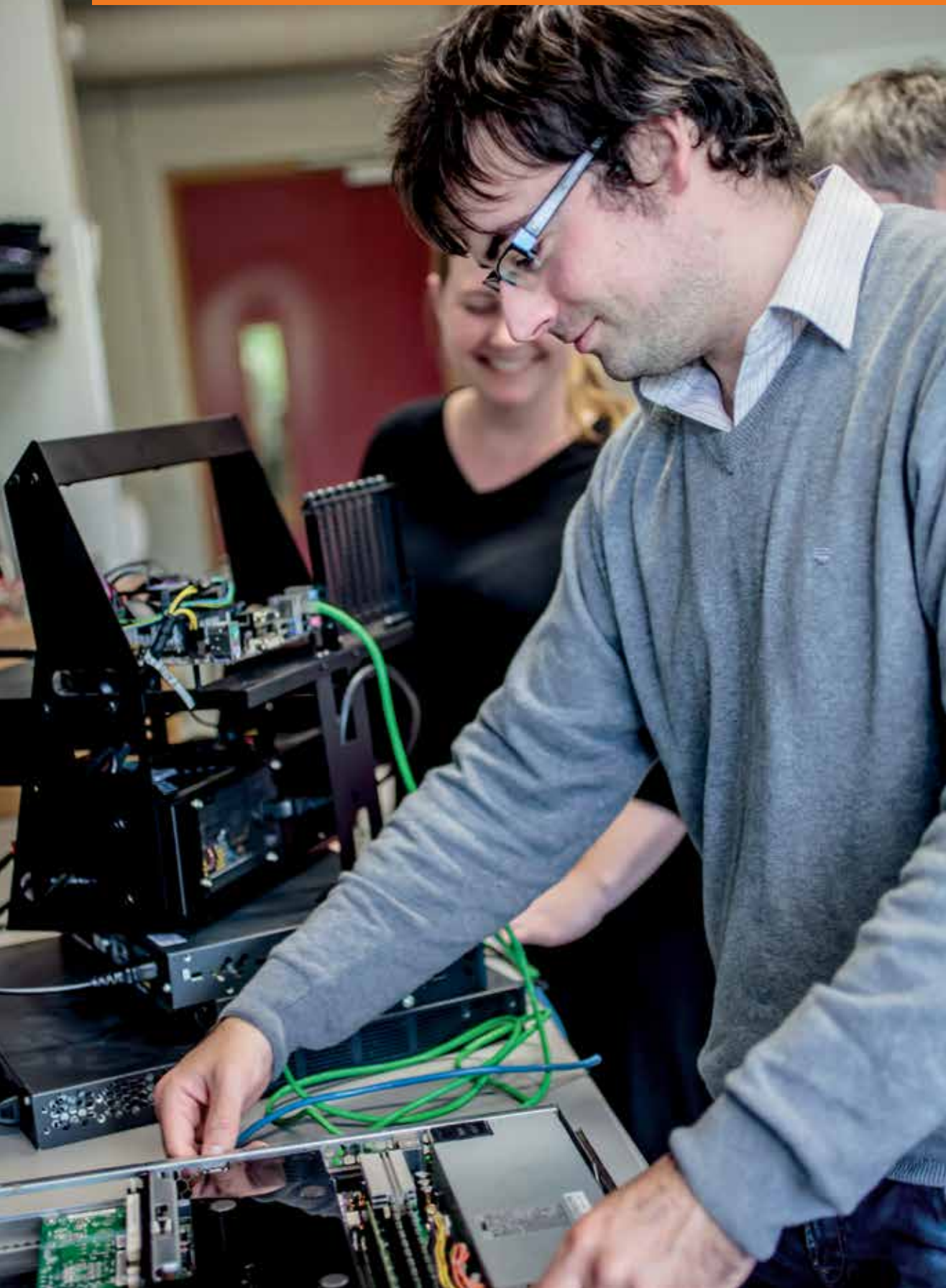

DEPARTMENT OF COMPUTING

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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Email: thomas.dowling@lyit.ie

CAO Course Listing

CAO Code	CAO Course Title
LY708	Bachelor of Science (Hons) in Computing in Applied Computing
LY707	Bachelor of Science in Computing with Computer Games Development
LY717	Bachelor of Science in Computing with Degree Award Options: General Computing or Mobile Technology or Cloud Technology
LY737	Bachelor of Science in Computing with Computer Security & Digital Forensics
N/A	Higher Certificate in Computing in Information Technology Support

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
Points in Recent Years:

