DEPARTMENT OF CIVIL, STRUCTURAL & ENVIRONMENTAL ENGINEERING

Civil Engineering deals with one of the most visible signs of change and progress around us, the construction and development of buildings and infrastructure. New infrastructure and buildings are required for the public and private sectors: older buildings and existing facilities are redeveloped and renewed. Utilities for water supply, waste treatment and infrastructural developments require the skills Civil Engineers. Civil Engineers are required to plan, design, construct and maintain these facilities.

The Civil Engineering profession is a broad based discipline, closely associated with public works and the construction industry. Opportunities vary in scope and location and may be office based, site-based or a combination of both.

Further information on the profession may be obtained from the following:
Engineers Ireland W: http://www.engineersireland.ie
The Institution of Structural Engineers W: http://www.istructe.org
Institution of Civil Engineers W: http://www.ice.org.uk

COURSES

- **MEng in Structural Engineering** (Level 9)
- **MEng in Civil Engineering (Environment and Energy)** (Level 9)
  Both taught Master of Engineering programmes are available to those who hold a minimum of a Second Class Honours Grade 2 in a professionally accredited Level 8 Engineering (shared delivery with full-time students)
- **Certificate in Environmental and Energy Engineering** (Level 8) – a part-time programme providing an opportunity for engineering degree graduates (Level 7 or 8) to acquire advanced skills and knowledge in the specific disciplines of Environmental and Energy Engineering (shared delivery with full-time students).
- **Bachelor of Engineering in Civil Engineering** (Level 7)
- **Higher Certificate in Civil Engineering** (Level 6)
- **The Institution of Structural Engineers** – preparation for Chartered Membership examination

Subject to demand, the Department periodically offer the following CPD single subject certification short courses:
- **Introduction to Eurocodes** – single subject certification
- **Practical Land Surveying** – single subject certification
- **Digital Land Surveying and GPS** – single subject certification
- **Building Regulatory Engineering** – single subject certification

In Brief

MEng in Structural Engineering (Level 9)
MEng in Civil Engineering (Environment and Energy) (Level 9)

The taught Master of Engineering programmes are designed to:

- deepen the postgraduate student's technical knowledge, skills and competences in the field of specialisation;
- develop an ability to carry out in depth research in a chosen field of Engineering, to draw conclusions from the research and present research findings;
- broaden knowledge in other areas such as Sustainability, Management, and Business. Additionally, the MEng in Structural Engineering programme will provide preparation for the Institute of Structural Engineers Professional Practice Examinations by developing structural analysis and design skills.

Certificate in Environmental and Energy Engineering (Level 8)

This programme is designed to:

- deepen the student's technical knowledge, skills and competences in the fields of Environmental and Energy Engineering;
- develop the student's ability to appraise and critically evaluate Environmental and Energy Engineering practices;
- Extend existing educational qualifications and enhance employment opportunities.

BEng in Civil Engineering (Level 7)

The Bachelor of Engineering (Ordinary) Degree is the traditional academic qualification for Higher Technician entry to the civil engineering profession.**

Career Opportunities

Graduates at Ordinary Degree level may find employment in consulting engineering offices, local authorities and with building and civil engineering contractors. Such opportunities exist both at home and abroad. Graduates are likely to work in conjunction with architects, quantity surveyors, builders and also with personnel from other engineering disciplines. The course also provides a basis for suitably qualified graduates who are interested in pursuing more advanced studies.

Higher Certificate in Civil Engineering (Level 6)

The Higher Certificate is the traditional academic qualification for Technician level entry to the civil engineering profession.**

Career Opportunities

Graduates may find employment in local authorities, consulting engineering offices and with building and civil engineering contractors in related areas. The initial employment of a civil engineering technician may involve surveying or setting out, manual or computer aided draughting, sampling and testing materials and site supervision. The course provides a basis for suitably qualified students to progress to Degree studies.

** For further information on entry standards to the Civil Engineering profession please refer to the Engineers Ireland website at www.engineersireland.ie

All courses offered are subject to demand and places may be limited.

