

**Bachelor of Engineering (Environmental and Sustainability Engineering)
with Second Major in Innovation & Design**

Cohort AY2026/2027

Course Requirements	Units
Common Curriculum	
GEA1000 Quantitative Reasoning with Data ¹	4
CS1010E Programming Methodology (or other variants) ²	4
CDE2501 Sustainable Systems for Liveable Cities ²	4
ES2631 Critique and Communication of Thinking and Design ²	4
GE: Cultures and Connections ²	4
GE: Communities and Engagement ²	4
DTK1234 Design Thinking	4
EE2211 Introduction to Machine Learning or EE2213 Introduction to Artificial Intelligence	4
EG1311 Design and Make or EG1311BE Design and Make	4
PF1101A Project Management and Finance	4
Sub-total for Common Curriculum	40
Engineering Core	
MA1511 Engineering Calculus	2
MA1512 Differential Equations for Engineering	2
MA1513 Linear Algebra with Differential Equations	2
CE2407A Uncertainty Analysis for Engineers	2
EG2401A Engineering Professionalism	2
EG3611A Industrial Attachment or CFG2101 NUS Vacation Internship Programme ³ and EG3612 Vacation Industrial Attachment	10
Sub-total for Engineering Core	20
Engineering Programme Requirements	
CE2134 Fluid Mechanics	4
ESE2101 Environmental Science and Engineering Principles and Practice	4
ESE2102 Principles and Practice in Environmental Monitoring	4
ESE2000 Chemistry for an Environmentally Sustainable Future	4
ESE2001 Environmental Challenges in the Anthropocene	4
ESE3101 Resource Management and Circular Economy	4
ESE3201 Air Quality in Changing Environment	4
ESE3301 Microbiology in Natural and Built Environment	4
ESE3401 Sustainable Urban Water Technology	4
ESE4408 Environmental Impact Assessment	4
ESE4501 Design Project	4
Technical electives	8
CDE4301 Innovation & Design Capstone or CDE4301A Ideas to Start-up (over 2 consecutive semesters) ⁴	8
Sub-total for Engineering Programme Requirements	60
Unrestricted Electives	
CDE3301 Ideas to Proof-of-Concept (over 2 consecutive semesters) ⁵	12
CDE4301 Innovation & Design Capstone or CDE4301A Ideas to Start-up (over 2 consecutive semesters) ⁴	4
Electives for Second Major ⁵	16
Other unrestricted electives	8
Sub-total for Unrestricted Electives	40
Total	160

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Notes:

- ¹ Students may read other approved courses for Data Literacy in lieu of GEA1000.
- ² Students may read equivalent courses in NUS College (NUSC), University Town College Programme (UTCP), and Ridge View Residential Programme (RVRC). CDE2501 fulfils GE: Singapore Studies while ES2631 fulfils GE: Critique and Expression.
- ³ May be replaced by CDE2605 Undergraduate Research Opportunities Programme or CDE2605R Undergraduate Research Experience (UREx).
- ⁴ The 12 units for CDE4301/CDE4301A are counted towards 8 units for Integrated Project while 4 units are counted as unrestricted elective.
- ⁵ Students should clear at least one elective course from List I prior to CDE3301. Students in competition teams may enrol in CDE3301C Complex Systems Design: From Mission to Prototype in Semester 3 to Semester 4 (Year 2) or Semester 5 to Semester 6 (Year 3).

