ICCM 2012 V.9B (Last Edited by D. Timoney, 25 July 2012, 09.30 am)

Programme: MTEMP006 Master of Engineering

Major Code: T164 UCD Master of Engineering (ME) in Energy Systems Engineering 2012/13

Full List of Modules Available (90 or 120-Credit Versions of Programme)

	UCD Code	Title	Core / Option	Core Credits	Option Credits	Sem-ester	Module Coordinator	Required Prior Learning	Comments 2012
1	EEEN40080	Power System Operation	C	5		1	Dr. Andrew Keane (Electrical Eng.)	Students taking this module must have a basic understanding of electrical power systems and be fully conversant with the underlying mathematics. Prior completion of an introductory course in electrical power systems (e.g. the equivalent of EEEN30070 Power System Engineering), is strongly recommended but is not essential.	
2	MEEN30140	Professional Engineering (Finance) (core for 120 credit programme, if not already taken)	C	5		1	Dr. Vincent Hargaden (Mechanical Eng.)	n/a	
3	EEEN40400	Wind Energy	C	5		1	Mr. Rick Watson (Electrical Eng.)	Prior completion of an introductory course in electrical power systems (e.g. the equivalent of EEEN30070 Power System Engineering), is strongly recommended but is not essential.	Incompatible with EEEN40110 Renewable Energy Systems
4	MEEN 40560	Research Skills and Techniques	C	5		1	Dr. David Browne (Mechanical Eng.)	n/a	
5	GEOL40310	Fossil Fuels, Carbon Capture & Storage	C	5		1	Prof. Pat Shannon (Geological Sciences)	3 Years of study in physical or chemical sciences or engineering, at Bachelor's level	
6	MEEN30100	Engineering Thermodynamics II	C	5		1	Dr. William Smith (Mechanical Eng.)	MEEN10010 Engineering Thermodynamics & Fluid Mechanics / MEEN10050 Energy Engineering, or equiv.	
7	MEEN40090	Energy Systems & Climate Change	C	5		1	Dr. William Smith (Mechanical Eng.)	MEEN10010 Engineering Thermodynamics & Fluid Mechanics / MEEN10050 Energy Engineering, or equiv.	
8	CHEN40440	Chemical Processes of Sustainable and Renewable Energy	O	5		2	Prof. Ravi Thampi (Chem & Bioproc. Eng)	3 Years of study in physical or chemical sciences or engineering, at Bachelor's level	
9	MEEN40430	Professional Engineering (Management) (core for 120 credit programme, if not already taken)	C	5		2	Dr. Eamonn Ambrose (Mechanical Eng. / Business)	n/a	
10	BMGT 30090	Entrepreneurial Management	O		5	2	Ms Patricia Kavanagh (Business)	n/a	
11	BSEN30030	Air Pollution	O		5	2	Dr Tom Curran (Biosystems Eng.)	Prior study in any of the physical or chemical sciences or engineering at Bachelor's level	
12	CHEN30140	Process Instrumentation & Control	O		5	2	Dr Niall English (Chem & Bioproc. Eng)	Mathematics for Engineers: ACM30160 or MAPH30160 - (differential equations)	
13	CVEN20030	Environmental Engineering Fundamentals	O		5	1	Dr Bill Magette (Civil Eng.)	Differential calculus Linear algebra Integral calculus and differential equations	
14	ECON41710	Energy Economics	O		5	2	Mr. Colm McCarthy (Economics)	Some knowledge of economics at an introductory level would be helpful.	This module is no longer available but an equivalent (under a "FIN4XXXX" module code) is under development.
15	EEEN 30090	Electrical Machines	O		5	1	Mr. Jeremiah O'Dwyer (Electrical Eng.)	EEEN20080 Electrical Engineering or EEEN20090 Electrical Energy Systems	
16	EEEN20020	Electrical and Electronic Circuits (core if not already taken)	O		5	1	Dr. Damian Flynn (Electrical Eng.)	Underlying mathematics: linear algebra, complex numbers and calculus. (Equiv. to MATH10150 & MATH10160 & MATH10170)	
17	EEEN20090	Electrical Energy Systems II	O		5	2	Dr. Damian Flynn (Electrical Eng.)	EEEN20020 or equivalent (Ability to analyse dc and ac circuits)	
18	EEEN30070	Power System Engineering	O		5	2	Mr. Rick Watson (Electrical Eng.)	Circuit Theory, Electronics & Electrical Engineering to the level of EEEN20020.	

