





## DEPARTMENT OF COMPUTING

With over 90,000 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

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### CAO Course Listing

CAO Code	CAO Course Title
LY708	Bachelor of Science (Hons) in Computing with Degree Award Options: Applied Computing or Cloud & Green IT
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
	Higher Certificate in Computing in Information Technology Support

## Applied Computing/ Cloud & Green IT (Common Entry)

**Bachelor of Science (Hons)  
in Computing with Degree  
Award Options: Applied  
Computing or Cloud and  
Green IT**

**National Framework:** Level 8

**CAO Code:** LY708

**Duration:** 4 years

**Number of Places:** 24

**Points in Recent Years:**

Year	Final	Median
2014	235	340
2015	300	345

### 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.

### MINIMUM ENTRY REQUIREMENTS

Minimum Six O6/H7

Maths O6/H7

English or Irish O6/H7

At least two H5



## What will I study?

### COMPUTING (HONS) (COMMON ENTRY) FIRST YEAR MODULES FOR SEMESTER 1 ONLY

#### Degree Award Option: Applied Computing

	Semester 1	Credits	Semester 2	Credits
Year 1	Introduction to Object Orientated Programming 1 (M)	10	Introduction to Object Orientated Programming 2 (M)	10
	Mathematics for Computing (M)	5	Introduction to the Web (M)	10
	Operating Systems 1 (M)	5	Problem Solving with Robots (M)	5
	Personal & Professional Development (M)	5	Computer Architecture (M)	5
	Student Development (M)	5		
Year 2	Object Orientated Programming (M)	10	Database Technology (M)	10
	Visual Programming (M)	10	Smart Devices (M)	10
	Operating Systems 2 (M)	5	Object Orientated GUI Programming (M)	5
	Mathematics for Computer Graphics (M)	5	Network Technologies (M)	5
Year 3	Object Orientated Systems Analysis & Design (M)	10	Team Project (M)	10
	Server Administration (M)	10	Web Applications Programming (M)	10
	Software Implementation (M)	5	Algorithms & Data Structures (M)	5
	Technical Writing (M)	5	Client-Server Database Architecture (M)	5
Year 4	Software Engineering (M)	10	Development Project (M)	10
	Emerging Technologies (M)	10	Thin Client (M)	10
	Project Preparation (M)	5	Legal, Ethical & Social Issues in Computing (M)	5
	Choose one of the following Electives (E):		Computer Science (M)	5
	Performance Based Programming (M)	5		
	Interactive Design (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.

### 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
- QA Analyst
- Mobile App Developer

### Follow-on courses

- MSc in Computing in Private Cloud Technologies
- MSc in Computing in Big Data Analytics
- MSc in Computing in Systems & Software Security



## Degree Award Option: Cloud & Green IT

	Semester 1	Credits	Semester 2	Credits
Year 1	Introduction to Object Orientated Programming 1 (M)	10	Introduction to Object Orientated Programming 2 (M)	10
	Mathematics for Computing (M)	5	Cloud & Green Computing (M)	10
	Operating Systems 1 (M)	5	Problem Solving with Robotics (M)	5
	Personal & Professional Development (M)	5	Computer Architecture (M)	5
	Student Development (M)	5		
Year 2	Object Orientated Programming (M)	10	Database Technology (M)	10
	Network Technologies (M)	10	Systems Administration for Virtual Environments (M)	10
	Operating Systems 2 (M)	5	Object Orientated GUI Programming (M)	5
	Mathematics for Computer Graphics (M)	5	Virtualisation for Green IT (M)	5
Year 3	Object Orientated Systems Analysis & Design (M)	10	Team Project (M)	10
	Security & the Cloud (M)	10	Green/Cloud Services Technology Management (M)	10
	Software Implementation (M)	5	Algorithms & Data Structures (M)	5
	Technical Writing (M)	5	Client-Server Database Architecture (M)	5
Year 4	Software Engineering (M)	10	Development Project (M)	10
	Enterprise Services Development (M)	10	Management Operations in Green/Cloud Environments (M)	10
	Project Preparation (M)	5	Legal, Ethical & Social Issues in Computing (M)	5
	Cloud Planning & Design (M)	5	Green Data Centre Design (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.

### Career opportunities

Successful graduates find themselves working in the following sectors:

- Cloud Infrastructure Companies
- Any type of Company running a large IT Infrastructure
- All areas of medicine, transport, education etc.

