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

## Bachelor of Engineering (Infrastructure & Project Management) with Minor in Innovation & Design

## Cohort AY2023/2024

| Course Requirements | Units |
|---|---|
| **Common Curriculum** | |
| GEA1000 Quantitative Reasoning with Data | 4 |
| CS1010E Programming Methodology | 4 |
| ES2631 Critique and Communication of Thinking and Design [1] | 4 |
| GE: Cultures and Connections [1] | 4 |
| GE: Singapore Studies [1] | 4 |
| GE: Communities and Engagement [1] | 4 |
| CDE2000 Creating Narratives | 4 |
| CDE2501 Liveable Cities | 4 |
| DTK1234 Design Thinking | 4 |
| EE2211 Introduction to Machine Learning | 4 |
| EG1311 Design and Make | 4 |
| IE2141 Systems Thinking and Dynamics | 4 |
| PF1101 Fundamentals of Project Management | 4 |
| IPM4101 Dissertation [2] | 8 |
| **Sub-total for Common Curriculum** | **60** |
| **Engineering Core** | |
| 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<br>CFG2101 NUS Vacation Internship Programme [3] and EG3612 Vacation Industrial Attachment | 10 |
| **Sub-total for Engineering Core** | **20** |
| **Engineering Programme Requirements** | |
| IPM1102 Infrastructure and Project Management Law | 4 |
| IPM1103 Digital Construction | 4 |
| IPM2101 Introduction to Building Performance | 4 |
| IPM2102 Construction Technology | 4 |
| IPM2103 Measurement (Building Works) | 4 |
| IPM2104 Project Cost Management | 4 |
| IPM3101 Project Feasibility | 4 |
| IPM3102 Infrastructure and Facilities Management | 4 |
| IPM4102 Project Execution | 4 |
| IPM4103 Contract and Procurement Management | 4 |
| **Sub-total for Engineering Programme Requirements** | **40** |
| **Unrestricted Electives** | |
| Group A course for Minor | 4 |
| Group B course for Minor | 4 |
| CDE3301/EG3301R Ideas to Proof-of-Concept (over 2 consecutive semesters) | 12 |
| Other unrestricted electives [2] | 20 |
| **Sub-total for Unrestricted Electives** | **40** |
| **Total** | **160** |

*(updated 10 July 2024)*

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

Notes:

[1] Students may read equivalent courses in NUS College (NUSC), University Town College Programme (UTCP), and Ridge View Residential Programme (RVRC).

[2] Students may take CDE4301 Innovation & Design Capstone or CDE4301A Ideas to Start-up in lieu of IPM4101 and 4 units of unrestricted electives.

[3] May be replaced by CDE2605 Undergraduate Research Opportunities Programme or CDE2605R Undergraduate Research Experience (UREx).

*(updated 10 July 2024)*

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

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

(for students who opt for vacation internships)

| Semester 1 | Units | Semester 2 | Units |
|---|---|---|---|
| IPM1102 Infrastructure and Project Management Law | 4 | IPM1103 Digital Construction | 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/B course for Minor | 4 |
| **Sub-total** | **20** | **Sub-total** | **20** |

| Summer vacation between Semesters 2 and 3 | Units |
|---|---|
| CFG2101 NUS Vacation Internship Programme | 4 |
| **Sub-total** | **4** |

| Semester 3 | Units | Semester 4 | Units |
|---|---|---|---|
| IPM2101 Introduction to Building Performance | 4 | IPM2103 Measurement (Building Works) | 4 |
| IPM2102 Construction Technology | 4 | IPM2104 Project Cost Management | 4 |
| CDE2501 Liveable Cities | 4 | ES2631 Critique and Communication of Thinking and Design | 4 |
| EE2211 Introduction to Machine Learning | 4 | IE2141 Systems Thinking & Dynamics | 4 |
| GE | 4 | CDE3301/EG3301R Ideas to Proof-of-Concept | 6 |
| Group A/B course for Minor | 4 | | |
| **Sub-total** | **24** | **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/EG3301R Ideas to Proof-of-Concept | 6 | GE | 4 |
| IPM3101 Project Feasibility | 4 | GE | 4 |
| IPM3102 Infrastructure and Facilities Management | 4 | UE | 4 |
| CDE2000 Creating Narratives | 4 | UE | 4 |
| EG2401A Engineering Professionalism | 2 | | |
| **Sub-total** | **20** | **Sub-total** | **16** |

