

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

Cohort 2020/2021

Modular Requirements	Modular Credits (MCs)
University Level Requirements	
General education modules:	
• Quantitative Reasoning (GER1000)	4
• Thinking & Expression (GET)	4
• Human Cultures (GEH)	4
• Singapore Studies (GES)	4
• Asking Questions (GEQ1000)	4
Sub-total for University Level Requirements	20
Programme Requirements	
Faculty requirements:	
• ES2531 Critical Thinking & Writing ¹	4
• EG2401A Engineering Professionalism	2
• ES1xxxx English ²	-
Foundation requirement (common core):	
• 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
CVE core modules:	
• 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
CVE technical electives ³	0
CVE design and project modules:	
• 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 & Design and replaces CE4104 B.Eng. Dissertation)</i>	12
EG3612 Vacation Internship Programme (VIP) ^{3,4}	6
Sub-total for Programme Requirements	112

**Innovation & Design Programme
Faculty of Engineering**

Unrestricted Elective Modules (UEM)	
• 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
Sub-total for Unrestricted Elective Modules	32
Total	160

Notes:

- ¹ Students in USP, UTCP, and RVRC may read an equivalent module (e.g. UWC2101%, UTW1001%, ES1601, ES1501%) in lieu of ES2531.
- ² 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.
- ³ 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).
- ⁴ 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 2020/2021 – 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
		Group A module for Second Major (UEM)	4
Sub-total	20	Sub-total	24

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	EG3301R DCP Project (UEM)	6
Group B module for Second Major (UEM)	4		
Sub-total	24	Sub-total	22

Semester 5	MCs	Semester 6	MCs
EG3301R DCP Project (UEM)	6	Innovation & Enterprise Elective 1 (UEM)	4
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
Sub-total	22	Sub-total	20

Summer vacation between Semesters 6 and 7	MCs
EG3612 Vacation Internship Programme	6
Sub-total	6

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

Recommended semester schedule for Cohort 2020/2021 – 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
		Group A module for Second Major (UEM)	4
Sub-total	20	Sub-total	24

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	EG3301R DCP Project (UEM)	6
Group B module for Second Major (UEM)	4		
Sub-total	24	Sub-total	22

Semester 5	MCs	Semester 6	MCs
EG3301R DCP Project (UEM)	6	Innovation & Enterprise Elective 1 (UEM)	4
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
Sub-total	22	Sub-total	20

Summer vacation between Semesters 6 and 7	MCs
EG3612 Vacation Internship Programme	6
Sub-total	6

Semester 7	MCs	Semester 8	MCs
EG4301 DCP Dissertation (replaces CE4104)	6	EG4301 DCP Dissertation (replaces CE4104)	6
Innovation & Enterprise Elective 2 (UEM)	4	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
Sub-total	22	Sub-total	20

**Innovation & Design Programme
Faculty of Engineering**

Recommended semester schedule for Cohort 2020/2021 – 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
		Group A module for Second Major (UEM)	4
Sub-total	20	Sub-total	24

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
Group B module for Second Major (UEM)	4	EG3301R DCP Project (UEM)	6
Sub-total	24	Sub-total	26

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

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

**Innovation & Design Programme
Faculty of Engineering**

Recommended semester schedule for Cohort 2020/2021 – 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
		Group A module for Second Major (UEM)	4
Sub-total	20	Sub-total	24

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	EG3301R DCP Project (UEM)	6
Group B module for Second Major (UEM)	4		
Sub-total	24	Sub-total	22

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

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
Sub-total		Sub-total	20

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 2020/2021 – poly-intake students or equivalent

Semester 1	MCs	Semester 2	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
Sub-total	20	Sub-total	22

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
Sub-total	22	Sub-total	20

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
Sub-total	22	Sub-total	22

Semester 7	MCs
Innovation & Enterprise Elective 2 (UEM)	4
CE4103 Design Project	4
EG2401A Engineering Professionalism	2
UEM (in lieu of EG3612)	2
Sub-total	12

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.