### Follow-on courses

- MSc in Computing in Private Cloud Technologies
- MSc in Computing in Big Data Analytics
- MSc in Computing in Systems & Software Security

### Graduate careers typically include:

- Cloud Architect
- Cloud Security
- Cloud Software Engineer







## 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

**Points in Recent Years:**

Year	Final	Median
2014	185	285
2015	190	295

### 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

### 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



## What will I study?

	Semester 1	Credits	Semester 2	Credits
Year 1	Introduction to Object Oriented Programming 1 (M)	10	Introduction to Object Oriented Programming 2 (M)	10
	Personal and Professional Development (M)	5	Introduction to Computer Games (M)	10
	Mathematics for Computing (M)	5	Problem Solving with Robots (M)	5
	Student Development (M)	5	Computer Architecture (M)	5
	Operating Systems 1 (M)	5		
Year 2	Object Oriented Programming (M)	10	Database Technology (M)	10
	Game Programming (M)	10	Graphics Programming (M)	10
	Mathematics for Computer Graphics (M)	5	Object Oriented GUI Programming (M)	5
	Operating Systems 2 (M)	5	Network Technologies (M)	5
Year 3	Object Oriented Analysis & Design (M)	10	Team Project (M)	10
	Advanced Game Design & 3D Modelling 1 (M)	10	Advanced Game Design & 3D Modelling 2 (M)	10
	Software Implementation (M)	5	Algorithms & Data Structures for Games Programming (M)	5
	Technical Writing (M)	5	Mobile 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)	10	Development Project (M)	10
	Advanced Game Programming 1 (M)	10	Advanced Game Programming 2 (M)	10
	Project Preparation (M)	5	Legal, Ethical & Social Issues in Computing (M)	5
	Maths & Physics for Games (M)	5	Business & Computer Games (M)	5

(M) = Mandatory

### Follow-on courses

- MSc in Computing in Private Cloud Technologies
- MSc in Computing in Big Data Analytics
- MSc in Computing in Systems & Software Security



## Computing

### Bachelor of Science in Computing

**National Framework:** Level 7  
**CAO Code:** LY717  
**Duration:** 3 years  
**Number of Places:** 48  
**Points in Recent Years:**

Year	Final	Median
2014	145	275
2015	150	285

### 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 Development & Testing
- Website Development
- Database Design & Development

### 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 Object Oriented Programming 1 (M)	10	Introduction to Object Oriented Programming 2 (M)	10
	Personal and Professional Development (M)	5	Problem Solving with Robots (M)	5
	Mathematics for Computing (M)	5	Computer Architecture (M)	5
	Student Development (M)	5	Management Information Systems (M)	5
	Operating Systems 1 (M)	5	Web Development 1 (M)	5
Year 2	Object Oriented Programming (M)	10	Database Technology (M)	10
	Web Development 2 (M)	10	Social & Structured Learning (M)	10
	Mathematics for Computer Graphics (M)	5	Object Orientated GUI Programming (M)	5
	Operating Systems 2 (M)	5	Network Technologies (M)	5
Year 3	Object Oriented Analysis & Design (M)	10	Infrastructure (M)	10
	Integrated Web Development (M)	10	Team Project (M)	10
	Software Implementation (M)	5	Algorithms & Data Structures (M)	5
	Technical Writing (M)	5	Client-Server Databases Architecture (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

### What will I study?

	Semester 1	Credits	Semester 2	Credits
Year 4	Software Engineering (M)	10	Development Project (M)	10
	Business Intelligence & Artificial Intelligence (M)	10	Cloud/Enterprise Applications (M)	10
	Performance Based Programming (M)	5	Legal, Ethical & Social Issues in Computing (M)	5
	Project Preparation (M)	5	Software Testing & QA (M)	5

(M) = Mandatory

### Follow-on courses

- MSc in Computing in Private Cloud Technologies
- MSc in Computing in Big Data Analytics
- MSc in Computing in Systems & Software Security



# Denis Bourne

Bachelor of Arts in Applied Computing,  
LYIT (2016)

Masters by Research, LYIT (Current)

"It's an open door policy with the tutors at LYIT. I chat to students from universities and they just don't get that sort of contact with their lecturers."



