ground running," she laughs.

Jackie O'Mahony, is a Cyber Forensics Consultant at VM Forensics. As a sort of 'digital detective', Jackie's job involves filling in the blanks using digital and forensic methods across all types of digital devices. "One day I could be involved in civil disputes such as, data breaches and the next, in criminal investigations examining CCTV. It's really varied."

Jackie always had an interest in computers.

"I like solving problems and have an analytical mind." She realised whilst studying Engineering in UL that it wasn't the right path for her. "I decided to take 2 years out to weigh up my options."

She scrutinised the Security and Forensics courses on offer, specifically looking at what the modules covered, something she recommends that all students should do. Studying closer to her Limerick home would have made life much easier for Jackie, but she chose LYIT. "The course at LYIT stood out as the one with the best reputation."

And she wasn't disappointed. It wasn't just the content of the degree that impressed her but the lecturers' industry background and their knowledge. "I loved the course, it lived up to my expectations. The way it was structured and how well it reflected the real world. Plus she says, "the dedication of the teaching staff was amazing. There's a genuine open-door policy at LYIT, you could always ask for advice."

Because the course covers security and forensics it effectively doubles the number of career opportunities available. "There's a shortage of people qualified in this area. You'll be in demand." Jackie hadn't even finished her final year when she interviewed for her current job.

Life at college isn't all about studying though, joining clubs and societies is a great way to make friends and broaden your college experience. Jackie was involved in the group that founded LYIT's first ever Camogie club and was a peer mentor for first years, as well as a member of the Ethical Hacking Club. "If you've an idea and want to try it, you'll be supported. That's typical of the ethos at LYIT. Learning is in the DNA of the place," she adds.

Jackie knows from first hand experience that bigger isn't necessarily better. "Don't be put off by a smaller college, it can be a huge strength, with more interactive teaching and accessible modern facilities."

"I spent four fantastic years at LYIT and made friends for life." Jackie is currently studying a Masters by Research in Cloud Forensics at LYIT and is hoping to set up a new department at VM Forensics. "LYIT prepared me well for working life."

Computer Security & Digital Forensics

Bachelor of Science in Computing with Computer Security & Digital Forensics

National Framework: Level 7
CAO Code: LY737
Duration: 3 years
Number of Places: 36
Reserved Quota: 10 - QQI FET Applicants

Points in Recent Years:

Year	Final	Median
2018	169	337
2019	172	358

Is this course for you?

This course teaches students the skills, methods and techniques used in Computer Security and Digital Forensics. The aim is to provide the Irish computer industry with high quality experts in this rapidly growing field of computing. Computer Security is about securing computer systems against all types of unauthorised access. However, no matter how secure a computer systems is it will still have vulnerabilities. Digital Forensics is about detecting intruders, analysing what they have done to your computer system, tracking and identifying the intruder and creating a portfolio of evidence about the intruder's activities to assist with a successful prosecution. If you have an interest in these areas, then this is the course for you.

Career opportunities

Successful graduates find themselves working in the following sectors:

- Companies running large computer networks
- The Payment Card Industry
- Financial Services Companies

Graduate careers typically include:

- Secure Systems Engineer
- IT Threat Analyst
- Secure Applications Developer & Tester

Minimum Entry Requirements:

Minimum Points Score 160
Minimum Five O6/H7
Maths F2/O6/H7
English or Irish O6/H7

What will I study?

	Semester 1	Credits	Semester 2	Credits
Year 1	Introduction to Programming (M)	10	Introduction to Object Oriented Programming (M)	10
	Computer Architecture & Operating Systems 1 (M)	5	Introduction to Ethical Hacking (M)	5
	Mathematics for Computing 1 (M)	5	Computer Architecture & Operating Systems 2 (M)	5
	Personal & Professional Development (M)	5	Introduction to Digital Forensics & Evidence (M)	5
	Web Fundamentals (M)	5	Mathematics for Computing 2 (M)	5
Year 2	Network Fundamentals (M)	5	API Programming (M)	5
	Object Oriented Programming 2 (M)	10	Algorithms & Data Structures (M)	5
	Relational Databases (M)	5		
	Advanced Ethical Hacking (M)	5	SQL Programming (M)	5
	Advanced Digital Forensics 1 (M)	5	Network Services (M)	5
			Web App Security (M)	5
			Advanced Digital Forensics 2 (M)	5
Year 3	Object Oriented Systems Analysis & Design (M)	5	Secure Programming (M)	5
	Secure Systems Administration (M)	5	Project Management (M)	5
	Software Implementation (M)	5	Data Analytics (M)	5
	Academic & Technical Writing Skills (M)	5	Team Project (M)	5
	Integrated Infrastructure (M)	5	Secure Network Services (M)	5
	Law of Evidence (M)	5	Maths for Cryptography (M)	5

(M) = Mandatory

Note: Students may also do a summer work placement at an appropriate stage of the course to receive an additional award of a Certificate in Industry Studies.

Add-on Level 8 Course

Bachelor of Science (Hons) in Computing with Computer Security & Digital Forensics

What will I study?

	Semester 1	Credits	Semester 2	Credits
Year 4	Software Engineering (M)	5	Development Project (M)	10
	Secure Infrastructure (M)	5	Steganography & Biometric Security (M)	10
	Image Processing for Digital Forensics (M)	5	Legal, Ethical & Social Issues in Computing (M)	5
	Research in Computing with Emerging Technologies (M)	10	Cryptography & Cryptographic Protocols (M)	5
	Governance, Risk & Compliance (M)	5		

(M) = Mandatory

Follow-on courses

Graduates who wish to diversify their skills into other areas or who wish to specialise further in their chosen field may go on to do a full range of taught Masters programmes (see prospectus) and Research programmes such as Level 9 (MSc) and Level 10 (Doctoral) studies at Letterkenny Institute of Technology and other institutions and universities at home and abroad.