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

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

## Cohort AY2025/2026

| Course Requirements | Units |
|---|---|
| **Common Curriculum** | |
| GEA1000 Quantitative Reasoning with Data [1] | 4 |
| CS1010E Programming Methodology (or other variants) | 4 |
| CDE2501 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<br>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** | |
| MA1505 Mathematics I | 4 |
| MA1512 Differential Equations for Engineering | 2 |
| MA1513 Linear Algebra with Differential Equations | 2 |
| EG2401A Engineering Professionalism | 2 |
| EG3611A Industrial Attachment or<br>CFG2101 NUS Vacation Internship Programme [3] and EG3612 Vacation Industrial Attachment | 10 |
| **Sub-total for Engineering Core** | **20** |
| **Engineering Programme Requirements** | |
| ME1103 Principles of Mechanics and Materials | 4 |
| ME2105 Principles of Mechatronics and Automation | 4 |
| ME2102 Engineering Innovation and Modelling | 4 |
| ME2116 Mechanics of Materials | 4 |
| ME2121 Engineering Thermodynamics and Heat Transfer | 4 |
| ME2134 Fluids Mechanics I | 4 |
| ME2162 Manufacturing Processes | 4 |
| ME3115 Mechanics of Machines | 4 |
| ME3123 Applied Thermofluids | 4 |
| ME3142 Feedback Control Systems | 4 |
| Technical electives | 12 |
| 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** |

*(updated 4 July 2025)*

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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.

*(updated 4 July 2025)*

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## Recommended semester schedule – JC-intake students or equivalent

(for students who opt for vacation internships)

| Semester 1 | Units | Semester 2 | Units |
|---|---|---|---|
| ME1103 Principles of Mechanics and Materials | 4 | ME2105 Principles of Mechatronics and Automation | 4 |
| CS1010E Programming Methodology | 4 | GEA1000 Quantitative Reasoning with Data | 4 |
| EG1311 Design and Make<br>or EG1311BE Design and Make | 4 | DTK1234 Design Thinking | 4 |
| MA1505 Mathematics I | 4 | MA1512 Differential Equations for Engineering | 2 |
| GE | 4 | MA1513 Linear Algebra with Differential Equations | 2 |
| | | PF1101A Project Management and Finance | 4 |
| | | Elective 1 for Second Major (from List I) | 4 |
| **Sub-total** | **20** | **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 | Units |
|---|---|---|---|
| ME2116 Mechanics of Materials | 4 | ME2102 Engineering Innovation and Modelling | 4 |
| ME2134 Fluids Mechanics I | 4 | ME2121 Engineering Thermodynamics and Heat Transfer | 4 |
| ME3115 Mechanics of Machines | 4 | CDE2501 Liveable Cities | 4 |
| ES2631 Critique and Communication of Thinking and Design | 4 | EE2211 Introduction to Machine Learning or EE2213 Introduction to Artificial Intelligence | 4 |
| Elective 2 for Second Major (from List I) | 4 | CDE3301 Ideas to Proof-of-Concept | 6 |
| **Sub-total** | **20** | **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 |
|---|---|---|---|
| CDE3301 Ideas to Proof-of-Concept | 6 | Elective 3 for Second Major | 4 |
| ME2162 Manufacturing Processes | 4 | Technical Elective 1 | 4 |
| ME3123 Applied Thermofluids | 4 | Technical Elective 2 | 4 |
| ME3142 Feedback Control Systems | 4 | GE | 4 |
| EG2401A Engineering Professionalism | 2 | UE | 4 |
| **Sub-total** | **20** | **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 4 for Second Major | 4 | Technical Elective 3 | 4 |
| UE | 4 | | |
| **Sub-total** | **14** | **Sub-total** | **10** |

