

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

**Cohort 2019/2020**

Modular Requirements	Modular Credits (MCs)
<b>University Level Requirements</b>	
<b>General education modules:</b>	
• Quantitative Reasoning (GER1000)	4
• Thinking & Expression (GET)	4
• Human Cultures (GEH)	4
• Singapore Studies (GES)	4
• Asking Questions (GEQ1000)	4
<b>Sub-total for University Level Requirements</b>	<b>20</b>
<b>Programme Requirements</b>	
<b>Faculty requirements:</b>	
• ES2531 Critical Thinking & Writing <sup>1</sup>	4
• EG2401A Engineering Professionalism	2
• ES1xxxx English <sup>2</sup>	-
<b>Foundation requirement (common core):</b>	
• CE1101A Civil Engineering Principles & Practice	4
• CE2102 Principles & Practice in Infrastructure & Environment	4
• MA1505 Mathematics I	4
• CS1010E Programming Methodology	4
• EE2211 Introduction to Machine Learning	4
• EG1311 Design & Make	4
• IE2141 Systems Thinking & Dynamics	4
• MLE1010 Materials Engineering Principles & Practice	4
<b>CVE core modules:</b>	
• CE2112 Soil Mechanics	4
• CE2134 Hydraulics	4
• CE2155 Structural Mechanics & Materials	4
• CE2183 Construction Project Management	4
• CE2407 Engineering & Uncertainty Analyses	4
• ESE3001 Water Quality Engineering	4
• CE3115 Geotechnical Engineering	4
• CE3116 Foundation Engineering	4
• CE3121 Transportation Engineering	4
• CE3132 Water Resources Engineering	4
• CE3155 Structural Analysis	4
• CE3165 Structural Concrete Design	4
• CE3166 Structural Steel Design & System	4
<b>CVE technical electives <sup>3</sup></b>	<b>0</b>
<b>CVE design and project modules:</b>	
• CE4103 Design Project	4
• EG4301 DCP Dissertation <u>or</u> EG4301A Ideas to Start-up (over 2 consecutive semesters) <i>(Double-counted for Second Major in Innovation &amp; Design and replaces CE4104 B.Eng. Dissertation)</i>	12
<b>EG3612 Vacation Internship Programme (VIP) <sup>3,4</sup></b>	<b>6</b>
<b>Sub-total for Programme Requirements</b>	<b>112</b>

**Innovation & Design Programme  
Faculty of Engineering**

<b>Unrestricted Elective Modules (UEM)</b>	
• Group A module for Second Major	4
• Group B module for Second Major	4
• Group C modules for Second Major – Innovation & Enterprise electives	8
• EG3301R DCP Project (over 2 consecutive semesters)	12
<b>Sub-total for Unrestricted Elective Modules</b>	<b>28</b>
<b>Total</b>	<b>160</b>

Notes:

- <sup>1</sup> Students in USP, UTCP, and RVRC may read an equivalent module (e.g. UWC2101%, UTW1001%, ES1601, ES1501%) in lieu of ES2531.
- <sup>2</sup> Students who have not passed or been exempted from the Qualifying English Test at the point of admission will have to read ES1000 and/or ES1103. ES1103 carries 4 MCs which may be counted as UEM.
- <sup>3</sup> Students in this Second Major are allowed to complete EG3612 (6 MCs) in lieu of EG3611A (10 MCs).  
  
The 12 MCs for EG4301 are mapped by 8 MCs from CE4104 and 4 MCs from the replacement of EG3611A (10 MCs) with EG3612 (6 MCs).  
  
Students may also opt to do EG3611A (10 MCs) in lieu of EG3612 (6 MCs).
- <sup>4</sup> EG3612 (VIP) is optional for poly-intake students and those in the following special programmes: double degree programmes (DDP), concurrent degree programmes (CDP), Chemical Sciences Programme (CSP), and E-Scholars. The 6 MCs for EG3612 may be replaced by other modules.