Sample study plan – JC-intake students or equivalent
(for students who opt for vacation internships)

Semester 1	Units	Semester 2	Units
ESE2101 Environmental Science and Engineering Principles and Practice	4	ESE2102 Principles and Practice in Environmental Monitoring	4
GEA1000 Quantitative Reasoning with Data	4	CS1010E Programming Methodology	4
DTK1234 Design Thinking	4	EG1311 Design and Make or EG1311BE Design and Make	4
MA1513 Linear Algebra with Differential Equations	2	MA1511 Engineering Calculus	2
CE2407A Uncertainty Analysis for Engineers	2	MA1512 Differential Equations for Engineering	2
PF1101A Project Management and Finance	4	Elective 1 for Second Major (from List I)	4
Sub-total	20	Sub-total	20

Summer vacation between Semesters 2 and 3	Units
CFG2101 NUS Vacation Internship Programme	4
Sub-total	4

Semester 3	Units	Semester 4	Units
CE2134 Fluid Mechanics	4	ESE3101 Resource Management and Circular Economy	4
ESE2000 Chemistry for an Environmentally Sustainable Future	4	ESE3301 Microbiology in Natural and Built Environment	4
ESE2001 Environmental Challenges in the Anthropocene	4	ES2631 Critique and Communication of Thinking and Design	4
EE2211 Introduction to Machine Learning or EE2213 Introduction to Artificial Intelligence	4	GE	4
EG2401A Engineering Professionalism	2	CDE3301 Ideas to Proof-of-Concept	6
Elective 2 for Second Major (from List I)	4		
Sub-total	22	Sub-total	22

Summer vacation between Semesters 4 and 5	Units
EG3612 Vacation Internship Attachment	6
Sub-total	6

Semester 5	Units	Semester 6 – can be used for SEP	Units
ESE3201 Air Quality in Changing Environment	4	Elective 3 for Second Major	4
ESE3401 Sustainable Urban Water Technology	4	Technical Elective 1	4
CDE2501 Sustainable Systems for Liveable Cities	4	GE	4
CDE3301 Ideas to Proof-of-Concept	6	UE	4
		UE	4
Sub-total	18	Sub-total	20

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Semester 7	Units	Semester 8	Units
CDE4301 Innovation & Design Capstone or CDE4301A Ideas to Start-up	6	CDE4301 Innovation & Design Capstone or CDE4301A Ideas to Start-up	6
ESE4501 Design Project	4	Elective 4 for Second Major	4
Technical Elective 2	4	ESE4408 Environmental Impact Assessment	4
Sub-total	14	Sub-total	14

Sample study plan – JC-intake students or equivalent

(for students who opt for vacation internships **plus a specialisation**)

Semester 1	Units	Semester 2	Units
ESE2101 Environmental Science and Engineering Principles and Practice	4	ESE2102 Principles and Practice in Environmental Monitoring	4
GEA1000 Quantitative Reasoning with Data	4	CS1010E Programming Methodology	4
DTK1234 Design Thinking	4	EG1311 Design and Make or EG1311BE Design and Make	4
MA1513 Linear Algebra with Differential Equations	2	MA1511 Engineering Calculus	2
CE2407A Uncertainty Analysis for Engineers	2	MA1512 Differential Equations for Engineering	2
PF1101A Project Management and Finance	4	Elective 1 for Second Major (from List I)	4
Sub-total	20	Sub-total	20

Summer vacation between Semesters 2 and 3	Units
CFG2101 NUS Vacation Internship Programme	4
Sub-total	4

Semester 3	Units	Semester 4	Units
CE2134 Fluid Mechanics	4	ESE3101 Resource Management and Circular Economy	4
ESE2000 Chemistry for an Environmentally Sustainable Future	4	ESE3301 Microbiology in Natural and Built Environment	4
ESE2001 Environmental Challenges in the Anthropocene	4	ES2631 Critique and Communication of Thinking and Design	4
EE2211 Introduction to Machine Learning or EE2213 Introduction to Artificial Intelligence	4	GE	4
EG2401A Engineering Professionalism	2	CDE3301 Ideas to Proof-of-Concept	6
Elective 2 for Second Major (from List I)	4		
Sub-total	22	Sub-total	22

Summer vacation between Semesters 4 and 5	Units
EG3612 Vacation Internship Attachment	6
Sub-total	6