*(updated 4 July 2025)*

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

| Semester 1 | Units | Semester 2 | Units |
|---|---|---|---|
| ME1103 Principles of Mechanics and Materials | 4 | ME2105 Principles of Mechatronics and Automation | 4 |
| CS1010E Programming Methodology | 4 | GEA1000 Quantitative Reasoning with Data | 4 |
| EG1311 Design and Make<br>or EG1311BE Design and Make | 4 | DTK1234 Design Thinking | 4 |
| MA1505 Mathematics I | 4 | MA1512 Differential Equations for Engineering | 2 |
| GE | 4 | MA1513 Linear Algebra with Differential Equations | 2 |
| | | PF1101A Project Management and Finance | 4 |
| | | Elective 1 for Second Major (from List I) | 4 |
| **Sub-total** | **20** | **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 | Units |
|---|---|---|---|
| ME2116 Mechanics of Materials | 4 | ME2102 Engineering Innovation and Modelling | 4 |
| ME2134 Fluids Mechanics I | 4 | ME2121 Engineering Thermodynamics and Heat Transfer | 4 |
| ME3115 Mechanics of Machines | 4 | CDE2501 Liveable Cities | 4 |
| ES2631 Critique and Communication of Thinking and Design | 4 | EE2211 Introduction to Machine Learning or EE2213 Introduction to Artificial Intelligence | 4 |
| Elective 2 for Second Major (from List I) | 4 | CDE3301 Ideas to Proof-of-Concept | 6 |
| **Sub-total** | **20** | **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 |
|---|---|---|---|
| CDE3301 Ideas to Proof-of-Concept | 6 | Elective 3 for Second Major | 4 |
| ME2162 Manufacturing Processes | 4 | Specialisation course 1 | 4 |
| ME3123 Applied Thermofluids | 4 | Specialisation course 2 | 4 |
| ME3142 Feedback Control Systems | 4 | Specialisation course 3 | 4 |
| EG2401A Engineering Professionalism | 2 | GE | 4 |
| **Sub-total** | **20** | **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 4 for Second Major | 4 | Specialisation course 5 | 4 |
| Specialisation course 4 | 4 | | |
| **Sub-total** | **14** | **Sub-total** | **10** |

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## Recommended semester schedule – JC-intake students or equivalent

(for students who opt for industrial attachment)

| Semester 1 | Units | Semester 2 | Units |
|---|---|---|---|
| ME1103 Principles of Mechanics and Materials | 4 | ME2105 Principles of Mechatronics and Automation | 4 |
| CS1010E Programming Methodology | 4 | GEA1000 Quantitative Reasoning with Data | 4 |
| EG1311 Design and Make<br>or EG1311BE Design and Make | 4 | DTK1234 Design Thinking | 4 |
| MA1505 Mathematics I | 4 | MA1512 Differential Equations for Engineering | 2 |
| GE | 4 | MA1513 Linear Algebra with Differential Equations | 2 |
| | | PF1101A Project Management and Finance | 4 |
| | | Elective 1 for Second Major (from List I) | 4 |
| **Sub-total** | **20** | **Sub-total** | **24** |

| Semester 3 | Units | Semester 4 | Units |
|---|---|---|---|
| ME2116 Mechanics of Materials | 4 | ME2102 Engineering Innovation and Modelling | 4 |
| ME2134 Fluids Mechanics I | 4 | ME2121 Engineering Thermodynamics and Heat Transfer | 4 |
| ME3115 Mechanics of Machines | 4 | CDE2501 Liveable Cities | 4 |
| ES2631 Critique and Communication of Thinking and Design | 4 | EE2211 Introduction to Machine Learning<br>or EE2213 Introduction to Artificial Intelligence | 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 | Units |
|---|---|---|---|
| CDE3301 Ideas to Proof-of-Concept | 6 | EG3611A Industrial Attachment | 10 |
| ME2162 Manufacturing Processes | 4 | | |
| ME3123 Applied Thermofluids | 4 | | |
| ME3142 Feedback Control Systems | 4 | | |
| EG2401A Engineering Professionalism | 2 | | |
| **Sub-total** | **20** | **Sub-total** | **20** |

| Semester 7 | Units | Semester 8 | Units |
|---|---|---|---|
| CDE4301 Innovation & Design Capstone<br>or CDE4301A Ideas to Start-up | 6 | CDE4301 Innovation & Design Capstone<br>or CDE4301A Ideas to Start-up | 6 |
| Elective 3 for Second Major | 4 | Elective 4 for Second Major | 4 |
| Technical Elective 1 | 4 | Technical Elective 2 | 4 |
| GE | 4 | Technical Elective 3 | 4 |
| UE | 4 | UE | 4 |
| **Sub-total** | **22** | **Sub-total** | **22** |

