University College Dublin
Ireland's Global University

Course code: T405

MEngSc Robotics & Intelligent Manufacturing

One Year Full Time (September start)

Introduction

The development and deployment of robotic as well as smart manufacturing technologies have become very important for a significant number of industrial sectors in Ireland and the rest of the world, including biomedical, pharmaceutical, agricultural as well as electronics and discrete companies. The main barrier towards implementing modern, smart automation technologies in standard manufacturing practices is the lack of skills of automation experts in the areas of robotics and digital manufacturing. In Ireland, this is manifested in the difficulty Irish robotic and system integration companies have in recruiting engineers who can be readily involved in today's complex automation cell and line building projects. This is also reflected on the average salary of automation experts, which is among the highest in the country. The main goal of this programme is to produce experts with sufficient scientific and practical skills in the areas of robotics and smart manufacturing.

Course Highlights

This programme is delivered by a highly research-intensive school, which is in the top 150 in the QS world subject rankings. An example of this research activity is the coordination of the 2.23-million-euro Horizon Europe iCircular3 Marie Skłodowska- Curie Actions project, with one of its main research goals being to take advantage of circular economy principles for improving the efficiency as well as for extending the lifecycle of industrial robots.

Course Content and Structure

The programme is a full-time, one-year **90 credit masters.** Overall, the programme offers:

- **60 credits** of focused technology and engineering management taught modules,
- **30 credit** Applied Robotics Research Project in collaboration with leading engineering and manufacturing companies in Ireland.
- A number of modules are expected to include live presentations, which will be delivered by Irish and European industrial experts in the areas of robotics and automation.

Modules Include:

Autumn Trimester

- Introduction to Robotics Supply
- Chain Design and Analysis
- Engineering Project Management
- Data Analytics for Engineers
- Control Theory
- Biosensors & Actuators
- Machine Learning for Engineers
- Entrepreneurship in Engineering
- Manufacturing Engineering II
- Research Skills and Techniques

Spring Trimester

- Operations Management
- Eng. Decision Support Systems
- Robotic applications
- Industrial Automation
- Data Science in Python
- Digital & Embedded Systems
- Advanced Metal Processing
- Advanced Polymer Engineering
- Technical Communication
- Professional Engineering (Management)

Summer Project (30 cr.) Applied Robotics Research Project

Why study at UCD?

Tradition

Established 1854, with over 170 years of teaching & research excellence

Employability

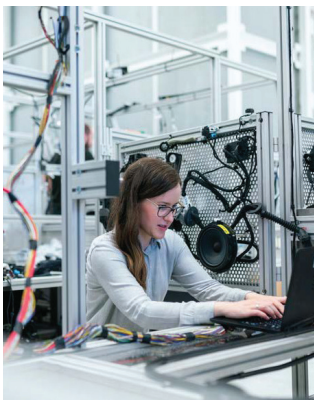
UCD is ranked in the top 100 worldwide at 88th globally for employability outcomes for graduating students.

Global profile

UCD is ranked in the top 1% of higher education institutions worldwide

Global careers

Dedicated careers support; 2-year stayback visa to work in Ireland



Career Opportunities

At this point of time there is a quite significant lack of automation scientists and engineers in the Irish job market. The prospectives for the programme graduates are excellent. Leading automation companies, such as KUKA Ireland and Cobots.ie, as well as biomedical manufacturing companies, such as STRYKER and Boston Scientific, are continuously looking for automation experts in the Irish job market.

Facilities & Resources

The College of Engineering and Architecture has invested more than 1 million EUR over the last years on robotics, smart automation, and digital manufacturing technologies. The available equipment, which will be used in a number of lab and training workshops, include state-of-the-art industrial and collaborative robots, as well as autonomous industrial / logistics mobile robotic platforms, advanced sensors, and digital manufacturing / simulation software.

Entry Requirements

- Applicants should hold a NFQ Level 8 (or international equivalent) degree in a relevant Engineering or Science programme Engineering or equivalent.
- Applicants whose first language is not English must also demonstrate English language proficiency of IELTS 6.5 (no band less than 6.0 in each element), or equivalent.
- Students who do not meet the IELTS requirement may wish to consider taking the Pre-Sessional or Pre-Masters Pathway. Full details www.ucd.ie/alc/programmes/pathways

International Fees & Scholarships

Tuition fee information is available on www.ucd.ie/fees. Please note that UCD offers a number of graduate scholarships for full-time, self-funding international students, holding an offer of a place on a UCD masters programme. Please see www.ucd.ie/international/scholarships for further information.

Related Masters Programmes

- ME Mechanical Engineering
- ME Manufacturing Eng with Data Science & AI for Competitive Manufacturing
- ME Manufacturing Engineering with Digital Manufacturing for Innovation

Course Profile

Assoc. Professor
Nikolaos Papakostas
Programme Director

A significant part of today's major economic activities, including manufacturing, construction, logistics, and transportation are being transformed by robotics, data analytics, machine learning and artificial intelligence platforms. It is expected that robots, automation, and intelligent technologies will constitute the foundation underlying all future scientific and engineering projects. This MEngSc programme provides students with an understanding of the tools that are required for designing and deploying novel production and business environments. These tools include digital manufacturing, simulation, data analytics, machine learning and artificial intelligence software, industrial, collaborative, and mobile robots, advanced sensors, and smart devices. Graduates will be capable of getting involved in advanced robotics and smart automation projects.

CONTACT US

Website: www.ucd.ie/eacollege/contact/ or www.ucd.ie/global/enquire/
Irish/EU Students – Katie O'Neill **E:** katie.oneill@ucd.ie **T:** +353 1 7161781
International Students – **E:** eamarketing@ucd.ie **T:** +353 1 7161802

APPLY NOW

This programme receives significant interest so please apply early online at **www.ucd.ie/apply**