**Recommended semester schedule for Cohort 2019/2020 – JC-intake students or equivalent**  
(for students who opt for vacation internship)

Semester 1	MCs	Semester 2	MCs
CE1101A Civil Engineering Principles & Practice	4	CE2102 Principles & Practice in Infrastructure & Environment	4
MA1505 Mathematics I	4	CE2155 Structural Mechanics & Materials	4
CS1010E Programming Methodology	4	MLE1010 Materials Engineering Principles & Practice	4
EG1311 Design & Make	4	GER1000 Quantitative Reasoning	4
GET	4	ES2531 Critical Thinking & Writing	4
		<b>Group A module for Second Major (UEM)</b>	<b>4</b>
<b>Sub-total</b>	<b>20</b>	<b>Sub-total</b>	<b>24</b>

Semester 3	MCs	Semester 4	MCs
IE2141 Systems Thinking & Dynamics	4	EE2211 Introduction to Machine Learning	4
CE2112 Soil Mechanics	4	CE3115 Geotechnical Engineering	4
CE2134 Hydraulics	4	CE3166 Structural Steel Design & System	4
CE2407 Engineering & Uncertainty Analyses	4	GEQ1000 Asking Questions	4
CE3155 Structural Analysis	4	<b>EG3301R DCP Project (UEM)</b>	<b>6</b>
<b>Group B module for Second Major (UEM)</b>	<b>4</b>		
<b>Sub-total</b>	<b>24</b>	<b>Sub-total</b>	<b>22</b>

Semester 5	MCs	Semester 6	MCs
<b>EG3301R DCP Project (UEM)</b>	<b>6</b>	<b>Innovation &amp; Enterprise Elective 1 (UEM)</b>	<b>4</b>
CE2183 Construction Project Management	4	CE3132 Water Resources Engineering	4
CE3116 Foundation Engineering	4	ESE3001 Water Quality Engineering	4
CE3121 Transportation Engineering	4	GES	4
CE3165 Structural Concrete Design	4	GEH	4
<b>Sub-total</b>	<b>22</b>	<b>Sub-total</b>	<b>20</b>

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

Semester 7	MCs	Semester 8	MCs
EG4301 DCP Dissertation (replaces CE4104)	6	EG4301 DCP Dissertation (replaces CE4104)	6
<b>Innovation &amp; Enterprise Elective 2 (UEM)</b>	<b>4</b>	EG2401A Engineering Professionalism	2
CE4103 Design Project	4		
<b>Sub-total</b>	<b>14</b>	<b>Sub-total</b>	<b>8</b>

**Recommended semester schedule for Cohort 2019/2020 – JC-intake students or equivalent**  
(for students who opt for vacation internship **plus a specialisation**)

Semester 1	MCs	Semester 2	MCs
CE1101A Civil Engineering Principles & Practice	4	CE2102 Principles & Practice in Infrastructure & Environment	4
MA1505 Mathematics I	4	CE2155 Structural Mechanics & Materials	4
CS1010E Programming Methodology	4	MLE1010 Materials Engineering Principles & Practice	4
EG1311 Design & Make	4	GER1000 Quantitative Reasoning	4
GET	4	ES2531 Critical Thinking & Writing	4
		<b>Group A module for Second Major (UEM)</b>	<b>4</b>
<b>Sub-total</b>	<b>20</b>	<b>Sub-total</b>	<b>24</b>

Semester 3	MCs	Semester 4	MCs
IE2141 Systems Thinking & Dynamics	4	EE2211 Introduction to Machine Learning	4
CE2112 Soil Mechanics	4	CE3115 Geotechnical Engineering	4
CE2134 Hydraulics	4	CE3166 Structural Steel Design & System	4
CE2407 Engineering & Uncertainty Analyses	4	GEQ1000 Asking Questions	4
CE3155 Structural Analysis	4	<b>EG3301R DCP Project (UEM)</b>	<b>6</b>
<b>Group B module for Second Major (UEM)</b>	<b>4</b>		
<b>Sub-total</b>	<b>24</b>	<b>Sub-total</b>	<b>22</b>

Semester 5	MCs	Semester 6	MCs
<b>EG3301R DCP Project (UEM)</b>	<b>6</b>	<b>Innovation &amp; Enterprise Elective 1 (UEM)</b>	<b>4</b>
CE2183 Construction Project Management	4	CE3132 Water Resources Engineering	4
CE3116 Foundation Engineering	4	ESE3001 Water Quality Engineering	4
CE3121 Transportation Engineering	4	GES	4
CE3165 Structural Concrete Design	4	GEH	4
<b>Sub-total</b>	<b>22</b>	<b>Sub-total</b>	<b>20</b>

