

ESE Curriculum (2024 Cohort - Normative 4-year Degree)

[min. no. of CUs for the award: 121]

**(1) Gateway Education (GE) Requirement (30 CUs)**

GE Requirement		Credit Units
University Requirements	GE1401 University English	3
	GE2410 English for Engineering	3
	GE1501 Chinese Civilisation – History and Philosophy	3
Distributional Requirements	A minimum of 3 credit units from each of the three distributional areas below: - Area 1: Arts and Humanities - Area 2: Study of Societies, Social and Business Organisations - Area 3: Science and Technology	12
School-specified Requirements	CA1167 Engineering Communication	3
	SEE1003 Introduction to Sustainable Energy and Environmental Engineering	3
	SEE3002 Energy and Environmental Economics	3
Total		30

**(2) School Requirement (18 CUs)**

Course	Credit Units	Remarks
CHEM1200 Discovery in Biology	3	
CHEM1300 Principles of General Chemistry	3	
MA1200 / MA1300 Calculus and Basic Linear Algebra I / Enhanced Calculus and Linear Algebra I	3	Select either MA1200 or MA1300
MA1201 / MA1301 Calculus and Basic Linear Algebra II / Enhanced Calculus and Linear Algebra II	3	Select either MA1201 or MA1301
PHY1201 General Physics I	3	
SEE1000 Professional Development: Career Planning Workshop	0	
SEE1002 Introduction to Computing for Energy and Environment	3	
SEE2000 Professional Development I	0	
SEE4000 Professional Development II	0	

**(3) Major Requirement (73 CUs)**

**A. Basic Core Courses (19 CUs)**

Course	Credit Units
MA2181 Mathematical Methods for Engineering	3
SEE2001 Electromagnetic Principles for Energy Engineers	3
SEE2002 Chemical Sciences for Energy and Environmental Engineers	4
SEE2003 Introduction to Energy and Environmental Data Analysis	3
SEE2101 Engineering Thermofluids I	3
SEE2201 Fundamentals of Environmental Engineering	3

**B. Major Core Courses (42 CUs)**

Course	Credit Units
SEE3001 Energy and Environmental Policy	3
SEE3003 Climate Change and Adaptation Strategies	3
SEE3101 Engineering Thermofluids II	4
SEE3102 Power Plant Engineering	3
SEE3103 Energy Efficiency for Buildings	3
SEE3104 Sustainable and Renewable Energy	3
SEE4001 Engineers in Society	1
SEE4003 Energy and Environmental Engineering Laboratory	3
SEE4004 Environmental Impact Assessment for Sustainable Development	4
SEE4112 Sustainable Engineering Systems: Modelling and Analysis	3
SEE4217 Waste and Wastewater Treatment Engineering	3
SEE4997 Final Year Project	6
SYE4024 Project Management	3

**C. Electives (12 CUs) - select at least **FOUR** courses from the following list**

Course	Credit Units	Remarks
SDSC3002 Data Mining	3	Select at least three from Courses SDSC3002, SEE4113, SEE4114, SEE4115, SEE4116, SEE4117, SEE4118, SEE4119, SEE4120, SEE4121 and SEE4122
SEE4113 Nanotechnology in Energy Conversion and Storage: Concepts and Creative Science	3	
SEE4114 Bioenergy Engineering: Principles and Applications	3	
SEE4115 Energy Catalysis and Reaction Engineering	3	
SEE4116 Energy and Carbon Auditing	3	
SEE4117 Solar Energy Engineering	3	
SEE4118 Wind and Marine Energy	3	
SEE4119 Electrical Energy Conversion	3	
SEE4120 Materials Engineering for Energy Storage Applications	3	
SEE4121 Gas Engineering	3	
SEE4122 Chemical Separations for Energy and Environmental Applications	3	

SEE3201	Atmospheric Science – An Introductory Survey	3	Select at least one from Courses SEE3201, SEE3204*, SEE3205, SEE3206, SEE3207, SEE4202, SEE4205, SEE4216, SEE4218 and SEE4220
SEE3204*	Urban Sustainability	3	
SEE3205	Urban Sustainability	3	
SEE3206	Environmental Social Governance	3	
SEE3207	Indoor Environmental Quality	3	
SEE4202	Atmospheric Chemistry	3	
SEE4205	Design of Smart Cities and Sustainable Building	3	
SEE4216	Combustion and Air Pollution Control	3	
SEE4218	Water and Water Resource Engineering	3	
SEE4220	Measurements of Air Pollutants	3	

\* SEE3204 is a summer course (not offered until further notice)

#### D. Optional Electives (15 CUs)

Students may choose to enroll in all of the following course(s) if they are interested in being a member of The Hong Kong Institution of Engineers (HKIE) in the Building Services (BSS) discipline. Given the quota restriction, students are required to obtain approval by the School before studying the courses.

