



Manufacturing & Engineering
Growth & Advancement

**DEGREE
APPRENTICESHIP**
in Mechanical
& Manufacturing
Engineering



Department for the
Economy
www.economy-ni.gov.uk

www.midulstermega.com     



Engineering a Better Future for Northern Ireland

WHAT IS A DEGREE APPRENTICESHIP?

Degree Apprenticeships provide an opportunity to gain a full honours bachelor's degree (Level 6).

These programmes are being developed by employers, universities and professional bodies working in partnership. Degree Apprenticeships combine working with part-time study at a university. Apprentices are employed throughout the programme and spend part of their time at university and the rest with their employer. Degree Apprenticeships are already popular amongst other industries such as construction, financial services and IT. Large firms such as **Deloitte**, **EY**, **ICE** and **Kainos** have successful Degree Apprenticeships that have been running in Northern Ireland for a number of years.

WHY CHOOSE A DEGREE APPRENTICESHIP?

The MEGA Degree Apprenticeship offers a wealth of benefits including mentorship, career pathways, progression, earn as you learn, development of skills and **no debt!**

HOW IS IT FUNDED?

Degree Apprenticeships have two aspects, **learning** and **working**. The cost of learning is paid for by the Department for the Economy NI. The apprentice is **paid from day one** of the programme by the employer for both working on site and their learning at university.

WHAT IS THE MEGA DEGREE APPRENTICESHIP IN CONJUNCTION WITH ULSTER UNIVERSITY?

Working collaboratively, MEGA with its industry network and Ulster University, School of Computing & Intelligent Systems at Magee campus, together launched Northern Ireland's first **Industry Approved Manufacturing Engineering Degree Apprenticeship** in 2021.

This Apprenticeship provides the apprentice with an abundance of real-time industry experience together with relevant training and skills acquired through the degree programme which has been created with industry needs at its epicentre, resulting in relevant highly skilled apprentices, ready for **local employment** within **international companies**. Its duration is 4 years, the same time commitment as a traditional sandwich-year degree.

WHAT ARE THE ENTRY REQUIREMENTS FOR THE APPRENTICESHIP?

GCSE

Grade B in Maths and Grade C in English - Essential

Technology & Design and Physics - Desired but not essential

A Level

Grades BBB to include one from:

GCE A Level Mathematics, Further Mathematics, Physics, Technology and Design, Double Award Science / Applied Science, Engineering, or Electronics.

For applicants offering Maths, Further Maths or Physics in GCE A Level, a two grade reduction will be applied at the time of offer.

BTEC Level 3 QCF Extended Diploma in a relevant Engineering subject area with overall award profile of DDD. This also requires a Merit in either Mathematics for Engineering Technicians or Further Mathematics for Engineering Technicians, AND Merit in Mechanical Principles and applications.

OR

BTEC Level 3 RQF National Extended Diploma in a relevant Engineering subject area with DDM overall award grades to include a Merit in Engineering Principles and Merit in Calculus to Solve Engineering Problems.

The following are acceptable in particular combinations or with A-Level (s) - NB Subject requirements apply (see above and A-level section).

BTEC Level 3 QCF Subsidiary Diploma, BTEC RQF National Extended Certificate,

BTEC Level 3 QCF 90-credit Diploma, BTEC Level 3 RQF National Foundation Diploma,

BTEC Level 3 QCF Diploma, BTEC Level 3 RQF National Diploma.

Irish Leaving Certificate

112 UCAS tariff points to include a minimum of five subjects (four of which must be at Higher Level) to include English at H6 if studied at Higher Level or O4 if studied at Ordinary Level.

Course Specific Subject requirements

This course also requires you to achieve H2 in **one** of the following: Mathematics, Physics, Chemistry, Physics/ Chemistry, Biology, Technology, Engineering, Technology & Design, or Environmental Technology.

If Mathematics is not passed at H2, you will be required to achieve a minimum of H6 if studied at Higher Level or O4 if studied at Ordinary Level in addition to one of the subjects above.