19	EEEN40010	Control Theory	O		5	1	Dr. Paul Curran (Electronic Eng.)	Transform theory to level of Signals and Systems (EEEN30110), or equivalent.	
20	EEEN40090	Power System Design	O		5	2	Mr. Rick Watson (Electrical Eng.)	Power system Engineering (EEEN30070), or equiv.	
21	EEEN40100	Power Electronics and Drives	O		5	1	Mr. Jeremiah O'Dwyer (Electrical Eng.)		
22	EEEN40120	Applications of Power Electronics	O		5	2	Dr. Andrew Keane (Electrical Eng.)	EEEN20020 & (EEEN20080 or EEEN20090) & EEEN30070 & EEEN30090 & EEEN40010 Power Electronics & Drives, {Power Electronics & Drives, Solid State Electronics, Control Theory, Solid State Electronics}	
23	MEEN20050	Heat Transfer	O		5	1	Dr. Donal Finn (Mechanical Eng.)	MEEN10010 Engineering Thermodynamics & Fluid Mechanics / MEEN10050 Energy Engineering, or equiv.	
24	MEEN30040	Measurement & Instrumentation	O		5	2	Dr. Donal Finn (Mechanical Eng.)	A basic knowledge of (i) statistical methods and (ii) electrical concepts	
25	MEEN40010	Engineering Thermodynamics III	O		5	1	Dr. David Timoney (Mechanical Eng.)	MEEN10010 Engineering Thermodynamics and MEEN30100 Engineering Thermodynamics II	Module to be moved to Semester One from Sept. 2012
26	MEEN40020	Mechanics of Fluids II	O		5	1	Dr. Malachy O'Rourke (Mechanical Eng.)	MEEN20010 Mechanics of Fluids I	
27	MEEN40110	Advanced Composites and Polymer Engineering	O		5	2	Prof. Michael Gilchrist (Mechanical Eng.)	Engineering Mathematics	
28	MEEN40050	Computational Continuum Mechanics I	O		5	1	Prof. Alojz Ivankovic (Mechanical Eng.)		
29	MEEN40150	Computational Contuum Mechanics II	O		5	2	Prof. Alojz Ivankovic (Mechanical Eng.)	Co-Requisite : Computational Continuum Mech I (MEEN40050)	
30	MEEN40160	Kinetics & Thermodynamics of Materials	O		5	1	Dr. David Browne (Mechanical Eng.)	MEEN10020 Materials Science and Engineering I	
31	MEEN40180	Nanomaterials	O		5	2	Dr. Denis Dowling (Mechanical / Chemical Eng.)	University level mathematics, physics, and chemistry, and engineering subjects such as fundamental materials science, electronics, thermal-fluid, and systems design.	
32	MEEN40190	Mechanics of Fluids III	O		5	2	Dr. Malachy O'Rourke (Mechanical Eng.)	MEEN30010 Eng. Thermodynamics II / Engineering Mathematics (ACM30160 or MAPH30160 - (differential equations))	
33	MEEN40200	Energy Systems in Buildings	O		5	2	Dr. Simos Oxizidis (Mechanical Eng.)	Introductory undergraduate modules in fluid mechanics, heat transfer and thermodynamics.	
34	MEEN40210	Energy in Transport	O		5	1	Dr. David Timoney (Mechanical Eng.)	Introductory undergraduate modules in physics / mechanics and thermodynamics.	
35	MEEN40670	Technical Communication	O		5	1 & 2	Prof. Michael Gilchrist / Mr. Barry Brophy (Mechanical Eng.)		This module will be offered in Semesters One and Two from 2012-13
36	PHYC30090	Nuclear Physics	O		5	2	Dr. Luis Leon Vintro (Physics)	Physics modules PHYC10080 and PHYC20020 or equivalent.	
	Option Rule:	**Students must register for a maximum of one of the following Professional Work Experience Modules**							
37	MEEN40530	Professional Work Experience - Long (Jan to July/August)	O		30	Y (2)	Dr. David Timoney (Mechanical Eng.)		
38	MEEN40540	Professional Work Experience - Short (e.g. Summer Work, Work with UCD Research Group on a part-time basis or group design project)	O		10	2	Dr. David Timoney (Mechanical Eng.)		
39	EEEN40190	Professional Work Experience (Electrical Energy) - Long (Jan to July/August)	O		30	2	Dr Damian Flynn		This module also used in ME (Electrical Energy Engineering)
40	EEEN40180	Professional Work Experience (Electrical Energy) - Short (e.g. Summer Work, Work with UCD Research Group on a part-time basis or group design project)	O		10	2	Dr Damian Flynn		This module also used in ME (Electrical Energy Engineering)
	Option Rule:	**Students must register for one of the following Research Project Modules**							
41	MEEN40570	ME (Energy) Research Project - 120 Credit Programme	C	20		Y	Dr. Simos Oxizidis / Dr. David Timoney (Mechanical Eng.)		
42	MEEN40550	ME (Energy) Research Project - 90 Credit Programme (Summer)	C	30		3	Dr. Simos Oxizidis / Dr. David Timoney (Mechanical Eng.)		

