

**Bachelor of Engineering (Civil Engineering)  
with Minor in Innovation & Design**

**Cohorts AY2021/2022 and AY2022/2023**

<b>Modular Requirements</b>	<b>Modular Credits (MCs)</b>
<b>Common Curriculum</b>	
GEA1000 Quantitative Reasoning with Data	4
CS1010E Programming Methodology	4
ES2631 Critique and Communication of Thinking and Design <sup>1</sup>	4
GE: Cultures and Connections <sup>1</sup>	4
GE: Singapore Studies <sup>1</sup>	4
GE: Communities and Engagement <sup>1</sup>	4
CDE2000 Creating Narratives	4
DTK1234 Design Thinking	4
EE2211 Introduction to Machine Learning	4
EG1311 Design and Make	4
EG2501 Liveable Cities	4
IE2141 Systems Thinking and Dynamics	4
PF1101 Fundamentals of Project Management	4
CE4103R Design Project or CE4104 B.Eng. Dissertation <sup>2</sup>	8
<b>Sub-total for Common Curriculum</b>	<b>60</b>
<b>Engineering Core</b>	
MA1511 Engineering Calculus	2
MA1513 Linear Algebra with Differential Equations	2
CE2407A Uncertainty Analysis for Engineers	2
CE2407B Introduction to Numerical Methods for Engineers	2
EG2401A Engineering Professionalism	2
EG3611A Industrial Attachment or CFG2101 NUS Vacation Internship Programme <sup>3</sup> and EG3612 Vacation Industrial Attachment	10
<b>Sub-total for Engineering Core</b>	<b>20</b>
<b>Engineering Programme Requirements</b>	
CE1103 Principles of Structural and Geotechnical Engineering	4
CE2155 Principles of Structural Mechanics and Materials	4
CE2134 Fluid Mechanics	4
CE3115 Stability of Slopes and Earth Retention Systems	4
CE3116 Foundation Systems for Urban Infrastructure	4
CE3121 Urban Transportation Engineering	4
CE3132 Hydrology and Free Surface Flows	4
CE3155A Structural Behaviour	2
CE3155B Structural Modelling	2
CE3165 Concrete Design for Urban Infrastructure	4
CE3166 Steel Design for Urban Infrastructure	4
<b>Sub-total for Engineering Programme Requirements</b>	<b>40</b>
<b>Unrestricted Electives</b>	
Group A module for Minor	4
Group B module for Minor	4
EG3301R DCP Project (over 2 consecutive semesters)	12
Other unrestricted electives <sup>2</sup>	20
<b>Sub-total for Unrestricted Electives</b>	<b>40</b>
<b>Total</b>	<b>160</b>

**Innovation & Design Programme**  
**NUS College of Design and Engineering**

Notes:

- <sup>1</sup> Students may read equivalent modules in USP/NUSC, UTCP, and RVRC.
- <sup>2</sup> Subject to approval from home department, students may take EG4301 DCP Dissertation or EG4301A Ideas to Start-up in lieu of CE4103R/CE4104 and 4 MCs of unrestricted electives.
- <sup>3</sup> May be replaced by EG2605 Undergraduate Research Opportunities Programme.

**Recommended semester schedule – JC-intake students or equivalent**  
(for students who opt for vacation internships)

Semester 1	MCs	Semester 2	MCs
CE1103 Principles of Structural and Geotechnical Engineering	4	CE2155 Principles of Structural Mechanics and Materials	4
GEA1000 Quantitative Reasoning with Data	4	CS1010E Programming Methodology	4
DTK1234 Design Thinking	4	EG1311 Design & Make	4
MA1513 Linear Algebra with Differential Equations	2	MA1511 Engineering Calculus	2
CE2407A Uncertainty Analysis for Engineers	2	CE2407B Introduction to Numerical Methods for Engineers	2
PF1101 Fundamentals of Project Management	4	Group A module for Minor	4
<b>Sub-total</b>	<b>20</b>	<b>Sub-total</b>	<b>20</b>

