Technology Ireland ICT

Skillnet

TU DUBLIN
OLLSCOIL TEICNEOLAÍOCHTA BHAILE ÁTHA CLIATH
TECHNOLOGICAL UNIVERSITY DUBLIN

CAPTURE THE CLOUD!

BSc in Cloud Networking Technologies

Boost your skills in Cloud Technologies and Networks

Summary

Ireland is a prime location for Cloud based enterprises and Cloud activity generally. This includes cloud infrastructure, for example in Data Centres, as well as a wide variety of Cloud computing businesses and service offerings.

It is estimated that more than 9,000 jobs can be created in Ireland through opportunities in the Cloud area over the next five years. More than half of these will be in small and medium sized businesses. All of these companies share one thing in common – an urgent need for qualified and competent Cloud Architects and staff skilled in the technical aspects of Cloud and Networking technologies.

In response to this need, Technology Ireland ICT Skillnet and TU Dublin (Blanchardstown Campus) developed a Level 6 Higher Certificate in Net-working Technologies in 2016 to create a pipeline of qualified technicians to work in the field. This BSc in Cloud Networking Technologies is the next logical step in creating a professional pathway for people wishing to pursue a career in the cloud space. This is a Level 7 Ordinary degree and will be followed by a Level 8 Honours degree.

The course is delivered primarily online and spread over one and a half years (3 academic Semesters) to allow students to combine work and study in an effective and manageable way. Each Semester will also include three face-to-face lab-based workshops on campus.

What You Will Learn

As well as the technical skills outlined under each module below you will:

- Develop your aptitude for critical analysis and problem-solving within constrained timeframes.
- Gain experience of dealing with industry standards and exposure to real-world project expectations and deliverables.
- Learn to work constructively as part of a team and to communicate effectively with a range of stakeholders.
- Learn how to plan, implement, test, evaluate, and document Cloud Enterprise projects.
- Learn how to present project proposals and outcomes with clarity and impact.

Course Structure

The programme is divided into three academic Semesters delivered over one and a half years with two modules delivered per Semester.

Semester 1 Autumn
- Network Programming
- Enterprise Routing & Switching

September 2018 to January 2019

Semester 2 Spring
- Network Function Virtualisation
- Cloud Architecture

February 2019 to June 2019

Semester 3 Autumn
- Software Defined Networking
- Group Project

September 2019 to January 2020

Becoming a Cloud Architect

Cloud Architects must possess an appropriate range of technical skills coupled with a good working understanding of how enterprises use Information Technology in back-office operations and in commercial activities and applications. Cloud Architects must understand the relevant building blocks of IT systems. These include Client Systems and Applications, Networking Infrastructure, applicable Programming Languages, Web tools and technologies, Databases, Data Analysis and more.

Becoming a Cloud Architect means developing a deep knowledge and understanding of Cloud Computing and its roles and uses in the marketplace. This means exploring a host of important technologies that include Virtualisation, Software Defined Networking, Network infrastructures, physical and virtual storage, backup and restore technologies, Network Security and more. It also means working on the soft skills that are crucial to the effectiveness of the Architect's role.

Opportunity Knocks

With Ireland bidding to become a centre of excellence in Cloud services there is a growing focus on training the next generation of Cloud Architects. This part-time BSc is an outstanding opportunity for those seeking to expand their technical knowledge and skills either as existing Cloud Architects or those proposing to move into such roles.

Industry Certifications

Much of the course content is aligned with industry certifications which are widely recognised in the ICT sector. Modules on this course provide a first step on the pathway to gaining certifications such as Cisco Certified Networking Professional, and certifications in Amazon Web Services, and Open Networking Foundation.*

*It should be noted that the costs associated with these industry certification exams, fees and exam preparation are outside the scope of this programme.

Industry Input and Case Studies

There will be individual and group workshops and tutorial assignments, problem solving and project work including visits from industry representatives as guest speakers. Where possible and relevant, case studies across the various modules will be encouraged. Projects will reflect real-world challenges giving them a realistic flavour, allowing the student to appreciate the skills they need to be effective problem-solvers.

Workplace Impact

The course will consolidate and integrate skills and knowledge so participants can make an immediate impact in the workplace. The focus on technical and communication skills will allow them to understand and participate in company group dynamics in the development and/or improvement of products.