ICCM 2012 V.9B (Last Edited by D. Timoney, 25 July 2012, 09.30 am)

T164 UCD Master of Engineering (ME) in Energy Systems Engineering Programme Structure 2012/13

Sample Modular Structure for 12-Month 90-Credit Programme (Guidance for UCD BE (Mechanical) Graduates)

	Semester 1	Comment	Core Credits	Option Credits	Sem-ester		Semester 2	Comment	Core Credits	Option Credits	Sem-ester
MEEN40090	Energy Systems & Climate Change (unless already taken)		5		1	CHEN40440	Chemical Processes of Sustainable and Renewable Energy		5		2
EEEN40080	Power System Operation		5		1	MEEN40200	Energy Systems in Buildings			5	2
GEOL40310	Fossil Fuels, Carbon Capture & Storage		5		1	BMGT30090	Entrepreneurial Management			5	2
EEEN40400	Wind Energy		5		1	MEEN40190	Mechanics of Fluids III			5	2
MEEN40560	Research Skills and Techniques		5		1	MEEN40110	Advanced Composites and Polymer Engineering			5	2
MEEN40210	Energy in Transport			5	1	MEEN40150	Computational Contuum Mechanics II			5	2
MEEN40010	Eng. Thermodynamics III			5	1	MEEN40180	Nanomaterials			5	2
MEEN40160	Kinetics & Thermodynamics of Materials			5	1	ECON41710	Energy Economics			5	2
EEEN40010	Control Theory			5	1	MEEN40670	Technical Communication			5	2
CVEN 20030	Environmental Engineering Fundamentals			5	1	PHYC30090	Nuclear Physics			5	2
MEEN40670	Technical Communication			5	1	BSEN30030	Air Pollution			5	2
						EEEN40090	Power System Design			5	2
EEEN 30090	Electrical Machines			5	1	EEEN40120	Applications of Power Electronics			5	2
EEEN40100	Power Electronics and Drives			5	1	EEEN30070	Power System Engineering			5	2
	SEMESTER CREDIT TOTALS		**25**	**5**			**SEMESTER CREDIT TOTALS**		**5**	**25**	
	Semester 3 (SUMMER)	**Pre-Requisite: UCD Module Code No.**	**Core Credits**	**Option Credits**	**Sem-ester**						
MEEN40550	Research Project / Thesis (Summer)		30		3						
	SEMESTER CREDIT TOTALS		**30**								

ICCM 2012 V.9B (Last Edited by D. Timoney, 25 July 2012, 09.30 am)

T164 UCD Master of Engineering (ME) in Energy Systems Engineering Programme Structure 2012/13

Sample Modular Structure for 12-Month 90-Credit Programme (Guidance for UCD BE (Electrical / Electronic) Graduates)

