

Degree Requirements

- Cohort AY2011/2012 updated as of 28 December 2012

The following are the requirements for the degree of B.Eng. (Environmental Engineering):

- Students in the B.Eng. (Environmental Engineering) Programme are required to complete a minimum of 162 MCs with a CAP ≥ 2.0 to graduate from the programme.
- 162 MCs will have to be earned by reading modules in accordance with Table A.
- The students are free to choose any combination of the offered modules from Table B to complete 28 MCs of the technical electives.
- A student must also satisfy other additional requirements that may be prescribed by the Faculty of Engineering or the University
- ***Poly-direct entry students of AY2012/2013, it is compulsory to read ES2331 Communicating Engineering towards the UEM /ULR-Breadth requirement.***

Table A: Summary of Modular Requirements and Credits

Modular Requirements	MCs
UNIVERSITY LEVEL REQUIREMENTS	20
General Education Modules (GEM) (at least one from Group B: Humanities and Social Sciences)	8
Singapore Studies (SS) Module	4
Breadth: Modules Outside Student's Faculty	8
PROGRAMME REQUIREMENTS	
Faculty Requirements:	10
ES1531/EG1413 Critical Thinking and Writing	4
HR2002 Human Capital in Organizations	3
EG2401 Engineering Professionalism	3
ES1102 English for Academic Purposes*	-
Major Requirements:	
Foundation Requirements	24
MA1505 Mathematics I	4
MA1506 Mathematics II	4
PC1431 Physics IE	4
MLE1101 Introductory Materials Science & Engineering	4
CE2409 Computer Applications	4
CM1502 General and Physical Chemistry for Engineers	4
Basic Engineering Modules:	16
EG1109 Statics and Mechanics of Materials	4
CE2134 Hydraulics	4
CE2183 Construction Project Management	4
CE2407 Engineering and Uncertainty Analysis	4
Engineering Process/Infrastructure Engineering (3 of the following courses):	12
CE2155 Structural Mechanics and Materials	4
CE2184 Infrastructure and the Environment	4
CM2142 Analytical Chemistry	4
CN2121 Chemical Engineering Thermodynamics	4
AR2723 Strategies for Sustainable Architecture	4
LSM1401 Fundamentals of Biochemistry	4
Environmental Engineering Core Modules:	28
ESE1001 Environmental Engineering Fundamentals	4
ESE2001 Environmental Processes	4
ESE2401 Water Science & Technology	4
ESE3101 Solid and Hazardous Waste Management	4
ESE3201 Air Quality Management	4

Modular Requirements	MCs
ESE3301 Environmental Microbiological Principles	4
ESE3401 Water & Wastewater Engineering 1	4
Elective Modules	
ESE Technical Electives Modules (from the modules in Table B)	16
UNRESTRICTED ELECTIVE MODULES **	20
Projects Modules	
ESE4501 Design Project 4MCs	16
ESE4502 B.Eng Dissertation 12 MCs	
Total	162

* For students who have not passed or been exempted from the Qualifying English Test at the time of admissions to the Faculty

** ***Poly-direct entry students of AY2012/2013, it is compulsory to read ES2331 Communicating Engineering towards the UEM /ULR-Breadth requirement.***

Table B: Technical Elective Modules ^α

Technical Elective Modules

- 1) Department of Civil and Environmental Engineering
 - ESE4301 Wastewater Biotechnology
 - ESE4401 Water & Wastewater Engineering 2
 - ESE4403 Membrane Tech in Env Applns
 - ESE4404 Bioenergy
 - ESE4405 Urban Water Engineering & Management
 - ESE4406 Energy and the Environment
 - ESE4407 Environmental Forensics
 - ESE4408 Environmental Impact Assessment
 - ESE4409 Environmental Applications of Adsorption
 - ESE5201 Combustion Pollution Control
 - ESE5202 Air Pollution Control Technology
 - ESE5203 Aerosol Science and Technology
 - ESE5204 Toxic & Hazardous Waste Management
 - ESE5205 Sludge and Solid Waste Management
 - ESE5301 Environmental Biological Principles
 - ESE5401 Water Quality Management
 - ESE5402 Industrial Wastewater Control
 - ESE5403 Water Reclamation & Reuse
 - ESE5404 Biological Treatment Processes
 - ESE5405 Water Treatment Processes
 - ESE5406 Membrane Treatment Process and Modelling
 - ESE5601 Environmental Risk Assessment
 - ESE5602 Environmental Management Systems
 - ESE5603 Pollution Minimisation and Prevention
 - CE3132 Water Resources Engineering
 - CE5307 Wave Hydrodynamics and Physical Oceanography
 - CE5603 Engineering Economics & Project Evaluation