*(updated 4 July 2025)*

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

| Semester 1 | Units | Semester 2 | Units |
|---|---|---|---|
| ME1103 Principles of Mechanics and Materials | 4 | ME2105 Principles of Mechatronics and Automation | 4 |
| CS1010E Programming Methodology | 4 | GEA1000 Quantitative Reasoning with Data | 4 |
| EG1311 Design and Make<br>or EG1311BE Design and Make | 4 | DTK1234 Design Thinking | 4 |
| MA1505 Mathematics I | 4 | MA1512 Differential Equations for Engineering | 2 |
| GE | 4 | MA1513 Linear Algebra with Differential Equations | 2 |
| | | PF1101A Project Management and Finance | 4 |
| | | Elective 1 for Second Major (from List I) | 4 |
| **Sub-total** | **20** | **Sub-total** | **24** |

| Semester 3 | Units | Semester 4 | Units |
|---|---|---|---|
| ME2116 Mechanics of Materials | 4 | ME2102 Engineering Innovation and Modelling | 4 |
| ME2134 Fluids Mechanics I | 4 | ME2121 Engineering Thermodynamics and Heat Transfer | 4 |
| ME3115 Mechanics of Machines | 4 | CDE2501 Liveable Cities | 4 |
| ES2631 Critique and Communication of Thinking and Design | 4 | EE2211 Introduction to Machine Learning<br>or EE2213 Introduction to Artificial Intelligence | 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 | Units |
|---|---|---|---|
| CDE3301 Ideas to Proof-of-Concept | 6 | EG3611A Industrial Attachment | 10 |
| ME2162 Manufacturing Processes | 4 | | |
| ME3123 Applied Thermofluids | 4 | | |
| ME3142 Feedback Control Systems | 4 | | |
| EG2401A Engineering Professionalism | 2 | | |
| **Sub-total** | **20** | **Sub-total** | **20** |

| Semester 7 | Units | Semester 8 | Units |
|---|---|---|---|
| CDE4301 Innovation & Design Capstone<br>or CDE4301A Ideas to Start-up | 6 | CDE4301 Innovation & Design Capstone<br>or CDE4301A Ideas to Start-up | 6 |
| Elective 3 for Second Major | 4 | Elective 4 for Second Major | 4 |
| Specialisation course 1 | 4 | Specialisation course 3 | 4 |
| Specialisation course 2 | 4 | Specialisation course 4 | 4 |
| GE | 4 | Specialisation course 5 | 4 |
| **Sub-total** | **22** | **Sub-total** | **22** |

*(updated 4 July 2025)*

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## Recommended semester schedule – JC-intake students or equivalent

(for students in year-long NOC programmes)

| Semester 1 | Units | Semester 2 | Units |
|---|---|---|---|
| ME1103 Principles of Mechanics and Materials | 4 | ME2105 Principles of Mechatronics and Automation | 4 |
| CS1010E Programming Methodology | 4 | GEA1000 Quantitative Reasoning with Data | 4 |
| EG1311 Design and Make<br>or EG1311BE Design and Make | 4 | DTK1234 Design Thinking | 4 |
| MA1505 Mathematics I | 4 | MA1512 Differential Equations for Engineering | 2 |
| GE | 4 | MA1513 Linear Algebra with Differential Equations | 2 |
| | | PF1101A Project Management and Finance | 4 |
| | | Elective 1 for Second Major (from List I) | 4 |
| **Sub-total** | **20** | **Sub-total** | **24** |

| Semester 3 | Units | Semester 4 | Units |
|---|---|---|---|
| ME2116 Mechanics of Materials | 4 | ME2102 Engineering Innovation and Modelling | 4 |
| ME2134 Fluids Mechanics I | 4 | ME2121 Engineering Thermodynamics and Heat Transfer | 4 |
| ME3115 Mechanics of Machines | 4 | CDE2501 Liveable Cities | 4 |
| ES2631 Critique and Communication of Thinking and Design | 4 | EE2211 Introduction to Machine Learning<br>or EE2213 Introduction to Artificial Intelligence | 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 |
|---|---|---|---|
| CDE3301 Ideas to Proof-of-Concept | 6 | NOC | |
| ME2162 Manufacturing Processes | 4 | | |
| ME3123 Applied Thermofluids | 4 | | |
| ME3142 Feedback Control Systems | 4 | | |
| GE | 4 | | |
| **Sub-total** | **22** | **Sub-total** | **20** |

| Semester 7 – NOC | Units | Semester 8 | Units |
|---|---|---|---|
| NOC | | Technical Elective 1 | 4 |
| | | Technical Elective 2 | 4 |
| | | Technical Elective 3 | 4 |
| **Sub-total** | **20** | **Sub-total** | **12** |

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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)

*(updated 4 July 2025)*

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## Recommended semester schedule – JC-intake students or equivalent

