

Technology
Ireland
ICT

Skillnet



National MSc in Artificial Intelligence

ONLINE • PART-TIME • NQF LEVEL 9

www.ictskillnet.ie



UNIVERSITY OF
LIMERICK
OLLSCOIL LUIMNIGH

Science and
Engineering

Unleash your unstoppable potential, with Technology Ireland ICT Skillnet



Technology is ever-changing. No matter what stage you are at in business or your career, there is always more to learn.

At Technology Ireland ICT Skillnet, our vision is to create **progressive futures**, helping organisations to **transform at scale** and individuals to **develop a competitive edge**, through the **power of learning**.

For almost two decades, Ireland's leading technology companies have trusted us to build the critical skills needed to thrive in a rapidly evolving market.

Let us connect you to the infinite possibilities shaping the world of tomorrow.

Supercharged skills

Each of our programmes are designed, developed, and validated by specialists from academia and industry, working together, with a constant focus on:

1 **Creating opportunity and momentum** for experienced professionals and those starting out or transitioning career.

2 Delivering learning solutions in a way that **balances work and study**.

3 Providing practical skills, along with the theoretical, allowing businesses to **navigate new frontiers in the world of tech**.



5,000+

companies supported



12,000+

learners upskilled



30+

professional programmes



Online, blended, and
in-company training supports



Government-subsidised
programme fees, up to 100%

National MSc in Artificial Intelligence

Redefine the possibilities for technology

Artificial intelligence (AI) is at the heart of many transformational business and technical applications. Applications using massive datasets, powerful computing architectures and advanced learning algorithms are contributing to business growth in almost every industry, while AI-enhanced services are fundamentally altering the way in which society functions, with this trend set to not just continue, but accelerate.



The National MSc in Artificial Intelligence, designed and delivered in collaboration with University of Limerick Faculty of Science and Engineering, is an exciting 2 year online part-time programme, giving current and future AI engineers the skills, theory and recognition they need to develop in their role, with an emphasis on practical application in the workplace.

The programme is industry-led and the content has been developed with the support of a range of companies working in this field in Ireland, such as Accenture, Analog Devices, Citibank, Ericsson, IBM, Microsoft.

**Get the right training to guide
technology in the right direction.**



At a glance

Start Date

September 2024

Award

Level 9 NFQ (90 ECTS)

Delivery

Online

Duration

2 years part-time

Fees

Skillnet subsidised: €2,950* per year

Non-subsidised: €4,950 per year

*There is an additional subsidised fee of €1,499 in Year 1 for the mandatory Certificate in Artificial Intelligence.

Programme Partner

University of Limerick Faculty of Science and Engineering



Programme structure

The programme runs over 2 years, and is delivered primarily via online lectures, with tutorials, assignments and expert support from module leaders and moderators who guide students in smaller groups.

Students will be expected to make a 15–20 hour commitment per week on average including lecture time (1–2 hours per week), self study, research, forum based interactions and assignment time.

Modules will be delivered with associated assessment of mastery so that semester-by-semester there is a confirmed and measurable achievement of learning objectives that can be transferred directly to the workplace.

Certificate in Artificial Intelligence

Participants must complete the preparatory Certificate in Artificial Intelligence course to the equivalent of a 2nd class honours level to be eligible for entry to the Masters, regardless of their prior qualifications or experience. The course is delivered by University of Limerick, in collaboration with the Irish Centre for High-End Computing (ICHEC). Successful completion of the preparatory course will lead to the award of a Certificate in Artificial Intelligence (Special Purpose Award, Level 8 NFQ, 12 ECT credits).



Who is this programme for

This programme is aimed at existing information technology professionals and those migrating from associated disciplines with an interest in, and aptitude for, transitioning into the area of artificial intelligence.

Ideal candidates for the course are:

- **Information technology specialists** looking to specialise in AI applications
- **Software engineers** interested in expanding their skill set to include AI programming
- **Data analysts** seeking to enhance their understanding of calculus and probability theory
- **Computer scientists** transitioning into the field of artificial intelligence
- **Technology consultants** eager to broaden their expertise in AI development

Semester and module breakdown

There are 5 teaching semesters and 1 research project semester, including the Certificate in Artificial Intelligence in Semester 1.

Year 1 – Autumn Semester

Certificate in Artificial Intelligence

- Introduction to Scientific Computing for AI
- Introduction to Deep Learning and Frameworks

Year 1 – Spring and Summer Semesters

Modules

- Artificial Intelligence and Machine Learning
- Data Analytics
- Advanced Topics Seminars and Project Specification
- Risk, Ethics, Governance and Artificial Intelligence





Year 2 – Autumn and Spring Semesters

In Year 2, students can choose to follow either the Modern Machine Learning, Natural Language Processing (NLP) or Computer Vision stream.

