LIT
FACULTY OF APPLIED SCIENCE, ENGINEERING AND TECHNOLOGY

LIT
DEPARTMENT OF MECHANICAL AND AUTOMOBILE ENGINEERING

# PRECISION ENGINEERING

## BACHELOR of ENGINEERING in PRECISION ENGINEERING – LEVEL 7 ADD-ON

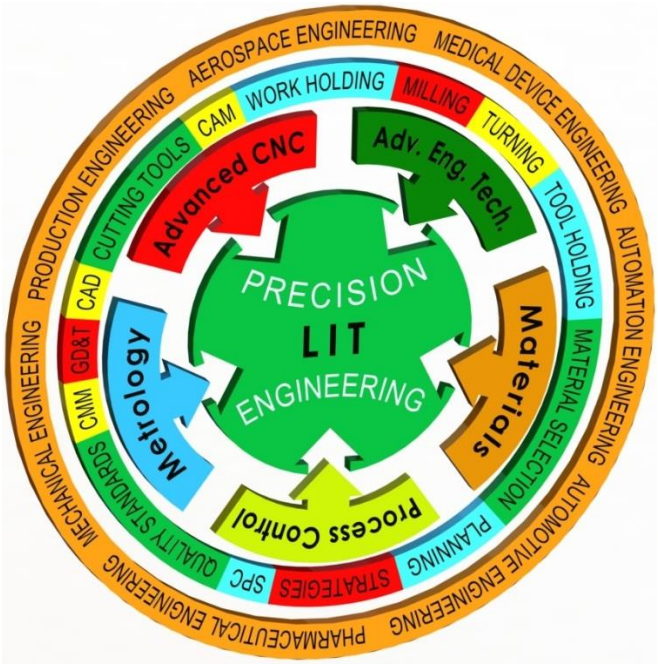
### What is the programme about?

This Level 7 degree in Precision Engineering has been designed with industry to respond efficiently and effectively to the needs of the Precision Engineering industry.

The programme focuses on the key factors required in the design, manufacturing, and assessment of high value components in the materials processing sector with specific emphasis in metal cutting and related processes. This is a workshop/lab based programme with hands-on experience on state-of-the-art CNC machines, CAM software and metrology equipment. Learners will work as individuals and in groups on a variety of industrial standard engineering projects.

This programme can be completed in one year full time. Alternatively, a work/learn model can be used over two years; students work three days per week and study in LIT two consecutive days per week.

Programme graduates will work as precision engineers in world class manufacturing environments and will be highly skilled in areas of CNC machining, CAD/CAM, metrology and material selection methods.




### What will I be able to do when I finish the programme?

A person who has completed this programme will be able to:

- Interpret engineering drawings and carry out model based inspection of components
- Support key business metrics with ongoing process improvements and introduction of new manufacturing processes and technologies.
- Support manufacturing process development to meet project milestones and to allow operations to meet their targets.
- Drive process improvements/capacity increases through new technology / equipment selection and specification.
- Validate requirements on new equipment introductions / processes / process changes.
- Design & develop tools, fixtures, and gauges for manufacturing operations and new product / process introductions in conjunction with toolroom technicians and process engineers.
- Preparation and maintenance of all relevant manufacturing specifications.

### Features of the programme

- **Programme flexibility** to work and learn, one year course, but can be undertaken part-time over two years
- Develops a deep knowledge of materials, design and manufacture through the utilisation of **modern technology**
- Developed in **conjunction with world class companies** in response to a shortage in highly skilled qualified engineers
- High practical content in **CNC Machining**, **Metrology**, **Materials** and **Statistical Process Control**
- **Uses industrial equipment** to solve real industrial problems
- Allows for maximum learning and **self-development**
- Facilitates **progression** to Level 8 programmes within LIT and other colleges/universities