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

Semester 7	MCs	Semester 8	MCs
EG4301 DCP Dissertation (replaces CE4104)	6	EG4301 DCP Dissertation (replaces CE4104)	6
<b>Innovation &amp; Enterprise Elective 2 (UEM)</b>	<b>4</b>	Specialisation module 3	4
CE4103 Design Project	4	Specialisation module 4	4
Specialisation module 1	4	Specialisation module 5	4
Specialisation module 2	4	EG2401A Engineering Professionalism	2
<b>Sub-total</b>	<b>22</b>	<b>Sub-total</b>	<b>20</b>

**Innovation & Design Programme  
Faculty of Engineering**

**Recommended semester schedule for Cohort 2019/2020 – JC-intake students or equivalent**  
(for students who opt for industrial attachment in lieu of vacation internship)

Semester 1	MCs	Semester 2	MCs
CE1101A Civil Engineering Principles & Practice	4	CE2102 Principles & Practice in Infrastructure & Environment	4
MA1505 Mathematics I	4	CE2155 Structural Mechanics & Materials	4
CS1010E Programming Methodology	4	MLE1010 Materials Engineering Principles & Practice	4
EG1311 Design & Make	4	GER1000 Quantitative Reasoning	4
GET	4	ES2531 Critical Thinking & Writing	4
		<b>Group A module for Second Major (UEM)</b>	<b>4</b>
<b>Sub-total</b>	<b>20</b>	<b>Sub-total</b>	<b>24</b>

Semester 3	MCs	Semester 4	MCs
IE2141 Systems Thinking & Dynamics	4	EE2211 Introduction to Machine Learning	4
CE2112 Soil Mechanics	4	CE3115 Geotechnical Engineering	4
CE2134 Hydraulics	4	CE3132 Water Resources Engineering	4
CE2407 Engineering & Uncertainty Analyses	4	CE3166 Structural Steel Design & System	4
CE3155 Structural Analysis	4	GEQ1000 Asking Questions	4
<b>Group B module for Second Major (UEM)</b>	<b>4</b>	<b>EG3301R DCP Project (UEM)</b>	<b>6</b>
<b>Sub-total</b>	<b>24</b>	<b>Sub-total</b>	<b>26</b>

Semester 5	MCs	Semester 6	MCs
<b>EG3301R DCP Project (UEM)</b>	<b>6</b>	EG3611A Industrial Attachment	10
CE2183 Construction Project Management	4		
CE3116 Foundation Engineering	4		
CE3121 Transportation Engineering	4		
CE3165 Structural Concrete Design	4		
<b>Sub-total</b>	<b>22</b>	<b>Sub-total</b>	<b>10</b>

Semester 7	MCs	Semester 8	MCs
EG4301 DCP Dissertation (replaces CE4104)	6	EG4301 DCP Dissertation (replaces CE4104)	6
<b>Innovation &amp; Enterprise Elective 1 (UEM)</b>	<b>4</b>	ESE3001 Water Quality Engineering	4
<b>Innovation &amp; Enterprise Elective 2 (UEM)</b>	<b>4</b>	GES	4
CE4103 Design Project	4	EG2401A Engineering Professionalism	2
GEH	4		
<b>Sub-total</b>	<b>22</b>	<b>Sub-total</b>	<b>16</b>

**Innovation & Design Programme  
Faculty of Engineering**

**Recommended semester schedule for Cohort 2019/2020 – JC-intake students or equivalent**  
(for students in year-long NOC programmes)

Semester 1	MCs	Semester 2	MCs
CE1101A Civil Engineering Principles & Practice	4	CE2102 Principles & Practice in Infrastructure & Environment	4
MA1505 Mathematics I	4	CE2155 Structural Mechanics & Materials	4
CS1010E Programming Methodology	4	MLE1010 Materials Engineering Principles & Practice	4
EG1311 Design & Make	4	GER1000 Quantitative Reasoning	4
GET	4	ES2531 Critical Thinking & Writing	4
		<b>Group A module for Second Major (UEM)</b>	<b>4</b>
<b>Sub-total</b>	<b>20</b>	<b>Sub-total</b>	<b>24</b>

Semester 3	MCs	Semester 4	MCs
IE2141 Systems Thinking & Dynamics	4	EE2211 Introduction to Machine Learning	4
CE2112 Soil Mechanics	4	CE3115 Geotechnical Engineering	4
CE2134 Hydraulics	4	CE3166 Structural Steel Design & System	4
CE2407 Engineering & Uncertainty Analyses	4	GEQ1000 Asking Questions	4
CE3155 Structural Analysis	4	<b>EG3301R DCP Project (UEM)</b>	<b>6</b>
<b>Group B module for Second Major (UEM)</b>	<b>4</b>		
<b>Sub-total</b>	<b>24</b>	<b>Sub-total</b>	<b>22</b>

