



UNIVERSITY COLLEGE DUBLIN

COLLEGE OF ENGINEERING, MATHEMATICAL AND PHYSICAL SCIENCES

**UCD SCHOOL OF ELECTRONIC, ELECTRICAL AND MECHANICAL ENGINEERING**

**MASTER OF ENGINEERING (Energy Systems) DEGREE PROGRAMME  
MTEMP006, T164**

**Duration:** 1 Year / 2 Years\* (see note below)      **Schedule:** Full Time

**Commencing:** Monday, 12 September 2011

**Programme Co-ordinator & Contact Details:** Dr David Timoney  
School of Electrical, Electronic and Mechanical Engineering  
UCD Engineering and Materials Science Centre  
University College Dublin, Belfield, Dublin 4, Ireland  
Email: [eng.arch@ucd.ie](mailto:eng.arch@ucd.ie)

**Application Details:** Applications for this programme must be made via the UCD Online Applications system at [www.ucd.ie/apply](http://www.ucd.ie/apply)

**Entry Requirements:** Candidates holding a Bachelors Degree in Engineering (with a minimum of 2H2 honours level) or an equivalent engineering qualification will be considered.

**Closing Date:** 15 July 2011.

For candidates wishing to avail of an 'early offer', applications received by **15 March 2011** will be considered and communicated to candidates, where appropriate.

**Fees (2011-12):** €6,120.00 (EU) per annum, €11,400.00 (Non-EU) per annum.  
Website: <http://www.ucd.ie/registry/adminservices/fees/2011/index.html>

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## OVERVIEW

The Master of Engineering (ME) in Energy Systems Engineering programme aims to prepare graduates to meet the engineering, economic and environmental challenges facing the energy systems of developed countries in the future. The programme will focus on the interdependence between the electricity system, building energy systems, the industrial production system, the food supply chain and the transport system, taking account of security of supply and climate impact / CO<sub>2</sub> emissions.

The programme is not restricted to renewable energy systems but aims to take a holistic view. For example, it includes modules dealing with nuclear power, fossil fuel extraction, processing, combustion and carbon sequestration and storage.

Inputs to the programme are provided from Mechanical, Electrical, Civil and Chemical Engineering and from Geological Sciences, Economics and the School of Business. Module choice within the programme will permit particular specialisation in Electric Power Systems.

The ME (Energy Systems) programme is designed for students seeking to obtain a professionally recognised qualification in Energy Systems Engineering and is structured to provide an engineering qualification fully compliant with the latest Masters level accreditation requirements of Engineers Ireland (<http://www.iei.ie/services/programme-accreditation/>).

\*For graduates of 4-year level-8 Bachelor of Engineering programmes who have already studied some Thermodynamics and Electrical Circuits at university level, the programme can be completed over 12 months (90 ECTS Credits). Applicants who do not have suitable prior learning may be eligible for admission to a longer version of the programme (120 ECTS Credits, over 2 academic sessions).

## COURSE CONTENT

The ME (Energy Systems) programme involves lectures, tutorials, assignments and laboratory work. A significant research project, carried out over the summer (during the 12-month structure), is included and a wide range of option modules is available. Several of the latter are focussed on Electrical Power Engineering topics.