Irish Leaving Certificate UCAS Equivalency

CAREER OPTIONS FOR GRADUATES FROM MEGA DEGREE APPRENTICESHIP

Design Engineer - Office based and client facing

Quality Engineer - Office / Production floor

Manufacturing Engineer - Shop floor working with the production teams

Project Manager - Engineering or related

Production Engineer - Liaison between design and production teams

Project Engineer - Design and production specialist / prototyping projects

Sales & Service Engineer - International work and travel

Other Jobs - Graduates will be qualified for a range of jobs that require Maths and Physics. Students could go on to work for Formula 1, develop Nuclear Weapons, work within the Energy Industry, Oil Fields, or within Banking/ Trading.



“
The MEGA degree apprenticeship has given me the opportunity to gain invaluable work experience whilst also developing my academic studies simultaneously which is brilliant because I find the hands on experience helps so much with learning, they both go hand in hand and this way I get to experience both. So far this degree course has been tailored brilliantly to show us new and innovative ideas to bring into our workplace and I am excited to continue this journey.

ZARA CHAMBERS
DA Student



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APPLICATION PROCESS

HOW TO APPLY?

Please visit the MEGA website www.midulstermega.com to apply for the MEGA Degree Apprenticeships. These courses are not part of the UCAS application process.

Step 1 - Go to www.midulstermega.com

Step 2 - Go to 'Student Area', and select 'Degree Apprenticeship' from the dropdown menu.

Step 3 - Apply by completing the 'UNIVERSITY APPLICATION' and 'COMPLETE MEGA CV' sections.

Only MEGA member companies will receive your CV.

November	Applications Open
March	Applications Close
APPLY HERE: www.midulstermega.com	
April	Company Shortlisting and Interviews
May	Conditional Industry offers of employment
August	Industry Confirmed offers – confirm results with UU
September	Start Ulster University Year 1

Successful MEGA candidates must have the appropriate entry requirements and have secured employment within a MEGA company.

APPLY ONLINE



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Delivering
Excellence
in the
Workplace





WHAT'S THE DIFFERENCE IN COST?

The cost of opting for a traditional degree:

Students not living with parents	Tuition Fee NI	Tuition Fee UK	Maintenance Grant (not paid back)	Maintenance Loan (repayable)	Total Cost Full-time study NI (minimum approx.)	Total Cost Full-time study UK (minimum approx.)
Parents earn < £19,203	£4,710 x 4 years = £18,840	£9,250 x 4 years = £37,000	£3,475 x 4 = £13,900	*£4,661 x 4 years = £18,644 *The lowest amount	£37,484	£55,644
Parents earn > £41,065	£4,710 x 4 years = £18,840	£9,250 x 4 years = £37,000	£0	£6,776 x 4 years = £27,104	£45,944	£64,104

The cost of a Degree Apprenticeship:

Cost of Tuition (Paid for by DfE)	Apprenticeship Wages	Total cost of Degree Apprenticeship
£0 x 4 years = £0	£15 - 18k in Year 1	£0



“

I am glad to have chosen the MEGA Degree Apprenticeship as it has given me an alternative approach to my degree. What I do within University immediately became relevant to what I was doing within work and likewise, what I am doing within work has helped me with the theory aspects in class. What I have been doing within Nugent has been very engaging and has challenged me from day one.

CONOR BRATTIN
DA Student



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WHO ARE MEGA?

MEGA stands for Manufacturing, Engineering, Growth & Advancement. It's an **industry-led collaborative network** of Engineering & Manufacturing companies of all sizes in Mid Ulster working together with Mid Ulster Council, Invest NI and Education Providers towards a common goal. Their main aim is to tackle the diminishing labour pool by implementing ways to attract and retain talent in the Engineering & Manufacturing industry.

The industry is changing and companies are struggling to employ graduates with the right skills to help them embrace technological advancements. MEGA, representing industry, along with Ulster University have designed Northern Ireland's first Manufacturing & Engineering **Industry Approved Degree**. This Degree Apprenticeship will be open to all Manufacturing & Engineering companies as well as students across the province.

WHY ULSTER UNIVERSITY?

The School of Computing, Engineering and Intelligent Systems (SCEIS) has a long history of engagement with all levels of the education landscape. They enhance the exposure of young people to careers in Engineering. The MEGA Degree Apprenticeship Scheme represents another opportunity for Ulster University to support this brand of learning.