# Home from home

**With four children, you wouldn't think Denis Bourne has too much time for studying. But not only has he just completed a degree and is about to embark on a two-year Research Masters, he's working part-time and has still found time for voluntary work and starting his own society on campus.**

Denis hasn't taken the orthodox route to his Masters. Growing up in Buncrana, he left school at 15 and worked in the building trade for several years. "But I knew it wasn't for me," he says, "so I took an access course at LYIT. It leads you easily into academic work. I then began an Applied Computing Degree."

During all this time, LYIT has been a second home for Denis and the teaching staff and lecturers have backed him all the way. It was actually Denis's lecturers who suggested a slightly different route for him. "They saw that I enjoyed the computer programming more than the rest of the degree and suggested it would suit me better, so I switched to a full computer programming degree."

Their advice turned out to be spot on. After flourishing in the four-year degree course, Denis has now been accepted for a Masters at LYIT, researching into airport indoor positioning systems. Using mobile devices and blue chip pin locations, this technology essentially helps airports track and manage queuing times.

Denis can't wait to get started. "All the facilities are here for the research," he says. "The IT facilities here are great for whatever you want to do and the lecturers are always on hand to help."

The Masters will mean another two years combining study, work and family but Denis knows he is capable of taking it all on. "It has been difficult at times. In the first and second

years of my degree I was working two evenings a week and weekends as a waiter. But since then I have found work doing web development for a local company and my weekends are free again. Thankfully, I have a very supportive partner too!"

Somehow Denis has also found time for voluntary work, running a CoderDojo class for pupils at Coláiste Ailigh secondary school in Letterkenny, which helps them understand computer programming. He will also be getting closely involved with societies again. He belonged to the kayaking society and helped found his own society, the popular Android App Society. "It is basically an android development programme, showing students how to use android. But we have also raised several thousand euro for charity."

Being a bit older than the average student and a family man has never been a problem for Denis.

**"There's a great mix of students here and everyone gets on. I knew no one when I first came here but I have just made more and more friends."**

## 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

**Points in Recent Years:**

Year	Final	Median
2014	160	270
2015	160	280

### 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 intruders activities to assist with a successful prosecution. If you have an interest in these areas, then this is the course for you.

### Career opportunities

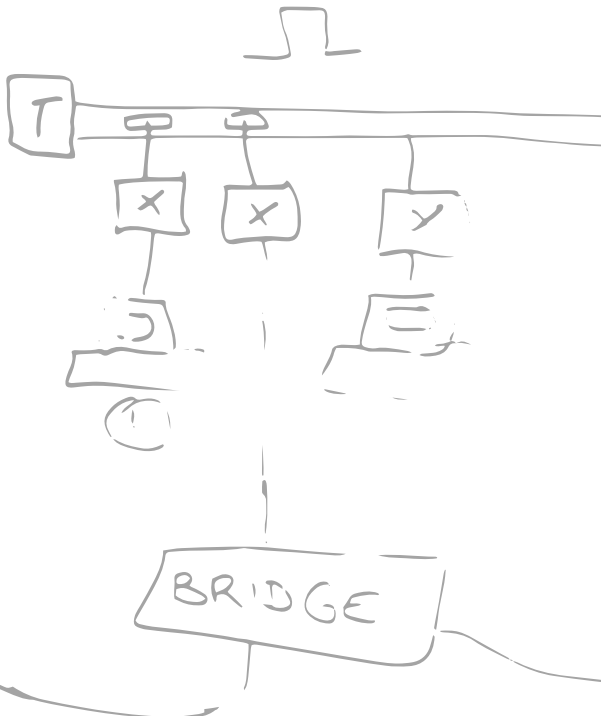
Successful graduates find themselves working in the following sectors:

- Companies running large computer networks
- The payment card industry
- Financial services companies