^α CEE reserves the right to decide on the modules to be offered in any given semester.

- 2) Dept of Chemical and Biomolecular Engineering
 - SH5002 Fundamentals in Industrial Safety
 - SH5004 Fundamentals in Industrial Hygiene
 - SH5101 Industrial Toxicology
 - SH5402 Advanced SHE Management
- 3) Dept of School of Design and Environment
 - LX5103 Environmental Law

Recommended Semester Schedules

The recommended semester schedule for EVE students is presented in Table C & Table D:

Table C: Recommended Semester schedule for EVE Students

Modules	MCs	Modules	MCs
Semester 1		Semester 2	
MA1505 Mathematics I	4	MA1506 Mathematics II	4
PC1431 Physics IE ^	4	MLE1101 Introductory Materials Science & Engineering	4
ESE1001 Environmental Engineering Fundamentals	4	EG1109 Statics and Mechanics of Materials	4
CE2409 Computer Applications in Civil Engineering	4	CM1502 General and Physical Chemistry for Engineers	4
ES1000* Basic English Course	-	ES1102* English for Academic Purposes	-
A Singapore Studies Module	4	General Education Module/ Breadth 1:	4
Sub-total	20	Sub-total	20

^ PC1431 Physics IE must be graded.

* Students who have not passed or even been exempted from the Qualifying English Test at the time of admissions to the Faculty, will have to read ES1000 and/or ES1102. This will be decided by CELC.

Modules	MCs	Modules	MCs
Semester 3		Semester 4	
CE2155* Structural Mechanics and Materials	4	CM2142* Analytical Chemistry	4
CE2184* Infrastructure and the Environment	4	LSM1401* Fundamentals of Biochemistry	4
CN2121* Chemical Engineering Thermodynamics	4	CE2183 Construction Project Management	4
LSM1401* Fundamentals of Biochemistry	4	ESE2401 Water Science & Technology	4
AR2723* Strategies for Sustainable Architecture	4	2 x General Education or Breadth Modules	8
CM2142* Analytical Chemistry	4	ES1531/EG1413** Critical Thinking and Writing	4
CE2134 Hydraulics	4		
CE2407 Engineering and Uncertainty Analysis	4		
ESE2001 Environmental Processes	4		
Sub-total	20	Sub-total	24

* Students are required to read 3 out of the 6 modules listed. LSM1401 and CM2142 are offered in both Semesters. Module choices are subjected to timetable availability and fulfilment of co/pre-requisites, if any.

** Students who are required to read ES1102 have to pass the module before reading ES1531/EG1413. Students are allowed to read ES1531/EG1413 in any semester as long as they have passed or been exempted from ES1102.

Modules	MCs	Modules	MCs
Semester 5		Semester 6	
ESE3101 Solid and Hazardous Waste Mgmt	4	Technical Elective Module 1	4
ESE3201 Air Quality Management	4	Technical Elective Module 2	4
ESE3301 Environmental Microbiological Principles	4	Unrestricted Elective Module 1	4
ESE3401 Water & Wastewater Engineering 1	4	Unrestricted Elective Module 2	4
General Education Module/ Breadth	4	Unrestricted Elective Modules 3	4
Sub-total	20	Sub-total	20