	Semester 1	**Comment**	**Core Credits**	**Option Credits**	**Sem-ester**		**Semester 2**	**Comment**	**Core Credits**	**Option Credits**	**Sem-ester**
MEEN40090	Energy Systems & Climate Change (unless already taken)		5		1	CHEN40440	Chemical Processes of Sustainable and Renewable Energy		5		2
EEEN40080	Power System Operation		5		1	MEEN40200	Energy Systems in Buildings			5	2
GEOL40310	Fossil Fuels, Carbon Capture & Storage		5		1	BMGT30090	Entrepreneurial Management			5	2
EEEN40400	Wind Energy	Incompatible with EEEN40110 Renewable Energy Systems	5		1	ECON41710	Energy Economics			5	2
MEEN40560	Research Skills and Techniques		5		1	MEEN40670	Technical Communication			5	2
MEEN30100	Engineering Thermodynamics II			5	1						
MEEN40010	Engineering Thermodynamics III			5	1	PHYC30090	Nuclear Physics			5	2
MEEN40210	Energy in Transport			5	1	BSEN30030	Air Pollution			5	2
MEEN40020	Mechanics of Fluids II			5	1						
CVEN 20030	Environmental Engineering Fundamentals			5	1	EEEN40090	Power System Design			5	2
MEEN 20050	Heat Transfer			5	1	EEEN40120	Applications of Power Electronics			5	2
EEEN 30090	Electrical Machines			5	1	EEEN30070	Power System Engineering			5	2
EEEN40100	Power Electronics and Drives			5	1						
MEEN40670	Technical Communication			5	1						
	SEMESTER CREDIT TOTALS		**25**	**5**			**SEMESTER CREDIT TOTALS**		**5**	**25**	
	Semester 3 (SUMMER)	**Pre-Requisite: UCD Module Code No.**	**Core Credits**	**Option Credits**	**Sem-ester**						
EEEN4XXXX	ME (Energy) Research Project (Electrical) - 90 Credit Programme (Summer)		30		3						
	SEMESTER CREDIT TOTALS		**30**								

ICCM 2012 V.9B (Last Edited by D. Timoney, 25 July 2012, 09.30 am)

T164 UCD Master of Engineering (ME) in Energy Systems Engineering Programme Structure 2012/13

Sample Modular Structure for 12-Month 90-Credit Programme - Guidance for UCD BE (CHEMICAL) Graduates

	Semester 1	**Comment**	**Core Credits**	**Option Credits**	**Sem-ester**		**Semester 2**	**Comment**	**Core Credits**	**Option Credits**	**Sem-ester**
MEEN40090	Energy Systems & Climate Change (unless already taken)		5		1	CHEN40440	Chemical Processes of Sustainable and Renewable Energy		5		2
~~**EEEN20020**~~	~~**Electrical and Electronic Circuits (unless already taken)**~~	**Prior completion of this module is required if programme is to be completed in 12 months**			~~**1**~~	~~**EEEN20090**~~	~~**Electrical Energy Systems II**~~	**Prior completion of this module is required if programme is to be completed in 12 months**			~~**2**~~
EEEN40080	Power System Operation		5		1	MEEN40200	Energy Systems in Buildings			5	2
GEOL40310	Fossil Fuels, Carbon Capture & Storage		5		1	BMGT30090	Entrepreneurial Management			5	2
EEEN40400	Wind Energy		5		1	ECON41710	Energy Economics			5	2
MEEN40560	Research Skills and Techniques		5		1	PHYC30090	Nuclear Physics			5	2
MEEN40210	Energy in Transport			5	1	MEEN40670	Technical Communication			5	2
MEEN30100	Engineering Thermodynamics II			5	1	EEEN30070	Power System Engineering	Pre-requisites: EEEN20020 & EEEN20090		5	2
MEEN40010	Engineering Thermodynamics III			5	1	EEEN40090	Power System Design	Pre-requisites: EEEN20020 & EEEN20090		5	2
EEEN40100	Power Electronics and Drives	Pre-requisites: EEEN20020 & EEEN20090		5	1	EEEN40120	Applications of Power Electronics	Pre-requisites: EEEN20020 & EEEN20090		5	2
EEEN 30090	Electrical Machines	Pre-requisites: EEEN20020 & EEEN20090		5	1						
MEEN40670	Technical Communication			5	1						
	SEMESTER CREDIT TOTALS		**25**	**0**			**SEMESTER CREDIT TOTALS**		**5**	**20**	
	Semester 3 (SUMMER)	**Pre-Requisite: UCD Module Code No.**	**Core Credits**	**Option Credits**	**Sem-ester**						
MEEN40550	Research Project / Thesis (Summer)		30		3						
	SEMESTER CREDIT TOTALS		**30**								

Printed 17/08/2012 11:51

ICCM 2012 V.9B (Last Edited by D. Timoney, 25 July 2012, 09.30 am)