The team at Ulster University have bid for funding under the City Deal programme to build the **Centre for Industrial Digitalisation Robotics and Automation (CIDRA)**. This industry-facing 4.0 development centre will greatly enhance NI industry in terms of **technology and skills development**. Ulster University sees Apprenticeships as essential to providing a pipeline of suitably educated individuals to support the growing use of **advanced technologies** in local manufacturing.



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MODEL OF DELIVERY

YEAR 1					
4 Days University / 1 Day with Employer					
SEPT	OCT, NOV, DEC	JAN	FEB, MAR, Mid APR	Mid APR, MAY, JUN, JUL, AUG	JUN, JUL, AUG
EMPLOYER - MEGA INDUCTION	UNIVERSITY	EMPLOYER UU EXAMS	UNIVERSITY	EMPLOYER UU EXAMS	EMPLOYER
Modules: Maths, Manufacturing, Mechanical Science				Modules: Design CAD, Electronics, Fluids and Thermo, Energy Systems	

Year 2 Onwards - 4 Days Employer / 1 Day University

YEAR 2		YEAR 3		YEAR 4	
SEPT - DEC	FEB - MAY	SEPT - DEC	FEB - MAY	SEPT - DEC	FEB - MAY
1 Day per week	1 Day per week	1 Day per week	1 Day per week	1 Day per week	1 Day per week
Modules: Maths, Materials	Modules: Mechanical Science, Electronics	Modules: Electrical Control systems, Design and CAD	Modules: Mechanical Science, Manufacturing Technology	Modules: Project, Design and CAD	Modules: Project, Computer Aided Engineering



The manufacturing and engineering sector is a huge driver of the economy in the Mid Ulster region



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DEGREE APPRENTICESHIP AT ULSTER UNIVERSITY

YEAR 1

MEC109 Manufacturing Processes (Semester 1)

This module provides an integrated programme of lectures and workshop practicals introducing students to engineering manufacture. Students will examine many manufacturing processes such as milling, turning, CNC machining and robotics, metal cutting and folding, marking out metal casting, polymers and composites.

EEE107 Maths for Engineering 1 (Semester 1)

The module will develop the student's mathematical ability and provide the student with all the necessary techniques, concepts and methods for the analysis of problems in engineering related disciplines. Students will study Algebra, Trigonometry, Vectors, Matrices and Calculus

MEC105 Design and Cad 1 (Semester 2)

The aims of the module are to enable students to gain a basic level of proficiency in the use of a modern 3-D CAD software, communicate design information in an appropriate way, and become familiar with the engineering design process and its application to simple design problems. Students will be introduced to computer aided control for CNC operation including robotic cell design – using software – Visual Studio/ Robot Studio.

EEE201 Circuits Analysis 1 (Semester 2)

The main aim of this module is to introduce the fundamental concepts of electrostatic and electromagnetic fields, related rules, electric and magnetic materials and their characteristics, and their applications in physical systems. Students will study DC Circuits, Circuit analysis techniques, Op Amps and Non-Linear devices, e.g. semi conductors. This is a key module to outline the basis for electronic measurement and control

MEC102 Introduction to Statics and Dynamics (Semester 1)

This module aims to ensure that students have a knowledge of the basic technological principles in statics, strength of materials and dynamics relevant to engineering. On completion of this module the student should be provided with the elements of the tools essential to analyse basic mechanical systems and mechanisms. Students will study beams bending, torsion, kinematics, motion and work energy principals.

ENE135 Introduction to Renewable Energy (Semester 2)

This module is designed to equip students with an understanding of the fundamental drivers underpinning the need for change and the issues of energy systems and energy conversion in relation to conventional and alternative energy systems. This module includes a basic introduction to the principles behind fluid mechanics and thermodynamics. Emphasis is placed on the application of this theory to everyday items, ranging from bicycles to motor cars.

YEAR 2

EEE406 Maths for Engineering 2 (Semester 1)

This module builds on the learning of EEE107 and encourages the development of a higher level of mathematical literacy and aims to generate an inherent mathematical curiosity for investigation and discovery. Students will study Calculus, differential equations, Laplace transforms, matrices and complex numbers and statistics. Additionally students will study Matlab software for automations of calculation.