Modules	MCs	Modules	MCs
Semester 7		Semester 8	
ESE4501 Design Project	4	ESE4502 B.Eng Dissertation (Cont'd)	8
ESE4502 B.Eng. Dissertation	4	Unrestricted Elective Module 5	4
Technical Elective Module 3	4	HR2002 Human Capital in Organizations	3
Technical Elective Module 4	4	EG2401 Engineering Professionalism	3
Unrestricted Elective Module 4	4		
Sub-total	20	Sub-total	18

Table D: Recommended Semester Schedule for B.Eng. (Env Eng) students with an accredited Polytechnic Diploma (AY2011/12 onwards)

Modules	MCs	Modules	MCs
Semester 1		Semester 2	
MA1301 Introductory Mathematics (UEM 1) <i>if no exemption is given</i>	4	Singapore Studies	4
PC1431 Physics IE **	4	MA1505 Mathematics I	4
ESE2001 Environmental Processes	4	ESE2401 Water Science and Technology	4
CE2409 Computer Applications in Civil Engineering	4	CM1502 General and Physical Chemistry for Engineers **	4
ESE1001 Environmental Engineering Fundamentals	4	1 GEM or Breadth Module	4
		(EG1109 Statics and Mechanics of Materials)	(4)
		ES1102 English for Academic Purposes	-
Sub-total	20	Sub-total	20 (24)

** PC1431 or CM1502 will be exempted for those who have passed the APC Test for either one of the modules.

Semester 3		Semester 4	
MA1506 Mathematics II	4	CM2142* Analytical Chemistry (Pre-Req: CM1101)	4
CE2155* Structural Mechanics and Materials	4	LSM1401* Fundamentals of Biochemistry	4
CE2184* Infrastructure and the Environment	4	CE2183 Construction Project Management	4
LSM1401* Fundamentals of Biochemistry	4	Technical Elective Module 1	4
CN2121* Chemical Engineering Thermodynamics (Pre-Req: CN1111 and CM1502)	4	Technical Elective Module 2	4
CM2142* Analytical Chemistry (Pre-Req: CM1101 waived if pass CM1502)	4	1 GEM or Breadth *** Module	4
AR2723* Strategies for Sustainable Architecture	4		
CE2134 Hydraulics	4		
ESE3401 Water and Wastewater Engineering1	4		
Sub-total	20	Sub-total	24

* Students are required to read 3 out of 6 modules listed. LSM 1401 and CM 2142 are offered in both semesters. Module choices are subjected to timetable availability and fulfilment of co/pre-requisites, if any.

*** ***Poly-direct entry students of AY2012/2013, it is compulsory to read ES2331 Communicating Engineering towards the UEM/ULR-Breadth requirement.***

Semester 5			Semester 6	
ESE3101	Solid & Hazardous Waste Management	4	Technical Elective Module 3	4
ESE3201	Air Quality Management	4	Technical Elective Module 4	4
ESE3301	Environmental Microbiological Principles	4	ESE4502 BEng Dissertation	8
ESE4501	Design Project	4	EG2401 Engineering Professionalism	3
ESE4502	BEng Dissertation	4	Unrestricted Elective Module 2	4
CE2407	Engineering and Uncertainty Analysis	4		
Sub-total		24	Sub-total	23

Note:-

1) All poly entry students are considered for the following exemptions (Maximum 40 MCs):

Module	MCs	Remarks
GEM Module	4	Please note that these exemptions are NOT guaranteed, but are subject to assessment of polytechnic diploma results.
Breadth Module	4	
EG1413 Critical Thinking and Writing	4	
HR2002 Understanding Human Relations in the New Economy	3	
MLE1101 Introductory Materials Science and Engineering	4	
Unrestricted Elective Modules	12	
PC1431 Physics IE	4	Students can opt to sit for APC tests to gain exemptions from either CM1502. Exemption for this module will ONLY be granted by passing of APC test.
CM1502 General and Physical Chemistry for Engineers	4	

2) The above schedule can be revised in the event of timetabling constraints.

Limit on Level-1000 Modules

Students should not read more than 60 MCs of Level-1000 modules towards their degree requirements (minimum of 160 MCs for graduation). For Polytechnic graduates, 12 MCs of the exempted UE modules will not count towards the 60 MCs limit on level-1000 modules.