T164 UCD Master of Engineering (ME) in Energy Systems Engineering Programme Structure 2012/13

Sample Modular Structure for 2-year 120 Credit Programme - Guidance for BSc (Engineering Science) Graduates (1-Semester "Long" PWE)

	Semester 1, Year 1	Comment	Core Credits	Option Credits	Sem-ester		Semester 2, Year 1 (30-Credit "Long" PWE)	Comment	Core Credits	Option Credits	Sem-ester
	6 modules from the list of Core and Option Modules below (30 Credits per Semester). Note: All core modules must be taken before completion of ME programme.					MEEN40530	Professional Work Experience (Jan to July/August)		30		2
	Semester 1, Year 2	**Comment**	**Core Credits**	**Option Credits**	**Sem-ester**		**Semester 2, Year 2**	**Comment**	**Core Credits**	**Option Credits**	**Sem-ester**
MEEN40570	ME (Energy) Research Project - 120 Credit Programme - Part 1		5 or 10		Y	MEEN40570	ME (Energy) Research Project - 120 Credit Programme - Part 2		10 or 15		Y
MEEN40560	Research Skills and Techniques (to be taken in final year of ME)		5		1						
	Typically 3 or 4 additional modules from the list of Core and Option Modules below, with a total of 25-35 Credits per Semester. Note: All core modules must be taken before completion of ME programme.						**Typically 3 or 4 additional modules** from the list of Core and Option Modules below, with a total of 25-35 Credits per Semester. Note: All core modules must be taken before completion of ME programme.				
Core Modules						***Core Modules***					
EEEN20020	Electrical and Electronic Circuits (if not already taken)		5		1	EEEN20090	Electrical Energy Systems II (if not already taken)		5		2
MEEN30140	Professional Engineering (Finance) (if not already taken)		5		1	CHEN40440	Chemical Processes of Sustainable and Renewable Energy		5		2
MEEN30100	Engineering Thermodynamics II (If not already taken)		5		1	MEEN40430	Professional Engineering (Management)		5		2
EEEN40080	Power System Operation		5		1						
MEEN40090	Energy Systems & Climate Change		5		1						
EEEN40400	Wind Energy		5		1						
GEOL40310	Fossil Fuels, Carbon Capture & Storage		5		1						
Option Modules						***Option Modules***					
MEEN40020	Mechanics of Fluids II			5	1	MEEN40200	Energy Systems in Buildings			5	2
EEEN40010	Control Theory			5	1	MEEN40190	Mechanics of Fluids III			5	2
MEEN40210	Energy in Transport			5	1	CHEN 30140	Process Instrumentation & Control			5	2
MEEN 20050	Heat Transfer			5	1	ECON41710	Energy Economics			5	2
CVEN 20030	Environmental Engineering Fundamentals			5	1	BSEN 30030	Air Pollution			5	2
MEEN40050	Computational Continuum Mechanics I			5	1	BMGT30090	Entrepreneurial Management			5	2
MEEN40010	Engineering Thermodynamics III			5	1	MEEN40670	Technical Communication			5	2
MEEN40670	Technical Communication			5	1	MEEN40150	Computational Contuum Mechanics II			5	2
EEEN40100	Power Electronics and Drives	Pre-requisites: EEEN20020 & EEEN20090		5	1	EEEN40090	Power System Design	Pre-requisites: EEEN20020 & EEEN20090		5	2
EEEN 30090	Electrical Machines	Pre-requisites: EEEN20020 & EEEN20090		5	1	EEEN40120	Applications of Power Electronics	Pre-requisites: EEEN20020 & EEEN20090		5	2
						EEEN30070	Power System Engineering	Pre-requisites: EEEN20020 & EEEN20090		5	2
						PHYC30090	Nuclear Physics	Physics modules PHYC10080 and PHYC20020 or equivalent.		5	2
	REQUIRED CREDIT TOTALS		45 or 50	10			**REQUIRED CREDIT TOTALS**		50 or 55	10	

Printed 17/08/2012 11:51

ICCM 2012 V.9B (Last Edited by D. Timoney, 25 July 2012, 09.30 am)

T164 UCD Master of Engineering (ME) in Energy Systems Engineering Programme Structure 2012/13

Sample Modular Structure for 2-year 120 Credit Programme - Guidance for BSc (Engineering Science) Graduates ("Short" PWE)