In Brief

The Institution of Structural Engineers

A short course facilitating preparation for the examinations of The Institution of Structural Engineers (http://www.istructe.org)

Introduction to Eurocodes

- **single subject certification at intermediate level**
  A CPD course, comprising a series of practical lectures, intended to familiarise Civil / Structural Engineering graduates (Level 7 or Level8) with the requirements of the Eurocodes in relation to Structural Engineering design.

Practical Land Surveying

- **single subject certification at intermediate level**
  A CPD course for those who have certified competence in Land surveying, linear surveying and levelling or equivalent**.**

Digital Land Surveying and GPS

- **single subject certification at intermediate level**
  A CPD course for those who have certified competence in Practical Land Surveying or equivalent.

Building Regulatory Engineering

- **single subject certification at advanced level**
  A CPD course for those who have a minimum of a Level 7 degree in Civil/ Structural Engineering or other cognate discipline**.**

All courses offered are subject to demand and places may be limited.

MEng in Structural Engineering
MEng in Civil Engineering (Environment and Energy)

ENQUIRIES

Civil Engineering
(Environment and Energy)
Leonard O'Driscoll
Chartered Engineer
T: 021 432 6563
E: leonard.odriscoll@cit.ie

Structural Engineering:
John Justin Murphy
Chartered Engineer
T: 021 432 6741
E: john.justinmurphy@cit.ie

Des Walsh
Chartered Engineer
T: 021 432 6765
E: des.walsh@cit.ie

COURSE CODE

CR_CSTRU_9
CR_CENEN_9

The total Course fee in 2011/12 was €5,000.
For current course fee information please contact the CIT Admissions Office.

The Department offers two taught MEng programmes specialising in the fields of
(i) Structural or
(ii) Civil Engineering (Environment and Energy).

Entry Requirements

Applicants should hold a minimum of a Second Class Honours Grade 2 in a professionally accredited Level 8 Honours Degree programme in Civil or Structural Engineering. Equivalent recognition may be given through the Recognition of Prior learning (RPL) process on an individual case-by-case basis to candidates who have not achieved this academic standard but who can demonstrate significant relevant professional experience in the discipline of Structural Engineering or Civil/Environmental/Energy Engineering for the respective programmes.

Aim:

The taught Master of Engineering programmes are designed to:

- deepen the postgraduate student's technical knowledge, skills and competences in the field of specialisation;
- develop an ability to carry out in depth research in a chosen field of Engineering, to draw conclusions from the research and present research findings;
- broaden knowledge in other areas such as Sustainability, Management, and Business. Additionally, the MEng in Structural Engineering programme will provide preparation for the Institute of Structural Engineers Professional Practice Examinations by developing structural analysis and design skills.

Course Structure

The courses are offered to part-time students under the ACCS scheme. The accumulation of sufficient credits for the award of the MEng is expected to involve two to three years part-time study. Part-time students will be required to attend shared delivery with full-time students on at least one day per week.

Module Information

http://modules.cit.ie
CIT has developed a website which gives full details of all modules for all courses. The website also has information on recommended textbooks, average weekly workload, assessments and exams.

Certificate in Environmental and Energy Engineering

COURSE CODE

CR_EENEN_8

ENQUIRIES

Des Walsh
Chartered Engineer
T: 021 432 6765
E: des.walsh@cit.ie

Denise Barnett
Chartered Engineer
T: 021 432 6766
E: denise.barnett@cit.ie

Dr Niamh Power
T: 021 433 5959
E: niamh.power@cit.ie

The Course Fee payable in 2011/12 was circa €2,225.
For current course fee information please contact the CIT Admissions Office

One academic year, requiring attendance on Tuesdays and Thursdays in both semesters or two academic years with attendance on one day per week.

Environmental & Energy Engineering is the application of scientific and engineering principles to activities which protect, enhance and improve the environment. Energy engineering focuses on hydrology, water resource management, and water and wastewater treatment design. Energy Engineering focuses on wind, wave, tidal, biomass and energy sustainability issues. Energy Engineering and its inextricable relationship to
the environment is an increasingly important aspect of global sustainability.

Entry Requirements

Applicants should hold a minimum of a Level 7 or Level 8 engineering qualification, preferably in Civil Engineering or a cognate discipline. Equivalent recognition may be given through the Recognition of Prior learning (RPL) process on an individual case-by-case basis to candidates who have not achieved this academic standard but who can demonstrate significant relevant professional experience in the disciplineof Environmental and Energy Engineering.