Semester 5	Units	Semester 6 – can be used for SEP	Units
ESE3201 Air Quality in Changing Environment	4	Elective 3 for Second Major	4
ESE3401 Sustainable Urban Water Technology	4	Specialisation course 1	4
CDE2501 Sustainable Systems for Liveable Cities	4	Specialisation course 2	4
CDE3301 Ideas to Proof-of-Concept	6	Specialisation course 3	4
		GE	4
Sub-total	18	Sub-total	20

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Semester 7	Units	Semester 8	Units
CDE4301 Innovation & Design Capstone or CDE4301A Ideas to Start-up	6	CDE4301 Innovation & Design Capstone or CDE4301A Ideas to Start-up	6
ESE4501 Design Project	4	Elective 4 for Second Major	4
Specialisation course 4	4	ESE4408 Environmental Impact Assessment	4
		Specialisation course 5	4
Sub-total	14	Sub-total	18

Sample study plan – JC-intake students or equivalent
(for students who opt for industrial attachment)

Semester 1	Units	Semester 2	Units
ESE2101 Environmental Science and Engineering Principles and Practice	4	ESE2102 Principles and Practice in Environmental Monitoring	4
GEA1000 Quantitative Reasoning with Data	4	CS1010E Programming Methodology	4
DTK1234 Design Thinking	4	EG1311 Design and Make or EG1311BE Design and Make	4
MA1513 Linear Algebra with Differential Equations	2	MA1511 Engineering Calculus	2
CE2407A Uncertainty Analysis for Engineers	2	MA1512 Differential Equations for Engineering	2
PF1101A Project Management and Finance	4	Elective 1 for Second Major (from List I)	4
Sub-total	20	Sub-total	20

Semester 3	Units	Semester 4	Units
CE2134 Fluid Mechanics	4	ESE3101 Resource Management and Circular Economy	4
ESE2000 Chemistry for an Environmentally Sustainable Future	4	ESE3301 Microbiology in Natural and Built Environment	4
ESE2001 Environmental Challenges in the Anthropocene	4	ES2631 Critique and Communication of Thinking and Design	4
EE2211 Introduction to Machine Learning or EE2213 Introduction to Artificial Intelligence	4	GE	4
EG2401A Engineering Professionalism	2	CDE3301 Ideas to Proof-of-Concept	6
Elective 2 for Second Major (from List I)	4		
Sub-total	22	Sub-total	22

Semester 5	Units	Semester 6	Units
ESE3201 Air Quality in Changing Environment	4	EG3611A Industrial Attachment	10
ESE3401 Sustainable Urban Water Technology	4		
CDE2501 Sustainable Systems for Liveable Cities	4		
GE	4		
CDE3301 Ideas to Proof-of-Concept	6		
Sub-total	22	Sub-total	20

Semester 7	Units	Semester 8	Units
CDE4301 Innovation & Design Capstone or CDE4301A Ideas to Start-up	6	CDE4301 Innovation & Design Capstone or CDE4301A Ideas to Start-up	6
Elective 3 for Second Major	4	Elective 4 for Second Major	4
ESE4501 Design Project	4	ESE4408 Environmental Impact Assessment	4
Technical Elective 1	4	Technical Elective 2	4
UE	4	UE	4
Sub-total	22	Sub-total	22

Sample study plan – JC-intake students or equivalent

(for students who opt for industrial attachment **plus a specialisation**)

Semester 1	Units	Semester 2	Units
ESE2101 Environmental Science and Engineering Principles and Practice	4	ESE2102 Principles and Practice in Environmental Monitoring	4
GEA1000 Quantitative Reasoning with Data	4	CS1010E Programming Methodology	4
DTK1234 Design Thinking	4	EG1311 Design and Make or EG1311BE Design and Make	4
MA1513 Linear Algebra with Differential Equations	2	MA1511 Engineering Calculus	2
CE2407A Uncertainty Analysis for Engineers	2	MA1512 Differential Equations for Engineering	2
PF1101A Project Management and Finance	4	Elective 1 for Second Major (from List I)	4
Sub-total	20	Sub-total	20