	Semester 1, Year 1	Comment	Core Credits	Option Credits	Sem-ester		Semester 2, Year 1 or Summer Period after Year 1 (10-Credit "Short" PWE)	Comment	Core Credits	Option Credits	Sem-ester
	6 modules from the list of Core and Option Modules below (30 Credits per Semester). Note: All core modules must be taken before completion of ME programme.					MEEN40540	Professional Work Experience (e.g. Summer Work, Work with UCD Research Group on a part-time basis or group design project) during Semester			10	2
							Four modules from the list of Core or Option Modules below. Note: All core modules denoted (C) must be taken before completion of ME programme				
	Semester 1, Year 2	**Comment**	**Core Credits**	**Option Credits**	**Sem-ester**		**Semester 2, Year 2**	**Comment**	**Core Credits**	**Option Credits**	**Sem-ester**
MEEN40570	ME (Energy) Research Project - 120 Credit Programme - Part 1		5 or 10		Y	MEEN40570	ME (Energy) Research Project - 120 Credit Programme - Part 2		10 or 15		Y
MEEN40560	Research Skills and Techniques (to be taken in final year of ME)		5		1						
	Typically 3 or 4 additional modules from the list of Core and Option Modules below, with a total of 25-35 Credits per Semester. Note: All core modules must be taken before completion of ME programme.						**Typically 3 or 4 additional modules** from the list of Core and Option Modules below, with a total of 25-35 Credits per Semester. Note: All core modules must be taken before completion of ME programme.				
Core Modules						***Core Modules***					
EEEN20020	Electrical and Electronic Circuits (if not already taken)		5		1	EEEN20090	Electrical Energy Systems II (if not already taken)		5		2
MEEN30140	Professional Engineering (Finance) (if not already taken)		5		1	CHEN40440	Chemical Processes of Sustainable and Renewable Energy		5		2
MEEN30100	Engineering Thermodynamics II (If not already taken)		5		1	MEEN40430	Professional Engineering (Management)		5		2
EEEN40080	Power System Operation		5		1						
MEEN40090	Energy Systems & Climate Change		5		1						
EEEN40400	Wind Energy		5		1						
GEOL40310	Fossil Fuels, Carbon Capture & Storage		5		1						
Option Modules						***Option Modules***					
MEEN40020	Mechanics of Fluids II			5	1	MEEN40200	Energy Systems in Buildings			5	2
EEEN40010	Control Theory			5	1	MEEN40190	Mechanics of Fluids III			5	2
MEEN40210	Energy in Transport			5	1	CHEN 30140	Process Instrumentation & Control			5	2
MEEN 20050	Heat Transfer			5	1	ECON41710	Energy Economics			5	2
CVEN 20030	Environmental Engineering Fundamentals			5	1	BSEN 30030	Air Pollution			5	2
MEEN40050	Computational Continuum Mechanics I			5	1	BMGT30090	Entrepreneurial Management			5	2
MEEN40010	Engineering Thermodynamics III			5	1	MEEN40670	Technical Communication			5	2
MEEN40670	Technical Communication			5	1	MEEN40150	Computational Contuum Mechanics II			5	2
EEEN40100	Power Electronics and Drives	Pre-requisites: EEEN20020 & EEEN20090		5	1	EEEN40090	Power System Design	Pre-requisites: EEEN20020 & EEEN20090		5	2
EEEN 30090	Electrical Machines	Pre-requisites: EEEN20020 & EEEN20090		5	1	EEEN40120	Applications of Power Electronics	Pre-requisites: EEEN20020 & EEEN20090		5	2
						EEEN30070	Power System Engineering	Pre-requisites: EEEN20020 & EEEN20090		5	2
						PHYC30090	Nuclear Physics	Physics modules PHYC10080 and PHYC20020 or equivalent.		5	2
	REQUIRED CREDIT TOTALS		45 or 50	10			**REQUIRED CREDIT TOTALS**		20 or 25	30	

Printed 17/08/2012 11:51

ICCM 2012 V.9C (Last Edited by D. Timoney, 26 July 2012, 7.30 pm)

T164 UCD Master of Engineering (ME) in Energy Systems Engineering Programme Structure 2012/13

Trial Modular Structure for 1.5 year (Start: September Year 1, End: December Year 2) 100 Credit Programme - Guidance for BE (Civil) Graduates