Aim

The Certificate in Environmental & Energy Engineering programme aims to provide an opportunity for engineering degree graduates to acquire advanced skills and knowledge in the specific disciplines of Environmental & Energy Engineering thus enhancing their employment prospects.

The programme covers both the theoretical background and the practical considerations of Environmental & Energy Engineering practices. The content seeks to reflect current and future practice in a broad range of areas including water, wastewater, wind, biomass and ocean energy. It aims to provide the graduate with high level design skills in the environmental and energy areas. The elective options afford the opportunity for the development of skills and competences in areas of the graduate's choosing The programme is targeted at engineering graduates wishing to up-skill in the environmental and sustainable energy areas.

The Student Experience

The learning experience involves a variety of modes, including classroom based lectures, individual and group project work and tutorials. The flexibility in relation to elective choices facilitates a learner centred approach, allowing the learner to direct the focus of his/her own programme of study.

Further Studies

Having successfully completed this programme the student may have the opportunity to progress to a Level 8 BEng (Hons) programme or a Level 9 MEng programme within the Faculty. Such opportunities will be dependent on previous qualifications, experience and programme specific entry requirements. Alternatively, suitable qualified graduates may proceed to a programme of research leading to a MEng or PhD award.

Bachelor of Engineering in Civil Engineering

COURSE FEE	ENQUIRIES		COURSE CODE
€200 per module (inc. exam fee)	Des Walsh Chartered Engineer T: 021 432 6765 E: des.walsh@cit.ie	James O'Byrne T: 021 432 6761 E: james.obyrne@cit.ie	CR_CCIVE_7

2 evenings per week, 6 - 10pm.
1 Saturday per month (average), 9am - 1pm or 2pm - 6pm.

The course is offered on a two year cycle basis. Please note that intake to this course does not occur on an annual basis; the next intake is scheduled for 2013/14.

Entry Requirements

Higher Certificate in Engineering in Civil Engineering (NFQ Level 6). Holders of other relevant qualifications will be considered for admission on an individual basis.

Course Structure

The course is offered under the ACCS scheme. ACCS is an acronym for "Accumulation of Credits and Certification of Modules". This scheme allows students instead of studying an entire course - to study one or more modules of that course. Modules passed, are certified individually, and can be accumulated, leading to an award of a Degree. The accumulation of sufficient credits for the award of the BEng is expected to involve a minimum of two years part-time study and the course modules are offered on that basis.

Module Information

http://modules.cit.ie
CIT has developed a website which gives full details of all modules for all courses. The website also has information on recommended textbooks, average weekly workload, assessments and exams.

Course Content

Module topics include
Mathematics, Structural Analysis, Structural Design (Concrete, Masonry, Steel, Timber), Soil Mechanics & Geology, Geotechnical Engineering, Research Project. Elective modules may be offered in Highway Engineering, Civil Engineering Construction Management, Environmental Engineering.

Further Studies

BEng (Ord.) graduates may be eligible to apply for Honours Civil and Structural Engineering Degree courses (NFQ Level 8). The Engineers Ireland Graduate Diploma is also a possible route of progression to full membership of Engineers Ireland for those holding the appropriate minimum entry requirements.

Award

Bachelor of Engineering in Civil Engineering (NFQ Level 7)

Higher Certificate in Engineering in Civil Engineering

COURSE CODE	COURSE FEE	ENQUIRIES	
CR_CCIVE_6	€200 per module (inc. exam fee)	Des Walsh Chartered Engineer T: 021 432 6765 E: des.walsh@cit.ie	James O'Byrne T: 021 432 6761 E: james.obyrne@cit.ie

2 evenings per week, 6 - 10pm. 1 Saturday per month (average), 9am - 1pm or 2pm - 6pm.

The course is offered on a two year cycle basis. The programme will run subject to sufficient demand.

Entry Requirements

Leaving Certificate Grade D3 (Ordinary Level) in five subjects to include Mathematics and either English or Irish. Special category students (e.g. mature students) will be considered on an individual basis.

