Innovation & Design Programme
Faculty of Engineering

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

Cohorts 2017/2018 and 2018/2019

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:	
• ES1531 Critical Thinking & Writing [1] *(Double-counted for Second Major in Innovation & Design)*	4
• EG2401A Engineering Professionalism	2
• ES1xxxx English [2]	-
Year 1 and core modules:	
• EG1111 Engineering Principles & Practice I	6
• EG1112 Engineering Principles & Practice II	6
• MA1505 Mathematics I	4
• MA1512 Differential Equations for Engineering	2
• MA1513 Linear Algebra & Differential Equations	2
• PC1431 Physics IE	4
• CS1010E Programming Methodology	4
• ME2112 Strength of Materials	4
• ME2121 Engineering Thermodynamics	4
• ME2134 Fluid Mechanics I	4
• ME2142 Feedback Control Systems	4
• ME2151 Principles of Mechanical Engineering Materials	4
• ME2115/ME3112 Mechanics of Machines	4
• ME3162 Manufacturing Processes	4
ME technical electives [3, 5]	24
ME design and project modules:	
• ME2102 Engineering Innovation & Modelling	4
• EG3301R DCP Project [3] (over 2 consecutive semesters) *(Double-counted for Second Major in Innovation & Design and replaces ME3103 Mechanical Systems Design)*	12
EG3612 Vacation Internship Programme (VIP) [3, 4]	6
Sub-total for Programme Requirements	**108**
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	12
• EG4301 DCP Dissertation or EG4301A Ideas to Start-up [5] (over 2 consecutive semesters) *(replaces ME4101A BEng Dissertation)*	12
Sub-total for Unrestricted Elective Modules	**32**
Total	**160**

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Notes:

[1] Students in USP, UTRP, and RVRC may read an equivalent module (e.g. ES1501X Academic Expository Writing) in lieu of EG1531.

[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 EG3301R are mapped by 8 MCs from ME3103 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) and 4 MCs of technical electives.

ME4102 Standards in Mechanical Engineering and ME4103 Mechanical Engineering and Society cannot be counted as ME technical electives. They may only be taken as UEM.

[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 Global Engineering Programme (GEP).

[5] Students in this Second Major are allowed to complete additional technical electives (8 MCs) in lieu of ME4101A (8 MCs).

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Recommended semester schedule for Cohorts 2017/2018 and 2018/2019 – JC-intake students or equivalent

Semester 1	MCs	Semester 2	MCs
MA1505 Mathematics I	4	MA1512 Differential Equations for Engineering	2
PC1431 Physics IE	4	MA1513 Linear Algebra & Differential Equations	2
GER1000 Quantitative Reasoning	4	CS1010E Programming Methodology	4
EG1111 Engineering Principles & Practice I	6	EG1112 Engineering Principles & Practice II	6
GET	4	GEQ1000 Asking Questions	4
		Group A module for Second Major (UEM)	4
Sub-total	**22**	**Sub-total**	**22**

Semester 3	MCs	Semester 4	MCs
ME2112 Strength of Materials	4	EG3301R DCP Project (double-counted)	6
ME2151 Principles of Mechanical Engineering Materials	4	ME2102 Engineering Innovation and Modelling	4
ME2134 Fluid Mechanics I	4	ME2121 Engineering Thermodynamics	4
ME3162 Manufacturing Processes	4	ME3112 Mechanics of Machines	4
ES1531 Critical Thinking & Writing (double-counted)	4		
Group B module for Second Major (UEM)	4		
Sub-total	**24**	**Sub-total**	**18**

Summer vacation between Semesters 4 and 5	MCs
EG3612 Vacation Internship Programme	6
Sub-total	**6**

Semester 5	MCs	Semester 6	MCs
EG3301R DCP Project (double-counted)	6	Innovation & Enterprise Elective 1 (UEM)	4
ME2142 Feedback Control Systems	4	ME Technical Elective 2	4
ME Technical Elective 1	4	ME Technical Elective 3	4
GES	4	ME Technical Elective 4	4
EG2401A Engineering Professionalism	2	GEH	4
Sub-total	**20**	**Sub-total**	**20**

Semester 7	MCs	Semester 8	MCs
EG4301 DCP Dissertation (UEM)	6	EG4301 DCP Dissertation (UEM)	6
Innovation & Enterprise Elective 2 (UEM)	4	Innovation & Enterprise Elective 3 (UEM)	4
ME Technical Elective 5	4	ME Technical Elective 6	4
Sub-total	**14**	**Sub-total**	**14**

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Recommended semester schedule for Cohorts 2017/2018 and 2018/2019 – poly-intake students

(for students who intend to complete in 6 semesters and are exempted from Group A module for Second Major)