| Semester 7 | Units | Semester 8 | Units |
|---|---|---|---|
| IPM4101 Dissertation | 8 | UE | 4 |
| IPM4102 Project Execution | 4 | UE | 4 |
| IPM4103 Contract and Procurement Management | 4 | UE | 4 |
| **Sub-total** | **16** | **Sub-total** | **12** |

*(updated 10 July 2024)*

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

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

(for students who opt for industrial attachment)

| Semester 1 | Units | Semester 2 | Units |
|---|---|---|---|
| IPM1102 Infrastructure and Project Management Law | 4 | IPM1103 Digital Construction | 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/B course for Minor | 4 |
| **Sub-total** | **20** | **Sub-total** | **20** |

| Semester 3 | Units | Semester 4 | Units |
|---|---|---|---|
| IPM2101 Introduction to Building Performance | 4 | IPM2103 Measurement (Building Works) | 4 |
| IPM2102 Construction Technology | 4 | IPM2104 Project Cost Management | 4 |
| CDE2501 Liveable Cities | 4 | ES2631 Critique and Communication of Thinking and Design | 4 |
| EE2211 Introduction to Machine Learning | 4 | IE2141 Systems Thinking & Dynamics | 4 |
| GE | 4 | CDE3301/EG3301R Ideas to Proof-of-Concept | 6 |
| Group A/B course for Minor | 4 | | |
| **Sub-total** | **24** | **Sub-total** | **22** |

| Semester 5 | Units | Semester 6 | Units |
|---|---|---|---|
| CDE3301/EG3301R Ideas to Proof-of-Concept | 6 | EG3611A Industrial Attachment | 10 |
| IPM3101 Project Feasibility | 4 | | |
| IPM3102 Infrastructure and Facilities Management | 4 | | |
| CDE2000 Creating Narratives | 4 | | |
| EG2401A Engineering Professionalism | 2 | | |
| **Sub-total** | **20** | **Sub-total** | **10** |

| Semester 7 | Units | Semester 8 | Units |
|---|---|---|---|
| IPM4101 Dissertation | 8 | UE | 4 |
| IPM4102 Project Execution | 4 | UE | 4 |
| IPM4103 Contract and Procurement Management | 4 | UE | 4 |
| GE * | 4 | UE | 4 |
| GE * | 4 | UE | 4 |
| **Sub-total** | **24** | **Sub-total** | **20** |

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

*(updated 10 July 2024)*

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

## Recommended semester schedule – poly-intake students

(for students who are exempted from DTK1234 and EG1311)

| Semester 1 | Units | Semester 2 | Units |
|---|---|---|---|
| IPM1102 Infrastructure and Project Management Law | 4 | IPM1103 Digital Construction | 4 |
| GEA1000 Quantitative Reasoning with Data | 4 | CS1010E Programming Methodology | 4 |
| PF1101 Fundamentals of Project Management | 4 | MA1511 Engineering Calculus | 2 |
| MA1301 Introductory Mathematics * (UE) | 4 | CE2407B Introduction to Numerical Methods for Engineers | 2 |
| Group A/B course for Minor | 4 | CDE3301/EG3301R Ideas to Proof-of-Concept | 6 |
| | | Group A/B course for Minor | 4 |
| **Sub-total** | **20** | **Sub-total** | **22** |