Semester 3	MCs	Semester 4	MCs
CE2134 Fluid Mechanics	4	CE3115 Stability of Slopes and Earth Retention Systems	4
CE3155A Structural Behaviour	2	GE	4
CE3155B Structural Modelling	2	IE2141 Systems Thinking & Dynamics	4
EE2211 Introduction to Machine Learning	4	ES2631 Critique and Communication of Thinking and Design	4
EG2501 Liveable Cities	4	EG3301R DCP Project	6
Group B module for Minor	4		
<b>Sub-total</b>	<b>20</b>	<b>Sub-total</b>	<b>22</b>

Summer vacation between Semesters 4 and 5	MCs
CFG2101 NUS Vacation Internship Programme	4
<b>Sub-total</b>	<b>4</b>

Semester 5	MCs	Semester 6 – can be used for SEP	MCs
EG3301R DCP Project	6	CE3116 Foundation Systems for Urban Infrastructure	4
CE3121 Urban Transportation Engineering	4	CE3132 Hydrology and Free Surface Flows	4
CE3165 Concrete Design for Urban Infrastructure	4	CE3166 Steel Design for Urban Infrastructure	4
CDE2000 Creating Narratives	4	GE *	4
EG2401A Engineering Professionalism	2	GE *	4
<b>Sub-total</b>	<b>20</b>	<b>Sub-total</b>	<b>20</b>

Summer vacation between Semesters 6 and 7	MCs
EG3612 Vacation Internship Attachment	6
<b>Sub-total</b>	<b>6</b>

Semester 7	MCs	Semester 8	MCs
CE4103R Design Project or CE4104 B.Eng. Dissertation	8	UE	4
UE	4	UE	4
UE	4	UE	4
<b>Sub-total</b>	<b>16</b>	<b>Sub-total</b>	<b>12</b>

**Recommended semester schedule – JC-intake students or equivalent**  
(for students who opt for industrial attachment)

Semester 1	MCs	Semester 2	MCs
CE1103 Principles of Structural and Geotechnical Engineering	4	CE2155 Principles of Structural Mechanics and Materials	4
GEA1000 Quantitative Reasoning with Data	4	CS1010E Programming Methodology	4
DTK1234 Design Thinking	4	EG1311 Design & Make	4
MA1513 Linear Algebra with Differential Equations	2	MA1511 Engineering Calculus	2
CE2407A Uncertainty Analysis for Engineers	2	CE2407B Introduction to Numerical Methods for Engineers	2
PF1101 Fundamentals of Project Management	4	Group A module for Minor	4
<b>Sub-total</b>	<b>20</b>	<b>Sub-total</b>	<b>20</b>

Semester 3	MCs	Semester 4	MCs
CE2134 Fluid Mechanics	4	CE3115 Stability of Slopes and Earth Retention Systems	4
CE3155A Structural Behaviour	2	GE	4
CE3155B Structural Modelling	2	IE2141 Systems Thinking & Dynamics	4
EE2211 Introduction to Machine Learning	4	ES2631 Critique and Communication of Thinking and Design	4
EG2501 Liveable Cities	4	EG3301R DCP Project	6
Group B module for Minor	4		
<b>Sub-total</b>	<b>20</b>	<b>Sub-total</b>	<b>22</b>

Semester 5	MCs	Semester 6 – can be used for SEP	MCs
EG3301R DCP Project	6	CE3116 Foundation Systems for Urban Infrastructure	4
CE3121 Urban Transportation Engineering	4	CE3132 Hydrology and Free Surface Flows	4
CE3165 Concrete Design for Urban Infrastructure	4	CE3166 Steel Design for Urban Infrastructure	4
CDE2000 Creating Narratives	4	GE *	4
EG2401A Engineering Professionalism	2	GE *	4
		UE	4
<b>Sub-total</b>	<b>24</b>	<b>Sub-total</b>	<b>24</b>

Semester 7	MCs	Semester 8	MCs
CE4103R Design Project or CE4104 B.Eng. Dissertation	8	EG3611A Industrial Attachment	10
UE	4		
UE	4		
UE	4		
UE	4		
<b>Sub-total</b>	<b>24</b>	<b>Sub-total</b>	<b>10</b>

\* Students in UTCP and RVRC will need to overload in Semesters 2 to 4 in order to clear these modules earlier.