Semester 3	MCs	Semester 4	MCs
MA1301 Introductory Mathematics (in lieu of EG3612)	4	EG3301R DCP Project (double-counted)	6
PC1431 Physics IE	4	MA1505 Mathematics I	4
ME2112 Strength of Materials	4	ME2121 Engineering Thermodynamics	4
ME2151 Principles of Mechanical Engineering Materials	4	ME3112 Mechanics of Machines	4
GER1000 Quantitative Reasoning	4	GEQ1000 Asking Questions	4
		GET	4
Sub-total	**20**	**Sub-total**	**26**

Semester 5	MCs	Semester 6	MCs
EG3301R DCP Project (double-counted)	6	Innovation & Enterprise Elective 1 (UEM)	4
MA1512 Differential Equations for Engineering	2	ME2142 Feedback Control Systems	4
MA1513 Linear Algebra & Differential Equations	2	ME Technical Elective 1	4
ME2134 Fluid Mechanics I	4	ME Technical Elective 2	4
ES1531 Critical Thinking & Writing (double-counted)	4	GEH	4
Group B module for Second Major (UEM)	4	GES	4
		EG2401A Engineering Professionalism	2
Sub-total	**22**	**Sub-total**	**26**

Semester 7	MCs	Semester 8	MCs
EG4301 DCP Dissertation (UEM)	6	EG4301 DCP Dissertation (UEM)	6
Innovation & Enterprise Elective 2 (UEM)	4	Innovation & Enterprise Elective 3 (UEM)	4
ME3162 Manufacturing Processes	4	ME Technical Elective 5	4
ME Technical Elective 3	4	ME Technical Elective 6	4
ME Technical Elective 4	4	UEM (in lieu of EG3612)	2
Sub-total	**22**	**Sub-total**	**20**

Notes:

1. Poly-intake students may receive the following exemptions depending on their Diploma qualification:
   - EG1111 Engineering Principles & Practice I (6 MCs)
   - EG1112 Engineering Principles & Practice II (6 MCs)
   - CS1010E Programming Methodology (4 MCs)
   - ME2102 Engineering Innovation & Modelling (4 MCs)
   - Unrestricted elective modules (20 MCs)

2. 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.

3. 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.

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Recommended semester schedule for Cohorts 2017/2018 and 2018/2019
– poly-intake students
(for students who intend to complete in 7 semesters and are exempted from Group A module for Second Major)

Semester 3	MCs	Semester 4	MCs
MA1301 Introductory Mathematics (in lieu of EG3612)	4	EG3301R DCP Project (double-counted)	6
PC1431 Physics IE	4	MA1505 Mathematics I	4
ME2112 Strength of Materials	4	GEQ1000 Asking Questions	4
ME2151 Principles of Mechanical Engineering Materials	4	GET	4
GER1000 Quantitative Reasoning	4	UEM (in lieu of EG3612)	2
Sub-total	**20**	**Sub-total**	**20**

Semester 5	MCs	Semester 6	MCs
EG3301R DCP Project (double-counted)	6	ME2121 Engineering Thermodynamics	4
MA1512 Differential Equations for Engineering	2	ME2142 Feedback Control Systems	4
MA1513 Linear Algebra & Differential Equations	2	ME3112 Mechanics of Machines	4
ME2134 Fluid Mechanics I	4	GEH	4
ES1531 Critical Thinking & Writing (double-counted)	4	GES	4
Group B module for Second Major (UEM)	4	EG2401A Engineering Professionalism	2
Sub-total	**22**	**Sub-total**	**22**

Semester 7	MCs	Semester 8	MCs
EG4301 DCP Dissertation (UEM)	6	EG4301 DCP Dissertation (UEM)	6
ME3162 Manufacturing Processes	4	Innovation & Enterprise Elective 1 (UEM)	4
ME Technical Elective 1	4	ME Technical Elective 3	4
ME Technical Elective 2	4	ME Technical Elective 4	4
Sub-total	**18**	**Sub-total**	**18**

Semester 9	MCs
Innovation & Enterprise Elective 2 (UEM)	4
Innovation & Enterprise Elective 3 (UEM)	4
ME Technical Elective 5	4
ME Technical Elective 6	4
Sub-total	**16**

Notes:

1. Poly-intake students may receive the following exemptions depending on their Diploma qualification:
   - EG1111 Engineering Principles & Practice I (6 MCs)
   - EG1112 Engineering Principles & Practice II (6 MCs)
   - CS1010E Programming Methodology (4 MCs)
   - ME2102 Engineering Innovation & Modelling (4 MCs)
   - Unrestricted elective modules (20 MCs)

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2. 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.

3. 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.