SCHOOL OF ENGINEERING

UNIVERSITY OF DUBLIN, TRINITY COLLEGE

PhD PROGRAMME

Eligible Level 9 Postgraduate Modules

2022/2023

1 Introduction

The School of Engineering requires each PhD student to accumulate a minimum of 10 ECTS (European Credit Transfer and Accumulation System) credits on Level 9 postgraduate modules to be taken in the early stage of their postgraduate studies. These credits are required in order to qualify for graduation along with submission of their examined PhD thesis.

The credits can be gained through participation and completion (that is, satisfying the Examiners in examinations or continuous assessment, depending on the course) of a number of modules that are available free of charge to PhD students.

There follows a list of modules which are deemed eligible for selection in obtaining these credits. When a student has selected their preferred module, they should discuss their selection with their Supervisor. When the choice is agreed, the module co-ordinator should be contacted to ensure that the module is running and that there is room for the student on the module. Then the student needs to register for the module by informing the School Office by e-mail of their choice so that their participation is registered with the Examinations Office. If a student withdraws from a module for any reason, they should inform both the course co-ordinator and the School Office.

2. Eligible PhD courses

2.1 School of Engineering

5th MAI year / MSc modules

Civil

ID	Module Title	ECTS	Module Coordinator
CE7M01	Civil Engineering Management	10	Niamh Harty
CE7M05	Research Methods	5	David O'Connell
CE7C04	Facade engineering	5	Roger West
CE7C05	Advanced spatial analysis using GIS	5	Niamh Harty
CEP55E03	Air Pollution; Monitoring, Assessment & Control	5	John Gallagher
CE7E04	Waste management and energy recovery	5	Liwen Xiao
CE7E05	Water quality and hydrological modelling	5	Laurence Gill
CE7E06	Water resource planning and climate change	5	David O'Connell
CE7E07	Sustainable water supply and sanitation	5	Laurence Gill
CE7J01	Wind energy	5	Biswajit Basu
CE7J02	Solar energy conversion and applications	5	Sarah McCormack
CE7J04	Energy policy and demand	5	Brian Caulfield
CE7J06	Wave and hydro energy	5	Aonghus McNabola
CE7T01	Transportation policy	5	Bidisha Ghosh
CE7T02	Transport modelling and planning	5	Brian Caulfield
CE7T04	Intelligent transportation systems	5	Bidisha Ghosh
CE7T05	Transportation design	5	Margaret O'Mahony
CE7S01	Geotechnical engineering	5	Brendan O'Kelly
CE7S02	Advanced structural analysis	5	Dermot O'Dwyer
CE7S03	Wind and earthquake engineering	5	Brian Broderick
CE7S04	Bridge engineering	5	Alan O'Connor
CE7S05	Advanced concrete technology	5	Roger West
CE7S06	Offshore geotechnical engineering	5	David Igoe

CE7S09	Advanced theory of structures	5	Roger West

Mechanical

ME5B03	Advanced thermal fluid sciences	5	Anthony Robinson
ME5B09	Control engineering II	5	Dermot Geraghty
ME5B10	Instrumentation and experimental techniques	5	Dermot Geraghty
MEP55B15	Low Carbon Transport Technology	10	Stephen Spence
MEP55B16	Low Caron Power Technology	10	Stephen Spence
MEP55E04	Computational Fluid Mechanics	5	Seamus O'Shaughnessy
ME5MM1	Micro and precision micro manufacturing	5	Rocco Lupoi
ME5MM3	Supply chain management	5	Garret O'Donnell
ME5MM7	Risk management and safety assessment systems	5	Maria Chiara Leva
MEP55B10	Finite Element Analysis	5	Caitriona Lally
MEP55M1	Turbomachinery	5	Stephen Spence

Electronic
*Music and Media Technologies**

EE5C01	Motion picture engineering	5	Anil Kokaram
EEP55C03	Statistical Signal Processing	10	Anthony Quinn
EE5C04	Speech and audio engineering	5	Naomi Harte
EEP55C07	Self-organising systems	5	Nicola Marchetti
EEP55M05	Optimisation and control	5	Biswajit Basu
EE5C16	Deep Learning and its Applications	10	Francois Pitie
EEPMMT07*	Audio Engineering	5	Jimmy Eadie
EEMT16*	Audio Production Techniques	5	Jimmy Eadie
EEMT17*	Spatial Audio	5	Enda Bates
EEMT18*	Introduction to MAX	5	Stephen Roddy
EEMT21*	Introduction to XR: Applications and Technologies	5	Fionnuala Conway
EEP55C21	Cyber Physical Systems & Control	5	Harun Siljak
EEP55C22	Computational Methods	10	Anil Kokaram
EEP55C23	Computation for Transport Engineering	5	Anil Kokaram
EEP55C24	Simulations for Geophysical Modelling	5	Biswajit Basu
EEP55C25	Algorithms for Quantum Computing	5	Biswajit asu