Semester 3	Units	Semester 4	Units
CE2134 Fluid Mechanics	4	ESE3101 Resource Management and Circular Economy	4
ESE2000 Chemistry for an Environmentally Sustainable Future	4	ESE3301 Microbiology in Natural and Built Environment	4
ESE2001 Environmental Challenges in the Anthropocene	4	ES2631 Critique and Communication of Thinking and Design	4
EE2211 Introduction to Machine Learning or EE2213 Introduction to Artificial Intelligence	4	GE	4
EG2401A Engineering Professionalism	2	CDE3301 Ideas to Proof-of-Concept	6
Elective 2 for Second Major (from List I)	4		
Sub-total	22	Sub-total	22

Semester 5	Units	Semester 6	Units
ESE3201 Air Quality in Changing Environment	4	EG3611A Industrial Attachment	10
ESE3401 Sustainable Urban Water Technology	4	Specialisation course 1	4
CDE2501 Sustainable Systems for Liveable Cities	4		
GE	4		
CDE3301 Ideas to Proof-of-Concept	6		
Sub-total	22	Sub-total	14

Semester 7	Units	Semester 8	Units
CDE4301 Innovation & Design Capstone or CDE4301A Ideas to Start-up	6	CDE4301 Innovation & Design Capstone or CDE4301A Ideas to Start-up	6
Elective 3 for Second Major	4	Elective 4 for Second Major	4
ESE4501 Design Project	4	ESE4408 Environmental Impact Assessment	4
Specialisation course 2	4	Specialisation course 4	4
Specialisation course 3	4	Specialisation course 5	4
Sub-total	22	Sub-total	22

Sample study plan – JC-intake students or equivalent
(for students in year-long NOC programmes)

Semester 1	Units	Semester 2	Units
ESE2101 Environmental Science and Engineering Principles and Practice	4	ESE2102 Principles and Practice in Environmental Monitoring	4
GEA1000 Quantitative Reasoning with Data	4	CS1010E Programming Methodology	4
DTK1234 Design Thinking	4	EG1311 Design and Make or EG1311BE Design and Make	4
MA1513 Linear Algebra with Differential Equations	2	MA1511 Engineering Calculus	2
CE2407A Uncertainty Analysis for Engineers	2	MA1512 Differential Equations for Engineering	2
PF1101A Project Management and Finance	4	Elective 1 for Second Major (from List I)	4
Sub-total	20	Sub-total	20

Semester 3	Units	Semester 4	Units
CE2134 Fluid Mechanics	4	ESE3101 Resource Management and Circular Economy	4
ESE2000 Chemistry for an Environmentally Sustainable Future	4	ESE3301 Microbiology in Natural and Built Environment	4
ESE2001 Environmental Challenges in the Anthropocene	4	ES2631 Critique and Communication of Thinking and Design	4
EE2211 Introduction to Machine Learning or EE2213 Introduction to Artificial Intelligence	4	GE	4
Elective 2 for Second Major (from List I)	4	CDE3301 Ideas to Proof-of-Concept	6
Sub-total	20	Sub-total	22

Semester 5	Units	Semester 6 – NOC	Units
ESE3201 Air Quality in Changing Environment	4	NOC	
ESE3401 Sustainable Urban Water Technology	4		
CDE2501 Sustainable Systems for Liveable Cities	4		
ESE4501 Design Project	4		
CDE3301 Ideas to Proof-of-Concept	6		
Sub-total	22	Sub-total	20

Semester 7 – NOC	Units	Semester 8	Units
NOC		ESE4408 Environmental Impact Assessment	4
		Technical Elective 1	4
		Technical Elective 2	4
		GE	4
Sub-total	20	Sub-total	16

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A year-long NOC programme comprises the following courses (up to 40 units):