Modern Machine Learning Modules

- Machine Learning Applications
- Machine Vision
- Deep Learning
- Artificial Intelligence and Data Science Ecosystems: Theory and Practice

Natural Language Processing Modules

- Natural Language Processing: An Introduction
- Information Retrieval
- Advanced Natural Language Processing
- Natural Language Understanding

Computer Vision Modules

- Deep Learning for Computer Vision
- Machine Vision and Image Processing
- Geometric Computer Vision
- Intelligent Visual Computing and Applications

Year 2 – Summer Semester

Dissertation Project

A major dissertation project will be selected within Year 1 and completed throughout Year 2. The project can be submitted at the start and end of the summer of Year 2, allowing the learner to finalise their dissertation during the summer of Year 2.

Outcomes for you

This unique programme will equip you with a knowledge-base and an advanced skill set to become a highly capable expert in the field of artificial intelligence, including a deep understanding of the risks and ethical issues associated with AI.

Specific learnings will vary depending on choice of learning stream:

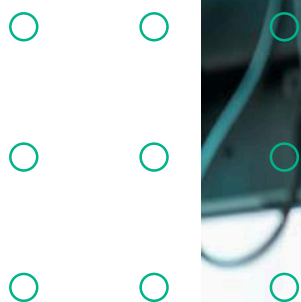
Modern Machine Learning stream:

Understand advanced machine learning models and applications, including natural language processing and probabilistic approaches to machine learning.

Understand traditional methods of machine vision, as well as act as an introduction to deep learning.

Learn about the most important deep neural network architectures, as well as the most important deep learning frameworks, and how to apply knowledge to sample applications.

Be able to analyse the algorithms that drive machine learning and how to leverage these in AI workflows through a model-driven design approach.



Computer Vision stream:

Understand the principles of Machine Vision and key topics such as linear image processing, feature detection and basic object detection.

Gain a practical understanding of Geometric computer vision, and its use in mobile robotics, vehicle autonomy and augmented reality.

Learn how to apply deep-learning to computer vision applications and tasks, including facial recognition and 3D reconstruction, image classification, object detection, and semantic segmentation in detail, along with fundamental concepts in the design and structure of deep neural networks.

Gain a full understanding of how to design and build networks for their own applications.

Natural Language Processing (NLP) stream:

Understand the fundamentals of statistical NLP, and its techniques and applications with a foundational approach.

Learn about Information Retrieval, Information Extraction and Semantic Web, experiencing a blend of fundamental concepts, techniques, and technologies used in modern information retrieval systems.

Understand advanced level topics in NLP, with a focus on deep learning-based approaches, including text classification, syntactic parsing, part of speech tagging, named-entity recognition, coreference resolution, and machine translation.

Learn about Natural Language Understanding and related topics, including sentiment analysis, relation extraction, natural language inference, semantic parsing, question answering, language generation, and conversational agents.

Award

Participants will receive a parchment for the Master in Artificial Intelligence upon successful completion of the programme.



Academic eligibility

The principal entry requirement for both the Masters course, and the mandatory Certificate in Artificial Intelligence, is a Level 8 honours degree, at minimum second class honours (NFQ or other internationally recognised equivalent), in a relevant engineering, computing, mathematics, science or technology discipline.

Applicants who possess an honours undergraduate degree, at minimum second-class honours, or equivalent in a non-numerate discipline and have a minimum of three years experiential learning in an appropriate computing discipline (with a high level of either mathematics or programming) may also apply. Their admission to the programme will be determined by the University of Limerick.

Applicants from other disciplines who have a significant mathematics, computing or programming element in their primary degree will also be considered.

Applicants who do not meet the requirements above may be considered under the [University of Limerick policy that allows for the recognition of Prior Learning](#), both formal and informal/ experiential learning; non-accredited personal and professional education; and work based training. As this is a highly technical Masters course, such applicants must have sufficient competence in mathematics and computer programming to be able to participate.

Funding eligibility

The fees for this programme are part-funded by Technology Ireland ICT Skillnet. The reduced programme fees are €2,950 per year. There is an additional fee of €1,499 for the compulsory certificate course.

Applicants must be working in a private or commercial semi-state organisation registered in the Republic of Ireland (Business, Consultant, Freelancer) to avail of the grant-aided fees. As a government-funded training network, we can only support those meeting these criteria.

Applicants who do not meet our funding criteria may in some cases be able to apply and pay the full fee of €4,950 per year if there are available places.

Please speak with our programme team to learn more about the availability of funding.

info@ictskillnet.ie

What our participants have to say



Overall, the course has given me an in-depth understanding of the inner workings and the pros and cons of AI. Plus, the added advantage to pursue AI opportunities within other roles and industries.

Michaela Dillon,
Senior QA Engineer,
ORBCOMM

Unquestionably I would recommend the programme. The content is really strong, covers a lot of areas of AI, and the lecturers are really helpful and flexible to the student's needs.

Gerry Carty,
Senior Engineering Manager,
Avaya

I would absolutely recommend the programme. I've got cutting edge, machine learning education, and a valuable industry-led qualification that has made changes to my career.