## MODULES

UCD Code	Module Title	Core / Option	Core Credits	Option Credits	Sem-ester
MEEN40090	Energy Systems & Climate Change	C	5		1
GEOL40310	Fossil Fuels, Carbon Capture & Storage	C	5		1
MEEN30100	Engineering Thermodynamics II	C	5		1
CHEN40440	Chemical Processes of Sustainable and Renewable Energy	C	5		2
EEEN40080	Power System Operation	C	5		1
EEME40400	Wind Energy	C	5		1
EEME40420	Research Skills and Techniques	C	5		1
EEME40410	Research Project / Thesis (Summer)	C	30		3
MEEN40200	Energy Systems in Buildings	O		5	2
ECON41710 <sup>s</sup>	Energy Economics	O		5	2
MEEN40210	Energy in Transport	O		5	1
EEEN40010	Control Theory	O		5	1
EEME40190	Statistics and Optimisation	O		5	2
MEEN40020	Mechanics of Fluids II	O		5	1
MEEN40190	Mechanics of Fluids III	O		5	2
MEEN40010	Engineering Thermodynamics III	O		5	2
MEEN 20050	Heat Transfer	O		5	2
CHEN30140	Process Instrumentation & Control	O		5	2
MEEN40160	Kinetics & Thermodynamics of Materials	O		5	1
MEEN40110	Advanced Composites and Polymer Engineering	O		5	2
MEEN40180	Nanomaterials	O		5	2
MEEN30040	Measurement & Instrumentation	O		5	2
EEEN30090	Electrical Machines	O		5	2
EEEN40100	Power Electronics and Drives	O		5	1
EEEN40090	Power System Design	O		5	2
EEEN40120	Applications of Power Electronics	O		5	2
EEEN30070	Power System Engineering	O		5	2
EEEN20090	Electrical Energy Systems II	O		5	2
BMGT30090	Entrepreneurial Management	O		5	2
STAT30120	Statistics and Visualization	O		5	2
BSEN30030	Air Pollution	O		5	2
CVEN20030	Environmental Engineering Fundamentals	O		5	1

*Please note that final selection of modules is subject to consultation with and prior approval by the Programme Coordinator.*

An up-to-date list of modules, together with full description of each is available at:  
<http://www.ucd.ie/programmes/T164>

## TEACHING AND ASSESSMENT

### Teaching

Teaching will be by means of lectures, supervised laboratories, tutorials, assignments and self-directed learning. For students completing the programme over 12 months (90 credits), an individual Research Project (30 credits) will be assigned. This will be supervised by a member of academic staff and undertaken over summer 2011. Many of the projects will be carried out in collaboration with industry.

### Assessment

Assessment will be by means of continuous assessment of assignments, laboratory and project work. There will be substantial written examination of course material. The Research Project module will require submission of a substantial final report / thesis. Assessment of this module will also involve participation in seminar / poster presentations and oral examination.

### Timetable / Hours

The programme is modular and semesterised with full-time hours. There are two teaching semesters, i.e. Semester 1 (Autumn) and Semester 2 (Spring). Students taking the 90-credit programme undertake their Research Project during the summer period. Details of the official University calendar for 2011/2012 are as follows:

#### Semester 1

Teaching term Monday, 12 September – Friday, 2 December 2011 <sup>1</sup>	12 weeks
Revision Saturday, 3 December – Friday, 9 December 2011	1 week
Exams Saturday, 10 December – Wednesday, 21 December 2011	10 working days

#### Semester 2

Teaching term Monday, 16 January – Friday, 2 March 2012	7 weeks
Fieldwork/Study period Monday, 5 March – Sunday, 18 March 2012 <sup>2</sup>	2 weeks
Teaching term Monday, 19 March – Friday, 20 April <sup>3</sup>	5 weeks
Revision Monday, 23 April – Sunday, 29 April 2012	1 week
Exams Monday, 30 April <sup>4</sup> – Saturday, 12 May 2012	11 working days

#### Summer term/Research period

Term Monday, 14 May – Sunday, 2 September 2012 <sup>5</sup>	16 weeks
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<sup>1</sup> October Bank Holiday: Monday, 31 October 2011

<sup>2</sup> St Patrick's Day: Saturday, 17 March 2012

<sup>3</sup> Good Friday, 6 April 2012; Easter Sunday, 8 April 2012; Easter Monday, 9 April 2012

<sup>4</sup> May Bank Holiday: Monday, 2 May 2012

<sup>5</sup> June Bank Holiday: Monday, 4 June, 2012; August Bank Holiday: 6 August 2012

## AWARD

Graduates are eligible for the award of Masters of Engineering (ME) in Energy Systems Engineering from University College Dublin.

## CAREER OPPORTUNITIES

Participants of this (ME) Energy Systems programme will be equipped with the skill set and knowledge, vital for crucial roles in research, design and development in companies in the Energy Sector. Candidates who complete the optional electrical engineering modules will be fully equipped to work as electrical engineers in the power industry.

## FURTHER INFORMATION

For further information in relation to this programme, please contact the UCD Engineering and Architecture Programme Office Tel: (+353) 1 716 1868 or Email: [eng.arch@ucd.ie](mailto:eng.arch@ucd.ie)