	Semester 1, Year 1	Comment	Core Credits	Option Credits	Total Credits	Sem-ester
Core Modules		Suggested Modules in Blue-Shaded Cells				
EEEN20020	Electrical and Electronic Circuits		5			1
GEOL40310	Fossil Fuels, Carbon Capture & Storage		5			1
MEEN40090	Energy Systems & Climate Change		5			1
MEEN30100	Engineering Thermodynamics II		5			1
MEEN40560	Research Skills and Techniques		5		1	
MEEN30140	Professional Engineering (Finance) (if not already taken)	Core if not already taken	5		1	
Option Modules						
MEEN 20050	Heat Transfer			5		1
MEEN40210	Energy in Transport			5		1
		Total Semester Credits (Core + Suggested Option Modules)	30			

	"Semester 3" Summer Period (June / July / August) After Year 1	**Comment**	**Core Credits**	**Option Credits**	**Total Credits**	**Sem-ester**
MEEN40550	Research Project / Thesis - Part Two		20			3
		Total Credits (Core + Suggested Option Modules)	20	0	20	

	Semester "Four" (September to December, Year 2)	**Comment**	**Core Credits**	**Option Credits**	**Total Credits**	**Sem-ester**
Core Modules		Suggested Modules in Blue-Shaded Cells				
EEEN40080	Power System Operation	Pre-requisites: EEEN20020 & 20090	5			1
EEEN40400	Wind Energy	Pre-requisites: EEEN20020 & 20090	5			1
Option Modules						
MEEN40210	Energy in Transport			5		1
MEEN40010	Engineering Thermodynamics III			5		1
MEEN40020	Mechanics of Fluids II			5		1
MEEN 20050	Heat Transfer			5		1
EEEN40010	Control Theory			5		1
CVEN 20030	Environmental Engineering Fundamentals			5		1
MEEN40050	Computational Continuum Mechanics I			5		1
MEEN40670	Technical Communication			5		1
		Total Semester Credits (Core + Suggested Option Modules)	30			

	TOTAL CREDITS FOR SUGGESTED PROGRAMME STRUCTURE (Including Credit for Prior PWE)	**120**

	Semester 2, Year 1 or Summer Period after Year 1 **(Assuming Candidate is Eligible for Award of 10-Credits for Prior Learning / "Short" Professional Work Experience)**	Comment	Core Credits	Option Credits	Total Credits	Sem-ester
Core Modules		Suggested Modules in Blue-Shaded Cells				
EEEN20090	Electrical Energy Systems II		5			
CHEN40440	Chemical Processes of Sustainable and Renewable Energy		5			2
MEEN40550	Research Project / Thesis - Part One		10			3
MEEN40540	Professional Work Experience (**ASSUMED PRIOR LEARNING IN THIS STRUCTURE**)		10			2
MEEN40430	Professional Engineering (Management) - If Not Already Taken	Core if not already taken	5			2
Option Modules						
MEEN40200	Energy Systems in Buildings			5		2
ECON41710	Energy Economics			5		2
BSEN 30030	Air Pollution			5		2
BMGT30090	Entrepreneurial Management			5		2
CHEN 30140	Process Instrumentation & Control			5		2
MEEN40190	Mechanics of Fluids III			5		2
MEEN40670	Technical Communication			5		2
MEEN40150	Computational Contuum Mechanics II			5		2
PHYC30090	Nuclear Physics			5		2
		Total Semester Credits (Core + Suggested Option Modules)	30			

	Semester 2, Year 2 - PROGRAMME COMPLETE	**Comment**	**Core Credits**	**Option Credits**	**Total Credits**	**Sem-ester**

Modules Not Accessible (Prior Learning not complete)

EEEN40100	Power Electronics and Drives	Pre-requisites: EEEN20020 & 20090		5		1
EEEN 30090	Electrical Machines	Pre-requisites: EEEN20020 & 20090		5		1

Modules Not Accessible (Prior Learning not complete)

EEEN40090	Power System Design	Pre-requisites: EEEN20020 & 20090		5	2	
EEEN40120	Applications of Power Electronics	Pre-requisites: EEEN20020 & 20090		5	2	
EEEN30070	Power System Engineering	Pre-requisites: EEEN20020 & 20090		5	2	