**Recommended semester schedule – JC-intake students or equivalent**  
(for students in Engineering Scholars Programme)

Semester 1	MCs	Semester 2	MCs
CE1103 Principles of Structural and Geotechnical Engineering	4	CE2155 Principles of Structural Mechanics and Materials	4
GEA1000 Quantitative Reasoning with Data	4	CE2407B Introduction to Numerical Methods for Engineers	2
DTK1234 Design Thinking	4	CE3115 Stability of Slopes and Earth Retention Systems	4
MA1513 Linear Algebra with Differential Equations	2	RC4 module 2 (replaces GE)	4
CE2407A Uncertainty Analysis for Engineers	2	EG3301R DCP Project	6
PF1101 Fundamentals of Project Management	4	Group A module for Minor	4
RC4 module 1 (replaces GE)	4	UE (or IE2141 Systems Thinking & Dynamics if not in RC4)	4
<b>Sub-total</b>	<b>24</b>	<b>Sub-total</b>	<b>28</b>

Semester 3	MCs	Semester 4 – NOC	MCs
CE2134 Fluid Mechanics	4	NOC	
CE3155A Structural Behaviour	2		
CE3155B Structural Modelling	2		
EG2501 Liveable Cities	4		
RC4 module 3 (replaces GE)	4		
EG3301R DCP Project	6		
Group B module for Minor	4		
<b>Sub-total</b>	<b>26</b>	<b>Sub-total</b>	<b>20</b>

Semester 5	MCs	Semester 6	MCs
CE3121 Urban Transportation Engineering	4	CE4103R Design Project <u>or</u> CE4104 B.Eng. Dissertation	8
CE3165 Concrete Design for Urban Infrastructure	4	CE3116 Foundation Systems for Urban Infrastructure	4
RC4 module 4 (replaces ES2631 Critique and Communication of Thinking and Design)	4	CE3132 Hydrology and Free Surface Flows	4
EE2211 Introduction to Machine Learning	4	CE3166 Steel Design for Urban Infrastructure	4
CDE2000 Creating Narratives	4	UE	4
UE	4	UE	2
<b>Sub-total</b>	<b>24</b>	<b>Sub-total</b>	<b>26</b>

**Innovation & Design Programme**  
**NUS College of Design and Engineering**

Students must complete the following modules before Semester 1 through advanced placement credits:

- CS1010E Programming Methodology (4 MCs)
- MA1511 Engineering Calculus (2 MCs) – using MA1505 Mathematics I (remaining 2 MCs counted as UE)
- EG1311 Design & Make (4 MCs)

A one-semester NOC programme comprises the following modules:

- TR3202S Start-up Internship Programme (12 MCs) – replaces EG3611A (10 MCs) and EG2401A (2 MCs)
- TR3204 Entrepreneurship Practicum (4 MCs) – counted as UE
- Entrepreneurship course (4 MCs) – counted as UE

Students who are not going on NOC must read EG2101 Pathways to Engineering Leadership in lieu of EG2401A.

**Recommended semester schedule – poly-intake students**  
(for students who may want to upgrade to a Second Major)

Semester 1	MCs	Semester 2	MCs
CE1103 Principles of Structural and Geotechnical Engineering	4	CE2155 Principles of Structural Mechanics and Materials	4
GEA1000 Quantitative Reasoning with Data	4	CS1010E Programming Methodology	4
PF1101 Fundamentals of Project Management	4	MA1511 Engineering Calculus	2
MA1301 Introductory Mathematics (UEM)	4	CE2407B Introduction to Numerical Methods for Engineers	2
Group A module for Minor	4	EG3301R DCP Project	6
		Group B module for Minor	4
<b>Sub-total</b>	<b>20</b>	<b>Sub-total</b>	<b>22</b>