- ETP3206L Innovation & Enterprise Internship (16 units) – replaces EG3611A (10 units), EG2401A (2 units), and UE (4 units)
- ETP3202L Innovation & Enterprise Case Study & Analysis (8 units) – replaces CDE4301A (8 units out of 12 units)
- ETP3203L Innovation & Enterprise Internship Practicum (8 units) – replaces CDE4301A (4 units out of 12 units) and UE (4 units)
- Entrepreneurship courses (up to 8 units) – replaces Electives 3 and 4 for Second Major (students will need to complete Electives 3 and/or 4 for Second Major in NUS if they are unable to complete 8 units of entrepreneurship courses during NOC)

Sample study plan – JC-intake students or equivalent
(for students in one-semester NOC programmes)

Semester 1	Units	Semester 2	Units
ESE2101 Environmental Science and Engineering Principles and Practice	4	ESE2102 Principles and Practice in Environmental Monitoring	4
GEA1000 Quantitative Reasoning with Data	4	CS1010E Programming Methodology	4
DTK1234 Design Thinking	4	EG1311 Design and Make or EG1311BE Design and Make	4
MA1513 Linear Algebra with Differential Equations	2	MA1511 Engineering Calculus	2
CE2407A Uncertainty Analysis for Engineers	2	MA1512 Differential Equations for Engineering	2
PF1101A Project Management and Finance	4	Elective 1 for Second Major (from List I)	4
Sub-total	20	Sub-total	20

Semester 3	Units	Semester 4	Units
CE2134 Fluid Mechanics	4	ESE3101 Resource Management and Circular Economy	4
ESE2000 Chemistry for an Environmentally Sustainable Future	4	ESE3301 Microbiology in Natural and Built Environment	4
ESE2001 Environmental Challenges in the Anthropocene	4	ES2631 Critique and Communication of Thinking and Design	4
EE2211 Introduction to Machine Learning or EE2213 Introduction to Artificial Intelligence	4	GE	4
Elective 2 for Second Major (from List I)	4	CDE3301 Ideas to Proof-of-Concept	6
Sub-total	20	Sub-total	22

Semester 5	Units	Semester 6 – NOC	Units
ESE3201 Air Quality in Changing Environment	4	NOC	
ESE3401 Sustainable Urban Water Technology	4		
CDE2501 Sustainable Systems for Liveable Cities	4		
GE	4		
CDE3301 Ideas to Proof-of-Concept	6		
Sub-total	22	Sub-total	20

Semester 7	Units	Semester 8	Units
CDE4301 Innovation & Design Capstone or CDE4301A Ideas to Start-up	6	CDE4301 Innovation & Design Capstone or CDE4301A Ideas to Start-up	6
ESE4501 Design Project	4	ESE4408 Environmental Impact Assessment	4
Technical Elective 1	4	Technical Elective 2	4
UE	4	UE	4
Sub-total	18	Sub-total	18

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A one-semester NOC programme comprises the following courses (up to 20 units):

- ETP3201S Innovation & Enterprise Internship (12 units) – replaces EG3611A (10 units) and EG2401A (2 units)
- ETP3204S Innovation & Enterprise Internship Practicum (Short) (4 units) – replaces Elective 3 for Second Major (4 units)
- Entrepreneurship course (4 units) – replaces Elective 4 for Second Major (4 units)

Sample study plan – JC-intake students or equivalent

(for students in Engineering Scholars Programme who plan to go for SEP)

Semester 1	Units	Semester 2	Units
ESE2101 Environmental Science and Engineering Principles and Practice	4	ESE2102 Principles and Practice in Environmental Monitoring	4
GEA1000 Quantitative Reasoning with Data	4	ESE3101 Resource Management and Circular Economy	4
DTK1234 Design Thinking	4	MA1512 Differential Equations for Engineering	2
MA1513 Linear Algebra with Differential Equations	2	RVRC/UTCP course 2 (replaces GE)	4
CE2407A Uncertainty Analysis for Engineers	2	Elective 1 for Second Major (from List I)	4
PF1101A Project Management and Finance	4	CDE3301 Ideas to Proof-of-Concept	6
RVRC/UTCP course 1 (replaces GE)	4		
Sub-total	24	Sub-total	24