Year	Final
2016	300
2017	276

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

MINIMUM ENTRY REQUIREMENTS

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

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 and 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 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	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

- MSc in Computing in Private Cloud Technologies
- MSc in Computing in Big Data Analytics
- MSc in Computing in Systems & Software Security
- MSc in Computing in DevOps
- MSc in Computing in Enterprise Applications Development

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
2016	190
2017	194

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

- MSc in Computing in Private Cloud Technologies
- MSc in Computing in Big Data Analytics
- MSc in Computing in Systems & Software Security
- MSc in Computing in Enterprise Applications Development
- MSc in Computing in DevOps

Computing
(Common Entry)

Bachelor of Science in Computing with Degree Award Options: General Computing or Cloud Technology or Mobile Technology

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

Year	Final
2016	140
2017	171

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
- Data Centres (Cloud) & Software Houses (Mobile)

Graduate careers typically include:

- Software Development & Testing
- Data Analytics
- Database Design & Development
- Managing Data Centres
- Developing Mobile Apps

MINIMUM ENTRY REQUIREMENTS

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

What will I study?

COMPUTING (COMMON ENTRY) FIRST YEAR MODULES				
	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

Degree Award Option: General Computing

	Semester 1	Credits	Semester 2	Credits
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

Degree Award Option: Cloud Technology

	Semester 1	Credits	Semester 2	Credits
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 Service (M)	5
			Automation (M)	5
	Private Cloud (M)	5	Private Cloud 2 (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
			Secure Network Service (M)	5
	Academic & Technical Writing Skills (M)	5	Public Cloud 2 (Azure) (M)	5
	Public Cloud 1 (AWS) (M)	5		

(M) = Mandatory

Degree Award Option: Mobile Technology

	Semester 1	Credits	Semester 2	Credits
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
	Interaction Design (M)	5	Network Services (M)	5
			Hybrid Development (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
	Introduction to Native App Development (M)	5	Secure Programming (M)	5
	Client Side Application Development (M)	5	Android Development 1 (M)	5
	Academic & Technical Writing Skills (M)	5	Server Side Application Development (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 Courses

Bachelor of Science (Hons) in Computing in General Computing

	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

Bachelor of Science (Hons) in Computing in Cloud Computing

	Semester 1	Credits	Semester 2	Credits
Year 4	Advanced Algorithms and Data Structures (E)	5	CyOps (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	Services Management (M)	5
	Governance, Risk & Compliance (M)	5		