(for students in one-semester NOC programmes)

| Semester 1 | Units | Semester 2 | Units |
|---|---|---|---|
| ME1103 Principles of Mechanics and Materials | 4 | ME2105 Principles of Mechatronics and Automation | 4 |
| CS1010E Programming Methodology | 4 | GEA1000 Quantitative Reasoning with Data | 4 |
| EG1311 Design and Make<br>or EG1311BE Design and Make | 4 | DTK1234 Design Thinking | 4 |
| MA1505 Mathematics I | 4 | MA1512 Differential Equations for Engineering | 2 |
| GE | 4 | MA1513 Linear Algebra with Differential Equations | 2 |
| | | PF1101A Project Management and Finance | 4 |
| | | Elective 1 for Second Major (from List I) | 4 |
| **Sub-total** | **20** | **Sub-total** | **24** |

| Semester 3 | Units | Semester 4 | Units |
|---|---|---|---|
| ME2116 Mechanics of Materials | 4 | ME2102 Engineering Innovation and Modelling | 4 |
| ME2134 Fluids Mechanics I | 4 | ME2121 Engineering Thermodynamics and Heat Transfer | 4 |
| ME3115 Mechanics of Machines | 4 | CDE2501 Liveable Cities | 4 |
| ES2631 Critique and Communication of Thinking and Design | 4 | EE2211 Introduction to Machine Learning<br>or EE2213 Introduction to Artificial Intelligence | 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 |
|---|---|---|---|
| CDE3301 Ideas to Proof-of-Concept | 6 | NOC | |
| ME2162 Manufacturing Processes | 4 | | |
| ME3123 Applied Thermofluids | 4 | | |
| ME3142 Feedback Control Systems | 4 | | |
| GE | 4 | | |
| **Sub-total** | **22** | **Sub-total** | **20** |

| Semester 7 | Units | Semester 8 | Units |
|---|---|---|---|
| CDE4301 Innovation & Design Capstone<br>or CDE4301A Ideas to Start-up | 6 | CDE4301 Innovation & Design Capstone<br>or CDE4301A Ideas to Start-up | 6 |
| Technical Elective 1 | 4 | Technical Elective 3 | 4 |
| Technical Elective 2 | 4 | UE | 4 |
| UE | 4 | | |
| **Sub-total** | **18** | **Sub-total** | **14** |

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)

*(updated 4 July 2025)*

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## Recommended semester schedule – JC-intake students or equivalent

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

| Semester 1 | Units | Semester 2 | Units |
|---|---|---|---|
| ME1103 Principles of Mechanics and Materials | 4 | ME2105 Principles of Mechatronics and Automation | 4 |
| ME2102 Engineering Innovation and Modelling | 4 | GEA1000 Quantitative Reasoning with Data | 4 |
| MA1512 Differential Equations for Engineering | 2 | DTK1234 Design Thinking | 4 |
| MA1513 Linear Algebra with Differential Equations | 2 | PF1101A Project Management and Finance | 4 |
| RVRC/UTCP course 1 (replaces GE) | 4 | RVRC/UTCP course 2 (replaces GE) | 4 |
| Elective 1 for Second Major (from List I) | 4 | CDE3301 Ideas to Proof-of-Concept | 6 |
| UE | 4 | | |
| **Sub-total** | **24** | **Sub-total** | **26** |

| 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 |
|---|---|---|---|
| ME2116 Mechanics of Materials | 4 | ME2121 Engineering Thermodynamics and Heat Transfer | 4 |
| ME2134 Fluids Mechanics I | 4 | Technical Elective 1 | 4 |
| ME3115 Mechanics of Machines | 4 | EE2211 Introduction to Machine Learning or EE2213 Introduction to Artificial Intelligence | 4 |
| RVRC/UTCP course 3 (replaces CDE2501) | 4 | EG2401A Engineering Professionalism | 2 |
| Elective 2 for Second Major (from List I) | 4 | RVRC/UTCP course 4 (replaces ES2631) | 4 |
| CDE3301 Ideas to Proof-of-Concept | 6 | Elective 3 for Second Major | 4 |
| **Sub-total** | **26** | **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 |
| ME2162 Manufacturing Processes | 4 | Elective 4 for Second Major | 4 |
| ME3123 Applied Thermofluids | 4 | Technical Elective 3 | 4 |
| ME3142 Feedback Control Systems | 4 | UE | 4 |
| Technical Elective 2 | 4 | | |
| **Sub-total** | **22** | **Sub-total** | **18** |

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)

