



MTU

Ollscoil Teicneolaíochta na Mumhan
Munster Technological University

Additive
Manufacturing

Industry
4.0

Robots

Simulation

Internet Of Things

Big data

System
Integration

Smart Product Engineering (Honours)

Innealtóireacht Táirge Cliste (Onóracha)

Level 8

SCORE THE NECESSARY CAO POINTS AND MEET
MINIMUM LEAVING CERTIFICATE REQUIREMENTS
6 SUBJECTS

SUBJECTS O6/H7	SUBJECTS H5	MATHS GRADE	ENGLISH OR IRISH GRADE
4	2	O3/H6	O6/H7

Application: CAO
 CAO Code: MT 844
 NFQ Level: 8
 Award Title: Bachelor of Engineering (Honours)
 in Smart Product Engineering
 Duration: 4 Years (8 Semesters)
 Places: 40
 Location: MTU Bishopstown Campus, Cork



Work placement takes place in Year 3



Progression to Postgraduate Programmes

developing product solutions from the outset, whereas traditional programmes tend to start with component analysis to build upwards. The programme delivery supports this learning methodology with practical, studio-based projects and assessments giving students the opportunity to combine the fields of electronic engineering, manufacturing techniques and design methodologies in an authentic product development experience.

FURTHER STUDIES

Upon successful completion of this programme, graduates may apply for postgraduate study in a variety of related Masters programmes. The NIMBUS Research Centre, at MTU Bishopstown Campus, Cork, offers PhD opportunities in relevant topics.

CONTACT INFORMATION

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QUESTION TIME

What level of Mathematics is required?

Grade O3/H6 in the Leaving Certificate exam is the minimum requirement. Mathematics is used in all engineering disciplines and provides powerful tools for understanding and solving problems.

Has the course professional accreditation?

As a new programme, the BEng (Honours) in Smart Product Engineering is currently not accredited. An application for accreditation by Engineers Ireland at the Bachelor (Honours) Level 8 educational standard will be made when the programme is operational.

Can you give me examples of the type of work I will be able to do?

From user needs, you will design and develop product ideas and then produce and evaluate prototype solutions. The prototype development will combine programmable electronic systems, mechanical designs and system software. The prototypes are critically evaluated based on user experience, manufacturability, sustainability and commercial feasibility.

CAREER OPPORTUNITIES

There is a strong demand for Science, Engineering and Technology graduates and most companies have difficulty recruiting for open positions. Graduates from the programme will be qualified to take up many roles in local, regional and international organisations. They will leave the programme with skills spanning multiple in-demand disciplines from product design, requirements specification, electronic and mechanical design and prototyping, embedded software development, system test, manufacturing, cloud service utilisation/ provision and project/business management.

Students undertake a relevant work placement between April and September of third year. The work placement introduces the student to the work practices, procedures and environments that they will encounter as professional engineers. It also provides a networking opportunity for future employment options.

FIRST YEAR AT A GLANCE

Year 1 integrates theory and practice, with an average of 10 hours in the classroom and 12 hours of studio work.

- **Design Thinking:** The module develops a human-centred approach to innovation—anchored in understanding customer's needs, rapid prototyping, and generating and communicating creative ideas.
- **Sensor measurement:** Smart products interface with the real world using sensors such as a phone touch screen. The fundamental circuits to connect sensors to the digital world are introduced.
- **3D Design and Print:** A suite of modules focus on the application of Computer Aided Drawing (CAD) to produce product components that are prototyped in the 3D printing studio.
- **Embedded Software:** Students learn to write embedded software to control and/or manage a hardware device to interface connected sensors, transfer the data and take actions based on measured values.
- **Mathematics:** A key engineering tool applied to systematic product development.
- **Innovation and Teamwork:** Throughout the first year students will acquire skills in developing and assessing innovation strategies and collaborating on team activities.

OVERVIEW

Smart Products are intelligent digital devices that gather and manage data and integrate with cloud services to best meet the demands of modern users. Examples include fitness trackers, autonomous cars, industrial equipment, energy monitors and medical devices. These products are part of the Internet of Things (IoT) and provide human-centric experiences supported by computing and engineering technologies to deliver impactful personal and societal benefits.

The Smart Products Engineering programme, developed in collaboration with industry, recognises the need for specialist engineers who can integrate the competencies of the diverse disciplines involved in developing these products. The programme enables students to; identify opportunities in the fast-changing marketplace for smart products, develop product requirements, and design and evaluate prototypes. This prepares graduates to design, prototype, commercialise and manage smart products, interfacing the real-world and cloud services.

The programme employs a novel teaching and learning approach, focussed on conceptually