Course		Credit Units
CA3712	Electrical Services	3
CA3722	HVAC Engineering	3
CA3732	Fire Engineering and Piped Services	3
CA4718	Power Electronics and Smart Lighting Controls	3
CA4737	Fire Science and Modelling	3

**ESE Curriculum (2024 Cohort – Advanced Standing I)**

**[min. no. of CUs for the award: 91]**

**(1) Gateway Education (GE) Requirement (21 CUs)**

<b>GE Requirement</b>		<b>Credit Units</b>
University Requirements	GE1401 University English	3
	GE2410 English for Engineering	3
	GE1501 Chinese Civilisation – History and Philosophy	3
Distributional Requirements	A minimum of 6 credit units from two of the three distributional areas below: - Area 1: Arts and Humanities - Area 2: Study of Societies, Social and Business Organisations - Area 3: Science and Technology	6
School-specified Requirements	CA1167 Engineering Communication	3
	SEE3002 Energy and Environmental Economics	3
<b>Total</b>		<b>21</b>

**(2) School Requirement (0 CU)**

<b>Course</b>	<b>Credit Units</b>
SEE2000 Professional Development I	0
SEE4000 Professional Development II	0

**(3) Major Requirement (70 CUs)**

**A. Basic Core Courses (16 CUs)**

<b>Course</b>	<b>Credit Units</b>
MA2181 Mathematical Methods for Engineering	3
SEE2001 Electromagnetic Principles for Energy Engineers	3
SEE2002 Chemical Sciences for Energy and Environmental Engineers	4
SEE2101 Engineering Thermofluids I	3
SEE2201 Fundamentals of Environmental Engineering	3

**B. Major Core Courses (42 CUs)**

<b>Course</b>	<b>Credit Units</b>
SEE3001 Energy and Environmental Policy	3
SEE3003 Climate Change and Adaptation Strategies	3
SEE3101 Engineering Thermofluids II	4
SEE3102 Power Plant Engineering	3
SEE3103 Energy Efficiency for Buildings	3
SEE3104 Sustainable and Renewable Energy	3
SEE4001 Engineers in Society	1

SEE4003	Energy and Environmental Engineering Laboratory	3
SEE4004	Environmental Impact Assessment for Sustainable Development	4
SEE4112	Sustainable Engineering Systems: Modelling and Analysis	3
SEE4217	Waste and Wastewater Treatment Engineering	3
SEE4997	Final Year Project	6
SYE4024	Project Management	3

C. Electives (12 CUs) - *select at least **FOUR** courses from the following list*

Course	Credit Units	Remarks
SDSC3002	Data Mining	3
SEE4113	Nanotechnology in Energy Conversion and Storage: Concepts and Creative Science	3
SEE4114	Bioenergy Engineering: Principles and Applications	3
SEE4115	Energy Catalysis and Reaction Engineering	3
SEE4116	Energy and Carbon Auditing	3
SEE4117	Solar Energy Engineering	3
SEE4118	Wind and Marine Energy	3
SEE4119	Electrical Energy Conversion	3
SEE4120	Materials Engineering for Energy Storage Applications	3
SEE4121	Gas Engineering	3
SEE4122	Chemical Separations for Energy and Environmental Applications	3
SEE3201	Atmospheric Science – An Introductory Survey	3
SEE3204*	Urban Sustainability	3
SEE3205	Urban Sustainability	3
SEE3206	Environmental Social Governance	3
SEE3207	Indoor Environmental Quality	3
SEE4202	Atmospheric Chemistry	3
SEE4205	Design of Smart Cities and Sustainable Building	3
SEE4216	Combustion and Air Pollution Control	3
SEE4218	Water and Water Resource Engineering	3
SEE4220	Measurements of Air Pollutants	3

\* SEE3204 is a summer course (not offered until further notice)

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<b>Course</b>	<b>Credit Units</b>
CA3712 Electrical Services	3
CA3722 HVAC Engineering	3
CA3732 Fire Engineering and Piped Services	3
CA4718 Power Electronics and Smart Lighting Controls	3
CA4737 Fire Science and Modelling	3