MEC308 Materials for Engineering (Semester 1)

The aim of this module is to educate on the properties, science and application of engineering materials dealing with a broad range of classifications of engineering materials, namely, metals and their alloys, engineering ceramics, polymers, elastomers and composites.

MEC341 Manufacturing Technology (Semester 2)

This module will equip the student with the knowledge and understanding of the key manufacturing processes, including automation found in the mechanical manufacturing industries and how these processes are used in a systematic way to bring about highly-engineered artefacts in a productive, high-quality and cost-competitive way. Students will study Lean manufacturing and continuous improvement, manufacturing systems and processes as well as in-depth study of subtractive and additive manufacture casting and deformation (forming) processes.

DEGREE APPRENTICESHIP AT ULSTER UNIVERSITY

YEAR 2

MEC360 Statics and Dynamics 2 (Semester 2)

This module continues to build and consolidate the core of engineering static strength of materials and dynamics required by a professional engineer. The academic theories and core principles of thermodynamics are introduced.

YEAR 3

MEC363 Design and CAE 2 (Semester 1)

This module synthesises both design and manufacturing within a real industrial environment and utilises the application of computers in the analysis and presentation of product designs.

EEE409 Engineering of Control Systems and Signals (Semester 1)

This module will present the core theoretical elements necessary to design control systems and signal filters and illustrate how these are applied to real problems according to some specifications and given real world limitations.

EEE601 Industry 4.0 (Semester 2)

This module advances the understanding of Internet of Things in an industrial context as Industry 4.0, encapsulating the trends and technologies that are transforming the way manufacturing and production operations manage their processes. It focuses on how data is produced, stored, processed, analysed and exchanged between operational systems inside industrial plants and in the cloud.

MEC510 Mechanical Science (Semester 2)

Building on MEC 102, this module equips students with the technological principles relevant to the practice of engineering to demonstrate the application of these principles in stress systems, three-dimensional dynamics, vibration and thermodynamic systems performance.

YEAR 4

EEE521 Project Thesis (Semesters 1 & 2)

Students are required to undertake an individual project during the final year of the course. Its purpose is to provide an experience of developing a solution to a real problem. This work combines skills and knowledge acquired previously on the course with those acquired during the project.

MEC520 Design and CAD 3 (Semester 1)

This module completes the engineering design suite of modules and provides opportunity for students to apply their knowledge within the context of real, industrially originated project work. This module is based on the execution of an industrially generated major design project through multi-disciplinary team activity involving aspects of project management, market analysis, specification, concept design, budget costing, decision making, detail design, production planning, manufacturing requirements and product costing.

MEC521 CAD/CAM AND Simulation (Semester 2)

This module provides a practical, hands-on treatment of Computer-aided Engineering in the context of application in design practice or manufacturing company. It majors on the more advanced part modelling techniques, assembly modelling, good modelling practice, collaboration and interoperability, design documentation, 3D printing, surface modelling, rendering, mechanism simulation and Finite Element Analysis.

Want more
information?

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FAQ

WHERE DOES MY CV GO?

Your CV will be distributed to MEGA member companies. The companies will shortlist and then interview for the position.

CAN I ORGANISE MY OWN EMPLOYER?

If you want to be employed by a MEGA member company, this is done through the MEGA application process. If you gain an employer outside of this, they will need to become a MEGA member to ensure you can gain access to our support and services.

WHAT HAPPENS IF I DON'T GET AN EMPLOYER?

Unfortunately, if you don't gain relevant employment for this course then you cannot commence with this Degree Apprenticeship.

WHAT HAPPENS AFTER MY APPRENTICESHIP?

There are ample career and progression opportunities on completion of your apprenticeship. See the '*Career Options*' section for examples.

IS MY QUALIFICATION THE SAME AS DOING A FULL-TIME DEGREE?

Yes, your degree qualification has equal status to a full-time degree, but you will also have gained four years industry experience.

CAN A STUDENT RESIDING IN SOUTHERN IRELAND GO ON THIS COURSE?

Yes, if your employer is Northern Ireland based. See the '*Entry Requirements*' section for more information.





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