

# TU710 ENGINEERING RELIABILITY MANAGEMENT

## Programme Background

TU Dublin's Engineering Reliability Management programme is the first of its kind in Ireland. It was specifically designed with the advice of industrial experts who highlighted the specific requirements needed to fulfil management, supervisory and technical positions across a broad range of high-tech industrial companies.

## What is Engineering Reliability Management?

It is an engineering activity which allows graduates to work in both mechanical, manufacturing & electrical engineering environments in high-tech multi-national companies, as well as traditional industries and public utilities.

The main aim is 'preventing failure from occurring'.

Graduates of the course will have acquired the requisite knowledge and skills to operate effectively in an environment where diagnostic and applied engineering skills will be valued and highly sought after.

## Why is reliability required in industry?

All engineering systems require the following:

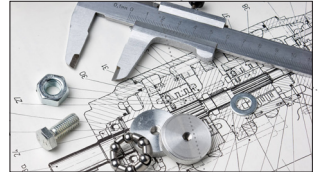
- Proper installation and layout
- Continuous monitoring of equipment and processes
- Effective planned maintenance
- Fault-finding and troubleshooting techniques
- High quality output and standards
- Improved safety

Implementation of these activities requires personnel whose role is recognised as forming part of a team, and who are responsible for the reliable and safe operation of plant and equipment.

## About the Programme

The function of reliability engineering is continually changing and the programme is specifically designed to meet the ever-increasing demands on reliability engineers.

This has led to a requirement in modern day industry for a multi- skilled, flexible engineer with specific expertise in the disciplines of electrical, mechanical, fluid power and computer applications.



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## Industrial Career Prospects & Employment Opportunities

Career prospects are excellent for graduates of this programme with opportunities for employment in industries and sectors such as:

- Medical Device
- Semiconductor
- Food & Beverage
- Polymer
- Pharmaceutical
- Healthcare and many others

and in roles such as:

- Reliability & Maintenance Manager
- Technical Supervisor
- Reliability Engineer
- Quality Control Engineers
- Engineering Technicians
- Instrumentation Technicians

### MEETA Awards Winners:

The MEETA society is a special interest group for maintenance, reliability and asset management practitioners. Each year MEETA conducts a national competition attracting entries for projects conducted in the maintenance sector.

Engineering Reliability Management students have had, and continue to have, an excellent track record in this competition. This stems from the high level of guidance and the knowledge transfer that takes place between the student, lecturer and the industrial representative.

The lecturing staff in TU Dublin City Campus endeavour to maintain a high level of quality and performance from all students of the programme.



## Expert Industrial Opinion

*“ The Engineering Reliability Management programme at TU Dublin covers all the essential aspects of maintenance engineering. It gives a wide and deep understanding of the technical, practical and managerial aspects of equipment maintenance. The lecturers on this course are committed, knowledgeable and possess valuable maintenance experience from various industries. This course is an excellent platform towards a career in maintenance and asset management. “*

**Mr. Pat Breen**  
Operations Manager,  
Smartply (Waterford),  
Coillte

*“ I would recommend the Engineering Reliability Management programme to anyone wishing to gain a solid, practical grounding in the fundamentals of engineering and maintenance systems. The course combines a nice blend of practical and theoretical subject matter, allowing the student to develop their engineering knowledge and hands on skills. The key focus areas of maintenance systems are covered in detail, ranging from planning and scheduling, materials science, asset management, facilities, reliability, IT systems, quality, automation, etc. “*

**Mr. Jim Kelly**  
Director of Asset Management,  
World Wide Engineering & Technical Operations at Johnson & Johnson

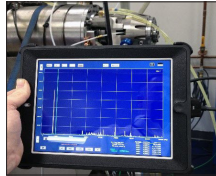
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## Technical Equipment

### Thermography

An infrared camera is a non-contact device that detects infrared energy (heat) and converts it into an electronic signal, which is then processed to produce a thermal image on a video monitor and perform temperature calculations.



### Vibration Analysis

All rotating equipment vibrates to some degree. As components reach the end of their product life they begin to vibrate more dramatically and in distinct ways. Ongoing monitoring of equipment allows these signs of wear and damage to be identified.

### Ultrasound

Ultrasonic techniques make it possible to detect friction in rotating machinery and predict deterioration.

Ultrasonic technology is sensitive to high-frequency sounds (inaudible to humans) and distinguishes them from lower-frequency sounds and mechanical vibration.



### Oil Analysis

Oil analysis (OA) is the analysis of a lubricant's properties, suspended contaminants, and wear debris. OA is performed during routine predictive maintenance to provide meaningful and accurate information on lubricant and machine condition.

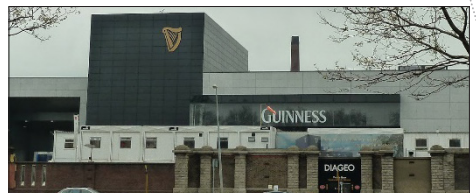
## Final Year Projects

Final year projects form a significant part of the overall programme. They run for the full duration of Semester 1 and Semester 2 in Year 3 of the programme.

The aim of the project module is to focus what the student has learned over the various modules on the programme and transfer that knowledge gained into a practical industrial based project.

Students are paired with a company and develop the project content around a maintenance-related issue specific to that company. In doing so, the student acquires industrial experience and develops confidence in his or her abilities to perform in a career specific environment. Guidance is given to the student from both the industrial contact and a college supervisor who assists the student in achieving the best possible outcome and attaining a highly sought after qualification.

Projects are 'real-life' in their nature, and are often implemented after completion by the industrial partner, or company. This often translates into large financial savings for the company.



*Final year project partnership in companies such as Diageo, Pfizer & Bristol-Myer Squibb*

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## Programme Outline

### 1st Year (Semester 1 & Semester 2)

- Mathematics 1 & 2
- Automation Technology
- Communications 1
- CAD + IT 1 & 2
- Electrotechnology 1 & 2
- Workshop + Metrology
- Manufacturing Systems 1
- Applied Engineering Science 1 & 2

### 2nd Year (Semester 1 & Semester 2)

- Mathematics 3 & 4
- Facilities Operation Maintenance + Efficiency 1
- Maintenance + Asset Management 1 & 2
- Computer Aided Design
- Electrical Service Plant
- Programmable Logic Controllers 2
- Instrumentation
- Condition Based Monitoring 1
- Material & Manufacturing Optimisation
- GMP for Clean-Room Environments

### 3rd Year (Semester 1 & Semester 2)

- Project (Industry-based)
- Maths 5
- Reliability, Availability, Maintainability + Supportability (RAMS)
- Electrical Facilities Maintenance
- Mechatronics
- Computerised Plant Maintenance
- Business + Engineering Management
- Condition Based Monitoring 2
- Metrology + Quality
- Facilities Operation Maintenance + Efficiency 2

## Examinations & Other Requirements

- (a) Students undertake University's examinations on completion of each semester.  
(b) Students also complete assignments and practical laboratory work during each semester

**Duration:** Three years (Full-time)

**Award:** Bachelor of Engineering Technology (B.Eng.Tech)  
(Engineering Reliability Management) of Technological University Dublin

**Location:** TU Dublin City Centre

### Entry Requirements

- Leaving Certificate, with a Pass grade in 5 subjects (including Mathematics and English or Irish)
- Craft Certificate, or equivalent qualification

### Recognition by Professional Bodies

Those who qualify with a Bachelor of Engineering Technology meet the Technician Engineer level requirement of Engineers Ireland and can qualify for the Associateship grade of membership after they have completed a suitable period of practical training.

## Programme Contacts

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