(M) = Mandatory (E)= Elective

Bachelor of Science (Hons) in Computing in Mobile Computing

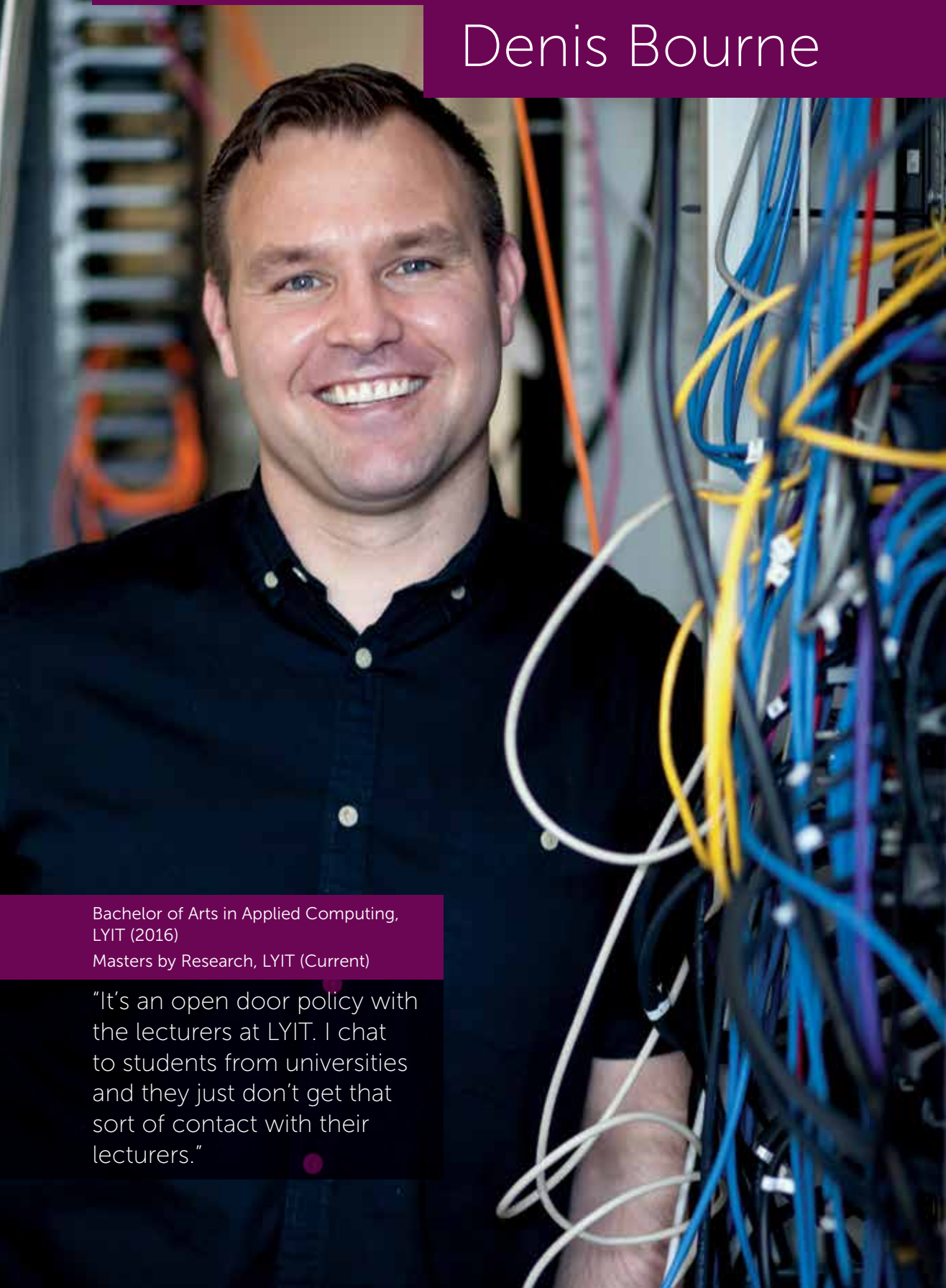
	Semester 1	Credits	Semester 2	Credits
Year 4	Advanced Algorithms and Data Structures (E1)	5	UX Design (M)	5
	DevOps (E1)	5	Legal, Ethical & Social Issues in Computing (M)	5
	Software Engineering (M)	5	Development Project (M)	10
	Research in Computing with Emerging Technologies (M)	10		
	Android Development 2 (M)	5	Mobile Games (M)	5
	iOS Development (E2)	5	iOS Development 2 (E)	5
	Advanced Mobile Technologies (E2)	5	Advanced Mobile Communication (E)	5

(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
- MSc in Computing in Enterprise Applications Development
- MSc in Computing in DevOps

Denis Bourne



Bachelor of Arts in Applied Computing, LYIT (2016)
Masters by Research, LYIT (Current)

"It's an open door policy with the lecturers 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 was a member of 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
2016	150
2017	208

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 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
	Security 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

- MSc in Computing in Private Cloud Technologies
- MSc in Computing in Big Data Analytics
- MSc in Computing in DevOps
- MSc in Computing in Systems & Software Security
- MSc in Computing in Enterprise Applications Development

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 WP

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

Muture 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 Architecture & Operating Systems 1 (M)	5	Industrial Placement 1 (M)	30
	Training & Support (M)	5		
	Software Development 1 (M)	10		
	Personal & Professional Development (M)	5		
	Computer Networks 1 (M)	5		
Year 2	Industrial Placement 2 (M)	30	Relational Databases (M)	5
			Computer Architecture & Operating Systems 2 (M)	5
			Software Development 2 (M)	5
			Mathematics (M)	5
			Web Development (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	Computer Networks 3 (M)	5	Computer Networks 4 (M)	5
	Computer Systems Administration 1 (M)	5	Computer Systems Administration 2 (M)	5
	Database Technology (M)	5	Software Design (M)	5
	Public Cloud 1 (AWS) (M)	5	Public Cloud 2 (Azure) (M)	5
	Server Side Scripting (M)	5	Client Side Scripting (M)	5
	Software Development 3 (M)	5	GUI Application Development (M)	5
Year 4	DevOps (M)	5	Legal, Ethical & Social Issues in Computing (M)	5
	Governance, Risk and Compliance (M)	5	Services Management (M)	5
	Web Application Development (M)	10	Project Development (M)	10
	Research in Computing with Emerging Technologies (M)	10	Advanced Database Systems (E)	10
			Software Testing & QA in Modern Software Development (E)	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
- MSc in Computing in DevOps
- MSc in Computing in Enterprise Applications Development