Summer vacation between Semesters 2 and 3	Units
CFG2101 NUS Vacation Internship Programme	4
Sub-total	4

Semester 3	Units	Semester 4 – can be used for SEP	Units
CE2134 Fluid Mechanics	4	ESE3301 Microbiology in Natural and Built Environment	4
ESE2000 Chemistry for an Environmentally Sustainable Future	4	EE2211 Introduction to Machine Learning or EE2213 Introduction to Artificial Intelligence	4
ESE2001 Environmental Challenges in the Anthropocene	4	RVRC/UTCP course 4 (replaces ES2631)	4
EG2401A Engineering Professionalism	2	Elective 3 for Second Major	4
RVRC/UTCP course 3 (replaces CDE2501)	4	UE	4
Elective 2 for Second Major (from List I)	4	UE	2
CDE3301 Ideas to Proof-of-Concept	6		
Sub-total	28	Sub-total	22

Summer vacation between Semesters 4 and 5	Units
EG3612 Vacation Internship Attachment	6
Sub-total	6

Semester 5	Units	Semester 6	Units
CDE4301 Innovation & Design Capstone or CDE4301A Ideas to Start-up	6	CDE4301 Innovation & Design Capstone or CDE4301A Ideas to Start-up	6
ESE3201 Air Quality in Changing Environment	4	Elective 4 for Second Major	4
ESE3401 Sustainable Urban Water Technology	4	ESE4408 Environmental Impact Assessment	4
ESE4501 Design Project	4	Technical Elective 2	4
Technical Elective 1	4		
Sub-total	22	Sub-total	18

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Students are highly encouraged to complete the following courses before Semester 1 through advanced placement credits:

- CS1010E Programming Methodology (4 units)
- EG1311 Design and Make (4 units)
- MA1505 Mathematics I (4 units) – replaces MA1511 Engineering Calculus (2 units) and counted as UE (2 units)

CFG2101 may be replaced by CDE2605 Undergraduate Research Opportunities Programme or CDE2605R Undergraduate Research Experience (UREx).

Sample study plan – JC-intake students or equivalent

(for students in Engineering Scholars Programme who plan to go for one-semester NOC programmes)

Semester 1	Units	Semester 2	Units
ESE2101 Environmental Science and Engineering Principles and Practice	4	ESE2102 Principles and Practice in Environmental Monitoring	4
GEA1000 Quantitative Reasoning with Data	4	ESE3101 Resource Management and Circular Economy	4
DTK1234 Design Thinking	4	MA1512 Differential Equations for Engineering	2
MA1513 Linear Algebra with Differential Equations	2	RVRC/UTCP course 2 (replaces GE)	4
CE2407A Uncertainty Analysis for Engineers	2	Elective 1 for Second Major (from List I)	4
PF1101A Project Management and Finance	4	CDE3301 Ideas to Proof-of-Concept	6
RVRC/UTCP course 1 (replaces GE)	4		
Sub-total	24	Sub-total	24

Semester 3	Units	Semester 4 – NOC	Units
CE2134 Fluid Mechanics	4	NOC	
ESE2000 Chemistry for an Environmentally Sustainable Future	4		
ESE2001 Environmental Challenges in the Anthropocene	4		
RVRC/UTCP course 3 (replaces CDE2501)	4		
Elective 2 for Second Major (from List I)	4		
CDE3301 Ideas to Proof-of-Concept	6		
UE	2		
Sub-total	28	Sub-total	20