Course Programme

http://modules.cit.ie

Stage 1

Module topic areas include Mathematics, Applied Mechanics, Engineering Science, Linear Surveying & Levelling, Engineering Graphics & CAD, and Construction.

Stage 2

Module topic areas include Mathematics, Civil Engineering Materials, Structural Design & Detailing, Structural Engineering, Land Surveying, Water Engineering, Civil Engineering Construction & Management, and Professional Studies.

Course Structure

The course is offered under the ACCS scheme. The accumulation of sufficient credits for the award of the Higher Certificate is expected to involve an average of three years part-time study and the course modules are offered on that basis as follows:

CCIVE_6 Year 1

Modules from Stage 1:
Topics typically include Mathematics, Engineering Science, Engineering CAD, Land Surveying, and Construction.

CCIVE_6 Year 2

Modules from Stage 1 and modules from Stage 2:
Topics typically include Applied Mechanics (Stage 1), Mathematics, Civil Engineering Materials, Land Surveying, Structural Detailing, Civil Engineering Construction & Management, and Professional Studies (Stage 2).

CCIVE_6 Year 3

Modules from Stage 2:
Topics typically include Land Surveying, Structural Engineering, Structural Design, and Water Engineering.

Award

Higher Certificate in Engineering in Civil Engineering (NFQ Level 6).

Further Studies at CIT

Higher Certificate graduates are eligible to apply for the BEng in Civil Engineering (NFQ Level 7).

COURSE FEE	ENQUIRIES	COURSE CODE
CIT fee: €600 (Additional fee may be payable to The Institution of Structural Engineers)	John Justin Murphy Chartered Engineer T: 021 432 6741 E: john.justinmurphy@cit.ie	CR_CISTE_9

10 sessions, every second Monday from 7pm – 10pm.

Courses of study for the examinations of the Institution of Structural Engineers, subject to demand. The proposed course will be targeted primarily at the Examinations. However, it will be open to those who do not wish to sit these but who would like to improve and advance their knowledge of Structural Engineering.

Note: In order to sit the Examinations it is necessary to be enrolled with the Institution in the appropriate grade of membership. Contact the Institution of Structural Engineers for full details (www.istructe.org.uk).

Introduction to Eurocodes

COURSE FEE	ENQUIRIES	COURSE CODE
€500	John Justin Murphy Chartered Engineer T: 021 432 6741 E: john.justinmurphy@cit.ie	CR_CEURO_8

The course is based on the Module Descriptor CIVL8025 Structural Design to Eurocodes. The full Module Descriptor may be viewed at http://modules.cit.ie

The course is likely to run over an eight week period, 6pm-10pm each evening.

This is a short course, comprising a series of practical lectures, intended to familiarise graduates with the requirements of the Eurocodes in relation to Structural Engineering design.

The course is appropriate for holders of a Level 7 or higher qualification in Civil and/or Structural Engineering.

Indicative Course Content

Introduction/Overview of Design
Structural Steel Design
Reinforced Concrete Design
Timber & Masonry Design

Award

Single Module Certification (5 credits at advanced level).

Practical Land Surveying

COURSE CODE	COURSE FEE	ENQUIRIES	
CR_CSURV_7_Y1	€500	Des Walsh Chartered Engineer T: 021 432 6765 E: des.walsh@cit.ie	James O'Byrne T: 021 432 6761 E: james.obyrne@cit.ie

The course is based on the Module Descriptor CIVL7025 Practical Land Surveying.
The full Module Descriptor may be viewed at http://modules.cit.ie

This is a short CPD course for those who have certified competence in Land surveying, linear surveying and leveling. It is particularly suited to construction personnel who are involved with the organisation of surveying and setting out on construction sites.

It is likely that the course will be offered over a number of days, including Saturdays, during the first semester. Exact timetable arrangements remain to be finalised. Typically, the hours may be 6pm-9pm Friday evenings and 9am-4pm Saturdays for a total of four weekends. Information updates may be obtained by contacting the Department of Civil, Structural & Environmental Engineering.

The successful completion of the course will lead to CIT single module certification in Practical Land Surveying (5 credits at intermediate level).