### Graduate careers typically include:

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

10 BASE 5



### 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 Object Oriented Programming 1 (M)	10	Introduction to Object Oriented Programming 2 (M)	10
	Personal and Professional Development (M)	5	Problem Solving with Robots (M)	5
	Mathematics for Computing (M)	5	Computer Architecture (M)	5
	Student Development (M)	5	Computer Crime (M)	5
	Operating Systems 1 (M)	5	Mathematics for Cryptography (M)	5
Year 2	Network Technologies (M)	10	Database Technology (M)	10
	Object Oriented Programming (M)	10	Risk Assessment & Countermeasures (M)	10
	Operating Systems 2 (M)	5	Object Orientated GUI Programming (M)	5
	Law of Evidence (M)	5	Digital Forensics 1 (M)	5
Year 3	Object Oriented Analysis & Design (M)	10	Digital Forensics 2 (M)	10
	Security Systems Administration (M)	10	Team Project (M)	10
	Software Implementation (M)	5	Secure Coding Techniques (M)	5
	Technical Writing (M)	5	Client-Server Databases Architecture (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)	10	Development Project (M)	10
	Secure Infrastructure (M)	10	Steganography & Biometric Security (M)	10
	Image Processing for Digital Forensics (M)	5	Legal, Ethical & Social Issues in Computing (M)	5
	Project Preparation (M)	5	Cryptography & Cryptography Protocols (M)	5

(M) = Mandatory

### Follow-on courses

- MSc in Computing in Private Cloud Technologies
- MSc in Computing in Big Data Analytics

## Information Technology Support

### Higher Certificate in Science in Computing in Information Technology Support

**National Framework:** Level 6

**LYIT Internal Code:**

LY\_KITSW\_C (September Intake) or  
LY\_KITSS\_C (January Intake)

**Duration:** 18 Months

**Number of Places:** 24



### Is this course for you?

This programme is an ATP (Accelerated Technician Programme), in which students can gain a Higher Certificate in 18 months. Students spend one semester in college, followed by 6 months on work placement, followed by another semester in college. It will suit people returning to the work force and those seeking a change of career. There are normally two intakes per year. The programme is designed to provide the graduate with the skills required to operate as a first line Information Technology Support person in a wide range of industry and business environments. The tasks could include commissioning computer systems and networks, developing web sites, connecting businesses to the internet, etc.

### Career opportunities

Successful graduates find themselves working in the following sectors:

- IT Companies
- Businesses that repair and service computer systems
- Any type of business which has a computer system

### Graduate careers typically include:

- Computer Technician
- Web & Database Developer
- Customer & Systems Support

### Special requirements

**Garda Vetting:** Certain work placements will require Garda Vetting, for example, work placements that will involve students working with children or vulnerable adults.

**Work Placement:** Please note that with respect to the placement, while the Institute will make every effort to assist the learner in finding a placement (interview techniques, CV preparation, arranging interviews etc), final responsibility for securing the placement resides with the learner.

### MINIMUM ENTRY REQUIREMENTS

Mature Student or  
Minimum Five O6  
English or Irish O6  
Maths O6/H7

## What will I study?

	Semester 1	Credits	Semester 2	Credits
Year 1	Computer Applications (M)	5	Industrial Placement 1 (M)	30
	Computer Systems (M)	5		
	Operating Systems 1 (M)	5		
	Software Development 1 (M)	5		
	Study Skills & Interpersonal Communications (M)	5		
	Computer Networks 1 (M)	5		
Year 2	Industrial Placement 2 (M)	30	Training & Support (M)	5
			Operating Systems 2 (M)	5
			Software Development 2 (M)	5
			Mathematics (M)	5
			Database Technology (M)	5
			Computer Networks 2 (M)	5

(M) = Mandatory

Note: Normally students will take Industrial Placement 1 and 2 back to back but in certain cases students may take Industrial Placement 1 and 2 separately and may, if necessary, take Industrial Placement 2 after the completion of the taught part of the course.

### Add-on Level 8 Course

## Bachelor of Science (Hons) in Computing in Computer Services Management

### What will I study?

	Semester 1	Credits	Semester 2	Credits
Year 3	Networks (M)	10	Computer Systems Administration (M)	10
	Structured Query Language (SQL) & Database Development (M)	10	Agile Testing & Quality Assurance (M)	10
	Software Design (M)	5	Dynamic Web Design & Development (M)	5
	Software Development (M)	5	GUI Application Development (M)	5
Year 4	IT Service Management (M)	10	Database Administration (M)	10
	Interaction Design (M)	5	Legal, Ethical & Social Issues in Computing (M)	5
	Project Preparation (M)	5	Project Implementation (M)	5
	Choose one of the following Electives (E):		IT Infrastructure (M)	10
	Web Application Development	10		
Emerging Technologies	10			

(M) = Mandatory, (E) = Elective

### Follow-on courses

- MSc in Computing in Private Cloud Technologies
- MSc in Computing in Big Data Analytics
- MSc in Computing in Systems & Software Security