Semester 3	MCs	Semester 4	MCs
MA1513 Linear Algebra with Differential Equations	2	CE3115 Stability of Slopes and Earth Retention Systems	4
CE2407A Uncertainty Analysis for Engineers	2	ES2631 Critique and Communication of Thinking and Design	4
CE2134 Fluid Mechanics	4	IE2141 Systems Thinking & Dynamics	4
CE3155A Structural Behaviour	2	GE	4
CE3155B Structural Modelling	2	GE	4
EG2501 Liveable Cities	4		
EG3301R DCP Project	6		
<b>Sub-total</b>	<b>22</b>	<b>Sub-total</b>	<b>20</b>

Semester 5	MCs	Semester 6	MCs
CE3121 Urban Transportation Engineering	4	CE4103R Design Project <u>or</u> CE4104 B.Eng. Dissertation	8
CE3165 Concrete Design for Urban Infrastructure	4	CE3116 Foundation Systems for Urban Infrastructure	4
CDE2000 Creating Narratives	4	CE3132 Hydrology and Free Surface Flows	4
EE2211 Introduction to Machine Learning	4	CE3166 Steel Design for Urban Infrastructure	4
EG2401A Engineering Professionalism	2		
GE	4		
<b>Sub-total</b>	<b>22</b>	<b>Sub-total</b>	<b>20</b>

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

- EG1311 Design & Make (4 MCs)
- DTK1234 Design Thinking (4 MCs)
- EG3611A Industrial Attachment (10 MCs)
- Unrestricted elective modules (20 MCs)

**Recommended semester schedule – poly-intake students**

(for students who are not planning to upgrade to a Second Major)

Semester 1	MCs	Semester 2	MCs
CE1103 Principles of Structural and Geotechnical Engineering	4	CE2155 Principles of Structural Mechanics and Materials	4
GEA1000 Quantitative Reasoning with Data	4	CS1010E Programming Methodology	4
PF1101 Fundamentals of Project Management	4	MA1511 Engineering Calculus	2
MA1301 Introductory Mathematics (UEM)	4	CE2407B Introduction to Numerical Methods for Engineers	2
GE	4	GE	4
		Group A module for Minor	4
<b>Sub-total</b>	<b>20</b>	<b>Sub-total</b>	<b>20</b>

Semester 3	MCs	Semester 4	MCs
MA1513 Linear Algebra with Differential Equations	2	CE3115 Stability of Slopes and Earth Retention Systems	4
CE2407A Uncertainty Analysis for Engineers	2	ES2631 Critique and Communication of Thinking and Design	4
CE2134 Fluid Mechanics	4	IE2141 Systems Thinking & Dynamics	4
CE3155A Structural Behaviour	2	GE	4
CE3155B Structural Modelling	2	EG3301R DCP Project	6
EG2501 Liveable Cities	4		
Group B module for Minor	4		
<b>Sub-total</b>	<b>20</b>	<b>Sub-total</b>	<b>22</b>

Semester 5	MCs	Semester 6	MCs
CE3121 Urban Transportation Engineering	4	CE4103R Design Project <u>or</u> CE4104 B.Eng. Dissertation	8
CE3165 Concrete Design for Urban Infrastructure	4	CE3116 Foundation Systems for Urban Infrastructure	4
CDE2000 Creating Narratives	4	CE3132 Hydrology and Free Surface Flows	4
EE2211 Introduction to Machine Learning	4	CE3166 Steel Design for Urban Infrastructure	4
EG2401A Engineering Professionalism	2		
EG3301R DCP Project	6		
<b>Sub-total</b>	<b>24</b>	<b>Sub-total</b>	<b>20</b>

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

- EG1311 Design & Make (4 MCs)
- DTK1234 Design Thinking (4 MCs)
- EG3611A Industrial Attachment (10 MCs)
- Unrestricted elective modules (20 MCs)