| Semester 3 | Units | Semester 4 | Units |
|---|---|---|---|
| MA1513 Linear Algebra with Differential Equations * | 2 | IPM2103 Measurement (Building Works) | 4 |
| CE2407A Uncertainty Analysis for Engineers * | 2 | IPM2104 Project Cost Management | 4 |
| IPM2101 Introduction to Building Performance | 4 | ES2631 Critique and Communication of Thinking and Design | 4 |
| IPM2102 Construction Technology | 4 | IE2141 Systems Thinking & Dynamics | 4 |
| CDE2501 Liveable Cities | 4 | GE | 4 |
| EE2211 Introduction to Machine Learning | 4 | | |
| CDE3301/EG3301R Ideas to Proof-of-Concept | 6 | | |
| **Sub-total** | **26** | **Sub-total** | **20** |

| Semester 5 | Units | Semester 6 | Units |
|---|---|---|---|
| IPM4101 Dissertation | 8 | CDE2000 Creating Narratives | 4 |
| IPM3101 Project Feasibility | 4 | EG2401A Engineering Professionalism | 2 |
| IPM3102 Infrastructure and Facilities Management | 4 | GE | 4 |
| IPM4102 Project Execution | 4 | GE | 4 |
| IPM4103 Contract and Procurement Management | 4 | | |
| **Sub-total** | **24** | **Sub-total** | **14** |

* Students who are exempted from MA1301 can take MA1513 and CE2407A in Semester 1.

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

- DTK1234 Design Thinking (4 units)
- EG1311 Design & Make (4 units)
- EG3611A Industrial Attachment (10 units)
- Unrestricted electives (20 units)

*(updated 10 July 2024)*

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

## Recommended semester schedule – poly-intake students

(for students who are exempted from CDE2000 and PF1101)

| Semester 1 | Units | Semester 2 | Units |
|---|---|---|---|
| IPM1102 Infrastructure and Project Management Law | 4 | IPM1103 Digital Construction | 4 |
| GEA1000 Quantitative Reasoning with Data | 4 | CS1010E Programming Methodology | 4 |
| DTK1234 Design Thinking | 4 | EG1311 Design & Make | 4 |
| MA1301 Introductory Mathematics * (UE) | 4 | MA1511 Engineering Calculus | 2 |
| Group A/B course for Minor | 4 | CE2407B Introduction to Numerical Methods for Engineers | 2 |
| | | GE | 4 |
| | | CDE3301/EG3301R Ideas to Proof-of-Concept | 6 |
| **Sub-total** | **20** | **Sub-total** | **26** |

| Semester 3 | Units | Semester 4 | Units |
|---|---|---|---|
| MA1513 Linear Algebra with Differential Equations * | 2 | IPM2103 Measurement (Building Works) | 4 |
| CE2407A Uncertainty Analysis for Engineers * | 2 | IPM2104 Project Cost Management | 4 |
| IPM2101 Introduction to Building Performance | 4 | ES2631 Critique and Communication of Thinking and Design | 4 |
| IPM2102 Construction Technology | 4 | IE2141 Systems Thinking & Dynamics | 4 |
| CDE2501 Liveable Cities | 4 | Group A/B course for Minor | 4 |
| EE2211 Introduction to Machine Learning | 4 | | |
| CDE3301/EG3301R Ideas to Proof-of-Concept | 6 | | |
| **Sub-total** | **26** | **Sub-total** | **20** |

| Semester 5 | Units | Semester 6 | Units |
|---|---|---|---|
| IPM4101 Dissertation | 8 | GE | 4 |
| IPM3101 Project Feasibility | 4 | GE | 4 |
| IPM3102 Infrastructure and Facilities Management | 4 | EG2401A Engineering Professionalism | 2 |
| IPM4102 Project Execution | 4 | | |
| IPM4103 Contract and Procurement Management | 4 | | |
| **Sub-total** | **24** | **Sub-total** | **10** |

* Students who are exempted from MA1301 can take MA1513 and CE2407A in Semester 1.

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

- CDE2000 Creating Narratives (4 units)
- PF1101 Fundamentals of Project Management (4 units)
- EG3611A Industrial Attachment (10 units)
- Unrestricted electives (20 units)

*(updated 10 July 2024)*