Semester 5	Units	Semester 6	Units
CDE4301 Innovation & Design Capstone or CDE4301A Ideas to Start-up	6	CDE4301 Innovation & Design Capstone or CDE4301A Ideas to Start-up	6
ESE3201 Air Quality in Changing Environment	4	ESE3301 Microbiology in Natural and Built Environment	4
ESE3401 Sustainable Urban Water Technology	4	ESE4408 Environmental Impact Assessment	4
ESE4501 Design Project	4	Technical Elective 1	4
EE2211 Introduction to Machine Learning or EE2213 Introduction to Artificial Intelligence	4	Technical Elective 2	4
RVRC/UTCP course 4 (replaces ES2631)	4	UE	4
Sub-total	26	Sub-total	26

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Students are highly encouraged to complete the following courses before Semester 1 through advanced placement credits:

- CS1010E Programming Methodology (4 units)
- EG1311 Design and Make (4 units)
- MA1505 Mathematics I (4 units) – replaces MA1511 Engineering Calculus (2 units) and counted as UE (2 units)

A one-semester NOC programme comprises the following courses (up to 20 units):

- ETP3201S Innovation & Enterprise Internship (12 units) – replaces EG3611A (10 units) and EG2401A (2 units)
- ETP3204S Innovation & Enterprise Internship Practicum (Short) (4 units) – replaces Elective 3 for Second Major (4 units)
- Entrepreneurship course (4 units) – replaces Elective 4 for Second Major (4 units)

Sample study plan – poly-intake students

Semester 1	Units	Semester 2	Units
ESE2101 Environmental Science and Engineering Principles and Practice	4	ESE2102 Principles and Practice in Environmental Monitoring	4
GEA1000 Quantitative Reasoning with Data	4	CS1010E Programming Methodology	4
DTK1234 Design Thinking <u>or</u> PF1101A Project Management and Finance ^	4	MA1511 Engineering Calculus	2
MA1301 Introductory Mathematics * (UE)	4	MA1512 Differential Equations for Engineering	2
Elective 1 for Second Major (from List I)	4	CDE3301 Ideas to Proof-of-Concept	6
		Elective 2 for Second Major (from List I)	4
Sub-total	20	Sub-total	22

Semester 3	Units	Semester 4	Units
CE2134 Fluid Mechanics	4	ESE3101 Resource Management and Circular Economy	4
ESE2000 Chemistry for an Environmentally Sustainable Future	4	ESE3301 Microbiology in Natural and Built Environment	4
ESE2001 Environmental Challenges in the Anthropocene	4	EE2211 Introduction to Machine Learning <u>or</u> EE2213 Introduction to Artificial Intelligence	4
MA1513 Linear Algebra with Differential Equations *	2	ES2631 Critique and Communication of Thinking and Design	4
CE2407A Uncertainty Analysis for Engineers *	2	GE	4
EG2401A Engineering Professionalism	2	Elective 3 for Second Major	4
CDE3301 Ideas to Proof-of-Concept	6		
Sub-total	24	Sub-total	24

Semester 5	Units	Semester 6	Units
CDE4301 Innovation & Design Capstone <u>or</u> CDE4301A Ideas to Start-up	6	CDE4301 Innovation & Design Capstone <u>or</u> CDE4301A Ideas to Start-up	6
ESE3201 Air Quality in Changing Environment	4	Elective 4 for Second Major	4
ESE3401 Sustainable Urban Water Technology	4	ESE4408 Environmental Impact Assessment	4
ESE4501 Design Project	4	Technical Elective 1	4
CDE2501 Sustainable Systems for Liveable Cities	4	Technical Elective 2	4
GE *	4		
Sub-total	26	Sub-total	22

* Students who are exempted from MA1301 can take MA1513 and CE2407A in Semester 1 and a GE in Semester 3.

Poly-intake students with accredited diplomas will receive the following exemptions:

- DTK1234 Design Thinking (4 units) or PF1101A Project Management and Finance (4 units)
- EG1311BE Design and Make (4 units) – can be taken in any semester if not exempted
- EG3611P Industrial Attachment (10 units)
- Unrestricted electives (20 units)