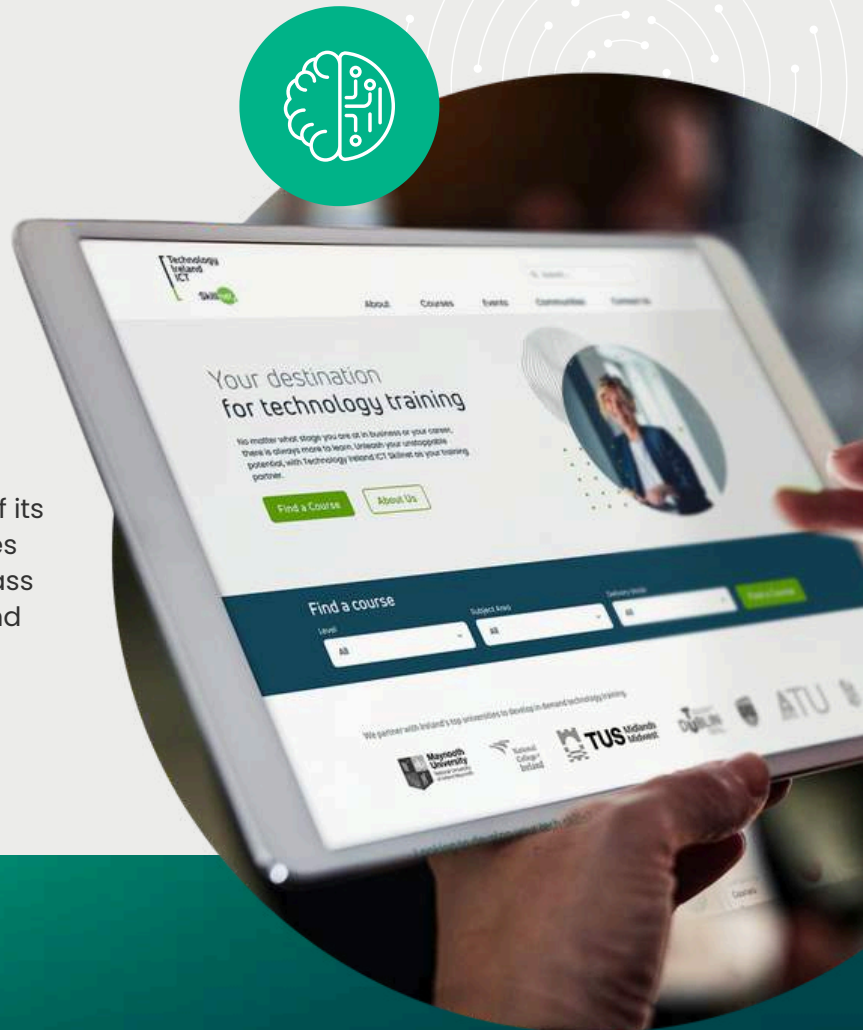
Seamus Brady,
Lead AI/ML Engineer,
Optum

Programme delivered in partnership with:



The University of Limerick Faculty of Science and Engineering delivers a wide range of undergraduate and postgraduate academic degree programmes in Computing, Design, Engineering, Mathematics and Science. They have 400 PhD researchers and extensive research capabilities.

The Faculty is well recognised for the quality of its teaching and learning, academic programmes and research expertise having three world-class research institutes in the areas of Materials and Surface Sciences, Software Engineering and Mathematics which are underpinned by well-established links with industry.



Ready to grow your career in Artificial Intelligence?

Our team is ready to answer any questions you might have regarding this programme. Send an email to info@ictskillnet.ie or use the enquiry form on our programme page and one of our programme leads will be delighted to assist you.

Successful applicants will be required to complete registration details both for Technology Ireland ICT Skillnet and for University of Limerick. Programme participants will become registered students of University of Limerick.

Start your learning journey today with Technology Ireland ICT Skillnet by clicking on the Learn More button.

Learn More

Embrace the future with confidence, with Technology Ireland ICT Skillnet as your training partner.



Programme pillars

Our wide range of programme channels allows you to access training in the latest technologies driving business development.



Industry approved

With the support of our Industry Steering Group, made up of some of Ireland's most progressive companies, you can be assured that our programmes will provide you with the most relevant and cutting-edge skills that industry demands.



Certification you can trust

Through our strategic partnerships with some of Ireland's most influential higher education institutions, we offer a range of certificate, diploma, and masters programmes, with awards accredited on the National Framework of Qualifications.



Join 12,000+ learners who have transformed their careers with us. **Explore our range of courses >**

www.ictskillnet.ie



UNLEASH YOUR
UNSTOPPABLE POTENTIAL



Get in touch to invest in your development.
Email: info@ictskillnet.ie **Call:** +353 (0)1 469 3754

www.ictskillnet.ie

Technology Ireland ICT Skillnet is co-funded by Skillnet Ireland and network companies. Skillnet Ireland is funded from the National Training Fund and the European Union through the Department of Further and Higher Education, Research, Innovation and Science.



Rialtas na hÉireann
Government of Ireland



Co-funded by
the European Union