On successful completion of the specific Modules the learner will be able to:

Network Programming

- Examine the requirements of a Cloud infrastructure development project and select the appropriate tools, programming languages, environments and libraries for the development process.
- Evaluate the data structures and infrastructural components, available and needed to develop a network focused application.
- Design and program a secure Cloud enterprise application that integrates with existing data sources and infrastructure.
- Implement both high and low-level data manipulation techniques to identify, extract, and cleanse data.
- Demonstrate the ability to build, test and deploy an application that interacts with existing file formats on local and network locations.

Enterprise Routing and Switching

- Describe the concepts of routing protocols, remote connectivity options, and their impact on routing in IPv4 and IPv6 networks.
- Configure OSPF/EIGRP in IPv4 and IPv6 environment.
- Implement infrastructure services at Layer 2 and Layer 3.
- Implement a Layer 3 solution using BGP to connect an enterprise network to a service provider.
- Define the hierarchical campus structure and implementation of complex enterprise switching solutions.
- Build a secure network at Layer 2 and Layer 3, according to industry best practices.

Network Function Virtualisation

- Demonstrate an understanding of virtualisation as a paradigm.
- Describe and use NFV approaches and tools.
- Build secure small model NFV environments.
- Describe NFV management and orchestration approaches.

Cloud Architecture

- Identify the drivers, value and benefits of Cloud Computing.
- Explain the service models available in a Cloud environment.
- Identify the key components in a Cloud Infrastructure and understand the process of architecting in a Cloud environment.
- Understand and implement best practices of security, reliability and performance efficiency when developing Cloud infrastructures.

Software Defined Networking

- Demonstrate theoretical knowledge of the domain of Software Defined Networking.
- Analyse the state-of the-art in Software Defined Networking.
- Describe the security issues and opportunities that are presented by Software Defined Networking.
- Construct and configure a virtual Software Defined Network using open source software.
- Develop a simple application that interfaces with the Software Defined Network controller's northbound API.

Group Project

- Identify and select appropriate tools and techniques for project development while working effectively as part of a team.
- Demonstrate effective written and oral communication while planning, undertaking, implementing, testing and documenting the group project.
- Describe techniques for project planning, implementation, evaluation and the specialised knowledge and skills related to the project content.
- Develop, test and demonstrate the project output from defined requirements.

Delivery – Blended Learning/Online

Participants will have online access to the materials covered in the programme. They will also be provided with articles, websites and video clips to aid and enhance their understanding of specific topics. Full access to ITB's library will also be available which is both a physical resource and an on-line repository of eBooks, journals and articles.

The programme will be delivered online between 6-10pm on two weekday evenings per week during each Semester, with an interactive blend of online lectures and practical work. Students will also be asked to attend three Saturdays per semester for teaching and assessment purposes.

Learning Methodology

A range of teaching and learning methods, including online lectures, workshop exercises, tutorials and project work pertinent to each module. Primarily, each module will introduce students to the fundamentals and concepts of the subject area. Instruction will then advance to an appropriate level to cover in-depth knowledge, to foster development of individual aptitudes and competence, and (where relevant) to develop team-working skills in the respective areas.

Assessment Methods

The focus will be on developing and enhancing the students' application of knowledge and skills. Assessment procedures include a combination of in-class tests, formal examinations, assignments, reports, projects presentations and seminars. At the commencement of each semester, students will be provided with a course handbook detailing module contents and assessment schedule (date, time, mode, and mark allocation).

Entry Requirements

Applicants with a Level 6 (Higher Certificate) in computing or science or equivalent will be eligible for direct entry to this course.

Applicants with a full QQI-FET (formerly FETAC) (Level 5 or 6) or without any formal educational requirements will be considered based on their work experience, industry training and certifications achieved and will be assessed through a process of Recognition of Prior Learning. Bridging studies may have to be completed in this instance.

How To Apply

For further details please email **info@ictskillnet.ie**

Fees

Full Cost €3,500 however candidates can avail of funding to reduce this to €2,800 payable in two yearly payments of €1,400 .

Technology Ireland ICT Skillnet is co-funded by Skillnet Ireland and member companies. Skillnet Ireland is funded from the National Training Fund through the Department of Education and Skills.

An Roinn Oideachais agus Scileanna
Department of Education and Skills

Skillnet IRELAND