Computer (subject to change)

CSU55001	Fuzzy logic and control systems	5	Khurshid Ahmad

CSU55004	Formal verification	5	Vasileios Koutavas
CS7CS3	Advanced software engineering	10	Clarke, Siobhan
CS7CS4	Machine Learning	5	Beel, Joeran
CS7DS1	Data analytics	10	Honari, Bahman
CS7DS2	Optimisation Algorithms for Analysis	5	Iosifidis, Georgios
CS7DS4	Data Visualisation	5	Dingliana, John
CS7GV1	Computer vision	5	Dahyot, Rozenn
CS7GV2	Mathematics of Light and Sound	5	Shevlin, Fergal
CS7GV4	Augmented reality	5	Smolic, Aljosa
CS7IS1	Knowledge and Data Engineering	5	O'Sullivan, Declan
CS7IS2	Artificial Intelligence	5	Dusparic, Ivana
CS7IS4	Text Analytics	5	Vogel, Carl
CS7NS1	Scalable Computing	5	McGoldrick, Ciaran
CS7NS2	Internet of Things	5	Weber, Stefan
CS7NS3	Next Generation Networks	5	Ruffini, Marco
CS7NS4	Urban Computing	5	TBC
CS7NS5	Security and Privacy	5	Farrell, Stephen
CS7NS6	Distributed Systems	5	Cahill, Vinny

Biomedical

MEP56BM1	Medical device design innovation project	10	Bruce Murphy
MEP55B10	Finite Element Analysis	5	Caitriona Lally
ME5BIO7	Advanced Medical Imaging	5	Michael Monaghan
MEP55BM8	Active Implanted Devices and Systems	10	Alejandro Lopez Valdes
MEP56BM9	Medical Device Design Fundamentals	5	Bruce Murphy
ME7B04	Basic Medical Sciences	5	Marie-Victoire Guillot-Sestier

ME7B24	Experimental and Research Methods in Biomedical Engineering	5	David Hoey
ME7B09	Current Research Topics in Cell & Tissue Engineering	10	Daniel Kelly
ME7B16	Laboratory Techniques in Cell & Tissue Engineering	5	Mark Ahearne
ME7B18	Design and Innovation	10	Michael Monaghan

2.2 Postgraduate Diploma courses

DPDEG-SENE-1P	Sustainable Engineering	60	Sarah McCormack
DPDEG-ABRC -1P	Applied Building Repair and Conservation	45	Sara Pavía
DPDEG-CLCA–1P	Construction Law and Contract Administration	45	Niamh Harty
DPDEG-EENG–1P	Environmental Engineering	45	Paul Johnston
DPDEG-FSPR-1P	Fire Safety Practice	45	Trevor Orr
DPDEG-PMAN-1P	Project Management	45	Trevor Orr
DPDEG-HSCO-1P	Health and Safety in Construction	45	Niamh Harty
DPDEG-ECAC-1F09	Climate Action	45	John Gallagher

Although these are 45 ECTS courses, PhD students electing to take these weekend courses must attend lectures for two semesters and pass the two examinations, (but not complete the 15 ECTS coursework component) to obtain the ECTS requirement. However, if the coursework and exams are satisfactorily completed, the candidate will be eligible to graduate with the relevant PGDip qualification. Permission from the Course Co-ordinator and the Dean of Graduate Studies has to be obtained to attend these PGDip courses. If the PGDip course fee is more than the research degree fee for that year, the higher fee must be paid if the course is taken in full.

2.3 School of Computer Science and Statistics

PG Cert Statistics course**

ST7001	Base Module	10	Mimi Zhang
ST7002	Introduction to Multiple Linear Regression	10	Myra O'Regan
ST7003	Design and Analysis of Experiments	10	TBC

**Although this is a 30 ECTS course, all students must take the Base Module. Permission from the Course Co-ordinator and the Dean of Graduate Studies has to be obtained to attend these PGDip courses.

2.4 External Modules

<u>Tangent, Trinity's Ideas Workspace</u>

Postgraduate Certificate in Creative Thinking, Innovation and Entrepreneurship
Postgraduate Certificate in Innovation and Enterprise Development
Postgraduate Certificate in Creative and Cultural Entrepreneurship