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

*(updated 4 July 2025)*

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## Recommended semester schedule – 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 |
|---|---|---|---|
| ME1103 Principles of Mechanics and Materials | 4 | ME2105 Principles of Mechatronics and Automation | 4 |
| ME2102 Engineering Innovation and Modelling | 4 | GEA1000 Quantitative Reasoning with Data | 4 |
| MA1512 Differential Equations for Engineering | 2 | DTK1234 Design Thinking | 4 |
| MA1513 Linear Algebra with Differential Equations | 2 | PF1101A Project Management and Finance | 4 |
| RVRC/UTCP course 1 (replaces GE) | 4 | RVRC/UTCP course 2 (replaces GE) | 4 |
| Elective 1 for Second Major (from List I) | 4 | CDE3301 Ideas to Proof-of-Concept | 6 |
| UE | 4 | | |
| **Sub-total** | **24** | **Sub-total** | **26** |

| Semester 3 | Units | Semester 4 – NOC | Units |
|---|---|---|---|
| ME2116 Mechanics of Materials | 4 | NOC | |
| ME2134 Fluids Mechanics I | 4 | | |
| ME3115 Mechanics of Machines | 4 | | |
| RVRC/UTCP course 3 (replaces CDE2501) | 4 | | |
| Elective 2 for Second Major (from List I) | 4 | | |
| CDE3301 Ideas to Proof-of-Concept | 6 | | |
| **Sub-total** | **26** | **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 |
| ME2162 Manufacturing Processes | 4 | ME2121 Engineering Thermodynamics and Heat Transfer | 4 |
| ME3123 Applied Thermofluids | 4 | Technical Elective 2 | 4 |
| ME3142 Feedback Control Systems | 4 | Technical Elective 3 | 4 |
| Technical Elective 1 | 4 | EE2211 Introduction to Machine Learning or EE2213 Introduction to Artificial Intelligence | 4 |
| RVRC/UTCP course 4 (replaces ES2631) | 4 | UE | 4 |
| **Sub-total** | **26** | **Sub-total** | **26** |

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)

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)

*(updated 4 July 2025)*

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## Recommended semester schedule – poly-intake students

| Semester 1 | Units | Semester 2 | Units |
|---|---|---|---|
| ME1103 Principles of Mechanics and Materials | 4 | ME2105 Principles of Mechatronics and Automation | 4 |
| ME2102 Engineering Innovation and Modelling | 4 | ME2121 Engineering Thermodynamics and Heat Transfer | 4 |
| CS1010E Programming Methodology | 4 | GEA1000 Quantitative Reasoning with Data | 4 |
| MA1301 Introductory Mathematics * (UE) | 4 | MA1512 Differential Equations for Engineering | 2 |
| Elective 1 for Second Major (from List I) | 4 | MA1513 Linear Algebra with Differential Equations | 2 |
| | | PF1101A Project Management and Finance | 4 |
| | | CDE3301 Ideas to Proof-of-Concept | 6 |
| **Sub-total** | **20** | **Sub-total** | **26** |

| Semester 3 | Units | Semester 4 | Units |
|---|---|---|---|
| ME2162 Manufacturing Processes | 4 | ME2116 Mechanics of Materials | 4 |
| ME3115 Mechanics of Machines | 4 | ME2134 Fluids Mechanics I | 4 |
| MA1505 Mathematics I * | 4 | CDE2501 Liveable Cities | 4 |
| ES2631 Critique and Communication of Thinking and Design | 4 | EE2211 Introduction to Machine Learning or EE2213 Introduction to Artificial Intelligence | 4 |
| Elective 2 for Second Major (from List I) | 4 | EG2401A Engineering Professionalism | 2 |
| CDE3301 Ideas to Proof-of-Concept | 6 | GE | 4 |
| **Sub-total** | **26** | **Sub-total** | **22** |

| 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 |
| ME3123 Applied Thermofluids | 4 | Elective 3 for Second Major | 4 |
| ME3142 Feedback Control Systems | 4 | Elective 4 for Second Major | 4 |
| Technical Elective 1 | 4 | Technical Elective 2 | 4 |
| GE | 4 | Technical Elective 3 | 4 |
| **Sub-total** | **22** | **Sub-total** | **22** |

* Students who are exempted from MA1301 can take MA1505 in Semester 1.

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

- DTK1234 Design Thinking (4 units)
- EG1311 Design and Make (4 units)
- EG3611P Industrial Attachment (10 units)
- Unrestricted electives (20 units)

*(updated 4 July 2025)*