Semester 5	MCs	Semester 6	MCs
<b>EG3301R DCP Project (UEM)</b>	<b>6</b>	NOC	
CE2183 Construction Project Management	4		
CE3116 Foundation Engineering	4		
CE3121 Transportation Engineering	4		
CE3165 Structural Concrete Design	4		
<b>Sub-total</b>	<b>22</b>	<b>Sub-total</b>	

Semester 7	MCs	Semester 8	MCs
NOC		CE4103 Design Project	4
		CE3132 Water Resources Engineering	4
		ESE3001 Water Quality Engineering	4
		GES	4
		GEH	4
<b>Sub-total</b>		<b>Sub-total</b>	<b>20</b>

Mapping of year-long NOC programmes:

NOC modules	iDP / Engineering modules
TR3201 Entrepreneurship Practicum (8 MCs)	EG2401A Engineering Professionalism (2 MCs) + UEM (4 MCs)
TR3202 Start-up Internship Programme (12 MCs)	EG3612 Vacation Internship Programme (6 MCs) + EG4301 DCP Dissertation (4 MCs out of 12 MCs)
TR3203N Start-up Case Study & Analysis (8 MCs)	EG4301 DCP Dissertation (8 MCs out of 12 MCs)
Entrepreneurship courses (up to 12 MCs)	Innovation & Enterprise electives (8 MCs – UEM)

Recommended semester schedule for Cohort 2019/2020 – poly-intake students or equivalent

Semester 3	MCs	Semester 4	MCs
MA1301 Introductory Mathematics (in lieu of EG3612)	4	EG3301R DCP Project (UEM)	6
CS1010E Programming Methodology	4	MA1505 Mathematics I	4
CE2112 Soil Mechanics	4	EE2211 Introduction to Machine Learning	4
CE2134 Hydraulics	4	CE2155 Structural Mechanics & Materials	4
CE2183 Construction Project Management	4	GER1000 Quantitative Reasoning	4
<b>Sub-total</b>	<b>20</b>	<b>Sub-total</b>	<b>22</b>

Semester 3	MCs	Semester 4	MCs
EG3301R DCP Project (UEM)	6	CE3115 Geotechnical Engineering	4
CE2407 Engineering & Uncertainty Analyses	4	CE3132 Water Resources Engineering	4
CE3116 Foundation Engineering	4	CE3166 Structural Steel Design & System	4
CE3155 Structural Analysis	4	GEQ1000 Asking Questions	4
Group B module for Second Major (UEM)	4	Group A module for Second Major (UEM)	4
<b>Sub-total</b>	<b>22</b>	<b>Sub-total</b>	<b>20</b>

Semester 5	MCs	Semester 6	MCs
EG4301 DCP Dissertation (replaces CE4104)	6	EG4301 DCP Dissertation (replaces CE4104)	6
IE2141 Systems Thinking & Dynamics	4	Innovation & Enterprise Elective 1 (UEM)	4
CE3121 Transportation Engineering	4	ESE3001 Water Quality Engineering	4
CE3165 Structural Concrete Design	4	GEH	4
GET	4	GES	4
<b>Sub-total</b>	<b>22</b>	<b>Sub-total</b>	<b>22</b>

Semester 7	MCs
Innovation & Enterprise Elective 2 (UEM)	4
CE4103 Design Project	4
EG2401A Engineering Professionalism	2
UEM (in lieu of EG3612)	2
<b>Sub-total</b>	<b>14</b>

Notes:

- Poly-intake students may receive the following exemptions depending on their Diploma qualification:
  - CE1101A Civil Engineering Principles & Practice (4 MCs)
  - CE2102 Principles & Practice in Infrastructure & Environment (4 MCs)
  - EG1311 Design & Make (4 MCs)
  - MLE1010 Materials Engineering Principles & Practice (4 MCs)
  - ES2531 Critical Thinking & Writing (4 MCs)
  - Unrestricted elective modules (20 MCs)
- Poly-intake students may be exempted from Group A module for Second Major (4 MCs) and/or one Innovation & Enterprise elective (4 MCs) depending on their Diploma qualification. These would be included as part of the 20 MCs of exemptions for unrestricted elective modules.
- EG3612 (VIP) is not compulsory for poly-intake students. The 6 MCs for VIP may be fulfilled by MA1301 (4 MCs) and/or other modules.