



Online MSc in DevOps



With most technology organisations moving their delivery platforms to a DevOps approach the shortage of people with cross sectional skills in DevOps is now acute. Developed by industry as a direct response to this need this first-ever Master's degree in DevOps aims to fill these important talent gaps and give credit, recognition and credibility to technologists working in this field.

The advantages of Development Teams and Operations Teams collaborating to improve the delivery of technology solutions has meant a rapid adoption of DevOps approaches to the Software Development Lifecycle. Closely associated with Lean and Agile concepts in enhancing the delivery of technology solutions, the DevOps approach has impacted very rapidly on the Technology industry.

Most existing DevOps 'specialists' grow or develop into their role with no formal standards or certification, and a modicum of training in the actual practice of cross functional DevOps practices. They may already be experienced, highly skilled, competent and high performers in their own field of Software Development, Computing, IT Management, or Quality Assurance but they can lack the knowledge and understanding of the other cross functional disciplines they now find themselves working with daily. Understanding not only the technical, but also the business and human factors at play during the high pressure demands of modern software delivery processes, is essential in the modern discipline of DevOps.

Award Level

There are two phases to the award. Candidates are registered for the full Masters of Science in DevOps Level 9 degree (90 credits) however candidates may opt to exit the programme on successful completion of the first three semesters with 60 credits and receive a Level 9 Postgraduate Diploma in DevOps (60 credits). Please note exit awards are at the discretion of the college and no refund of fees will be due.

The award structure will place greater emphasis on continuous assessment, practical and project work rather than on formal examinations. In fact there are only 2 modules that carry an actual exam.

The aim is that participants will gain a deep understanding of the topics and content covered, and be able to demonstrate this acquired knowledge as proven competence in tests and exercises drawn from practical "real life" DevOps scenarios.

Programme Delivery

The programme will start with a 3 day workshop which will involve all participants being physically present. This is seen as important to facilitate networking, experience sharing and group learning.

It is expected that lectures will be delivered one evening per week in term time and every 3-4 weeks there may be a requirement to hold lectures twice in that week. There will also be a requirement to attend one on-campus day at the end of each semester.

Lectures will be streamed live from TU Dublin (Tallaght Campus) and will be available for download and offline viewing.

Semester 1: Introduction to DevOps

Human and Organisational Issues	Software Development Methodologies
<ul style="list-style-type: none"> Lean and Agile movements and methods Assess and evaluate organisational design and culture to facilitate DevOps style development, deployment and support Develop and manage global multi-disciplinary teams including an understanding of the cultural and practical issues which arise Be able to form, lead and develop teams Assess competence, accountability, responsibility, norms and operational management Collaboration, negotiation and partnering Managing the Future - Creating a readiness for organisational change, organisational development and change management 	<ul style="list-style-type: none"> Technical implications of DevOps – the philosophy, the history, the SDLC, Lean, Agile Manifesto, continuous feedback and learning Change, Source, Defect Control Systems, Examination of major industry implementations (e.g. Atlassian, VSTS) Code Promotion Code Synchronization System Debugging Software QA Automated Testing Software Security Vulnerability Management Software Telemetry and Monitoring Feedback and Learning



Semester 2: DevOps Fundamentals

Business Technology Strategy	IT Infrastructure Fundamentals for DevOps
<ul style="list-style-type: none"> The Business Case for Agility and DevOps Lean/Agile management/methods/frameworks (SAFE) Product road maps, pipelines, backlogs, valuing new features and technical debt Business case development and risk assessment Creation/management of multi-annual business plans Financial Management of Product and Technology life-cycles Project Management and Methodologies The end of the monolithic project Designing for agility and value Challenges for DevOps Regulated Software Impact for Customers of DevOps approach 	<ul style="list-style-type: none"> Automation of Infrastructure Task and Process automation languages Advanced System Administration Software Security System Hardening Policies and implementation Virtualisation Containerisation IT Network and Infrastructure Protocols IT Network Monitoring Continuous Deployment Cloud Computing Concepts Infrastructure as Code



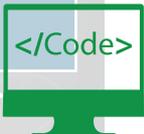


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Semester 3: Advanced DevOps

Advanced IT Infrastructure for DevOps	DevOps in Practice
<ul style="list-style-type: none"> • Architectural Design to support DevOps • The DevOps supply-chain and PLM relationship • DevOps in the Public Cloud • Comparative Analysis of Cloud Offerings • Cloud Scalability and Elasticity3 • Load Balancing • Virtualisation Automation • Provisioning and Orchestration • Software Configuration Management • Software Provisioning Management • Security in the Public Cloud • Degradating systems gracefully • Chaos Monkey • Server-less Compute in the Cloud 	<ul style="list-style-type: none"> • The DevOps paradigm/pipeline in practice requirements • Develop Continuous Integration/Test/Deployment Release management • Monitor and Learn • Feedback and Iteration • Detailed DevOps Case Study of the technical and human experiences of typical practitioners, e.g. <ul style="list-style-type: none"> - Google SRE (Site Reliability Engineering) - Intercom (Customer Messaging Platform)



Semester 4: DevOps Research

Research Methods	Research Project
<ul style="list-style-type: none"> • Academic Writing • Qualitative and Quantitative research • Surveys • Statistics 	<ul style="list-style-type: none"> • Applied piece of Research in DevOps area • Encompasses a Proof of Concept/Prototype • Supplements DevOps Theory knowledge <p><i>This is an opportunity for students to carry out a piece of work which is at the cutting edge of the field and explores in depth a feature or element of that field. It is perfectly feasible, and there are many examples of this, for students to carry out their research project on a piece of work of direct relevance to their company or organisation. The academic team in TU Dublin (Tallaght Campus) have deep industry experience and have supervised and developed MSc. projects which explore business values, infrastructure automation and DevOps projects with real industry relevance.</i></p>



Participant Eligibility

The minimum entry requirement for standard entrants to the course is a 2:2 (GPA 2.5 or equivalent), in a Bachelor of Science in Computing (Level 8) or a cognate discipline or equivalent. Candidates not attaining this standard level must achieve an acceptable standard for progression by other means approved by QQI.

How to Apply

Candidates should submit their CV directly to Technology Ireland ICT Skillnet at info@ictskillnet.ie

Fees

Successful candidates may be eligible for part-funded fees of €1,495 per annum pr person providing they are working in private or commercial semi state organisations registered in the Republic of Ireland.



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An Roinn Oideachais agus Scileanna
Department of Education and Skills