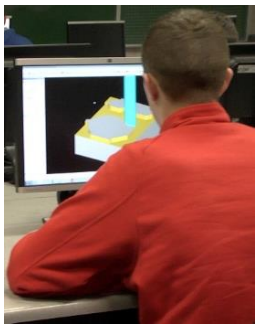
### Programme Modules

1. **Metrology and Statistical Process Control**
   Safety and quality standards, metrology principles, measuring instruments, thread measurement, surface texture measurement, hardness testing, coordinate measuring machines, large scale measurement equipment, geometric dimensioning and tolerancing, datum systems, tolerance analysis
2. **Applied Mechanical Engineering Mathematics**
   Vector analysis, differentiation, integration, ordinary differential equations, Laplace transforms, Fourier Series
3. **Materials and Mechanics**
   Material classification, material structures, composites, complex stress & strain analysis, material selection methods and case studies, environmental impact & eco audits, fatigue and failure
4. **Advanced Engineering Technology and Process Planning**
   Safety, engineering processes, modern machining techniques, machine tooling, work and tool holding techniques, principles of process planning, forming, maintenance
5. **Advanced CNC Machining**
   CNC machines, CNC machine tooling, post processors, numerical control programming, CAM programming, integrated manufacturing techniques
6. **Final Year Project**
   Project planning and development, formal presenting, formal report writing, project execution, team development, professional development

### Employment opportunities

Graduates will typically be employed in one of the following roles:

- Precision engineer in a world class machining environment
- Applications engineer utilising CAD/CAM to maximise utilisation of machines tools
- Manufacturing engineer
- Production engineer
- CNC machinist and programmer
- Materials engineer
- Process control engineer
- Equipment test engineer/technician
- Engineer in the medical device, human implant, and Life Sciences Industries



## Course Progression Ladder

**Level 9 & 10** — **Post-Graduate Studies**

**Level 8** — **B. Eng. (Hons) in Precision Engineering** — Sept. 2017 Start[2]

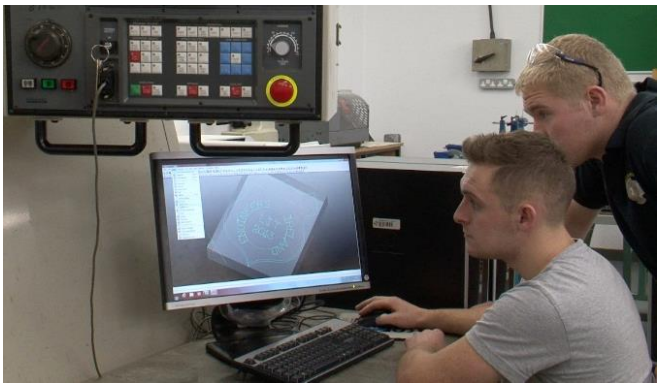
**Level 7** — **B. Eng. in Precision Engineering** — Due to commence September 2014[1]

**Level 6** — **Higher Certificate in Precision Engineering** — Sept. 2015 Start[2]

**Level 6** — **Higher Certificate in Mechanical Engineering[3]**

Notes:

1. Commencement subject to validation by external panel, scheduled for 23rd June 2014
2. Subject to approval.
3. Additional requirements may be necessary for entry to Level 7 in Precision Engineering, see minimum entry requirements section below.



## For application details contact:

Admissions Office:
Limerick Institute of Technology,
Tel: (061) 293262 or (061) 293262
admissions@lit.ie
http://www.lit.ie/Admissions/default.aspx

## Minimum Entry Requirements

**Level 6 Higher Certificate** successfully completed in an engineering related area, such as mechanical engineering, as well as prior learning in:

- Engineering/Manufacturing Technology
- CAD (SolidWorks)
- CNC

**Level 6 Craft Certificate (trade)** successfully completed in an engineering area, such Fitting or Toolmaking, as well as prior learning in:

- Higher Certificate Engineering Mathematics and Science
- Engineering/Manufacturing Technology
- CAD (SolidWorks)
- CNC

Where a candidate does not have sufficient/appropriate prior learning experience in these areas, entry to the Level 7 programme in Precision Engineering can still be granted based on agreement to undertake additional night class modules to compensate.
For example, LIT offers the following night class programmes: (http://www.lit.ie/Prospectus/FLProspectus/default.aspx)

- CAD: City and Guilds Level 2 Award in CAD Parametric Modelling (SolidWorks)
- Engineering Mathematics and Science: City and Guilds Advanced Diploma in Engineering Theory: Manufacturing 2565-03
- Engineering Technology: City and Guilds Technician Diploma in Engineering Theory: Manufacturing 2565-02
- CNC: CNC Machining, City and Guilds 2565-03-035

## Contact Information

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