Having completed this subject, an individual would expect to be able to:

- Organise resources, record and process survey data using specialised equipment (eg Total Station, GPS,Digital Level)
- Use computer applications to process and manipulate survey data
- Use specialised equipment (e.g. Total Station, GPS, Digital Level) to set out construction works
- Process and present in an appropriate format the outcomes of survey or setting out exercises
- Work as the leader in a team carrying our surveying exercises

Course Content

Electromagnetic Distance Measurement
Construction and use of equipment. Sources of error and accuracy. Checking adjustment. Field procedures.

Total Stations
Data capture. Setup data. Feature codes, strings and digital ground modelling. Coordinate systems. Software and hardware requirements.

Setting out
Accuracy specification. Stages in setting out. Generation of setting out data. Methods of marking and referencing.

Data Processing
Data formats. Software systems. Digital Terrain Modelling. Data presentation, plans, sections and models. Calculation of volumes.

Global Positioning Systems
Introduction to practical Applications of Global Positioning Systems. Principles of operation. Space, control and user segments. Differential GPS.

Award

Single Module Certification
(5 credits at intermediate level)

Digital Land Surveying and GPS

COURSE FEE	ENQUIRIES		COURSE CODE
€500	Des Walsh, Chartered Engineer T: 021 432 6765 E: des.walsh@cit.ie	James O'Byrne T: 021 432 6761 E: james.obyrne@cit.ie	CR_CSURV_7_Y2

The course is based on the Module Descriptor CIVL7005 Digital Land Surveying and GPS. The full Module Descriptor may be viewed at http://modules.cit.ie

This is a short CPD course for those who have certified competence in Practical Land Surveying. It is particularly suited to construction personnel who are involved with the organisation of surveying and setting out on construction sites.

It is likely that the course will be offered over a number of days, including Saturdays, during the first semester. Exact timetable arrangements remain to be finalised however typically the hours may be 6pm-9pm Friday evenings and 9am-4pm Saturdays for a total of four weekends. Information updates may be obtained by contact the Department of Civil, Structural & Environmental Engineering.

The successful completion of the course will lead to CIT single module certification in Digital Land Surveying and GPS (5 credits at advanced level).

Having completed this subject, an individual would expect to be able to:

- establish survey control of determined accuracy using GPS equipment and OSI reference
- compute setting out data from survey and design information
- manipulate field survey data and incorporate design data using specialised software
- critically evaluate the use of advanced positioning instrumentation for setting out.

Course Content

Ordnance Survey
Coordinate systems: Irish National Grid, Irish Transverse Mercator. Heights & Elevations, Geoid Models, Site Adjustments. OSI services.

Global Positioning Systems
Fundamentals of operation for surveying. Correction and sources of error. Radio regulations. Real time kinematic (RTK), Static and Faststatic operation. Field techniques, RTK and Setting Out.

Data Processing
Data capture. Setup data. Feature codes, strings and digital ground modelling. Software and hardware requirements. Data formats. Software systems. Data transfer, Real time and Post processing systems. Adjustments, data export and reports.

Setting Out
Principles of setting out. Coordinate positioning, total stations and GPS. Controlling verticality. Laser instruments. Machine Control. Quality assurance and accuracy.

Award

Single Module Certification (5 credits at advanced level)

Building Regulatory Engineering

COURSE CODE	COURSE FEE	ENQUIRIES	
CR_CBREG_8	€500	Des Walsh Chartered Engineer T: 021 432 6765 E: des.walsh@cit.ie	Andrew Macilwriath T: 021 432 6203 E: andrew.macilwriath@cit.ie

The course is based on the Module Descriptor CIVL8004 Building Regulatory Engineering.
The full Module Descriptor may be viewed at http://modules.cit.ie

This course addresses many of the key areas of the building regulations, and pays particular attention to the preparation of Fire Safety Certificate applications, together with the recently introduced Disability Access Certificate applications. The lecturer on this course has worked in the area of Fire & Building Control for many years.

The course will be offered over a number of days, including Saturdays. Typically, the hours will be 6pm-9pm Friday evenings and 9am-4pm Saturdays for a total of four weekends. Information updates may be obtained by contacting the Department of Civil, Structural & Environmental Engineering.

The successful completion of the course will lead to CIT single module certification in Building Regulatory Engineering (5 credits at advanced level).

Award

Single Module Certification (5 credits at advanced level)