

**Bachelor of Engineering (Infrastructure & Project Management)
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) ²	4
CDE2501 Sustainable Systems for 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 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	
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 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
IPM1103I Digitalisation in the Built Environment	4
IPM1104 Built Environment Engineering Principles and Practice	4
IPM2101 Introduction to Building Performance	4
IPM2102 Construction Technology	4
IPM2103 Measurement (Building Works)	4
IPM2104 Project Cost Management	4
IPM2105 Construction Systems	4
IPM2106 Mechanical and Electrical Systems	4
IPM3102 Infrastructure and Facilities Management	4
IPM3103 Project Finance	4
IPM4102 Project Execution	4
IPM4103 Contract and Procurement Management	4
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

NUS Innovation & Design Programme
College of Design and Engineering

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. Students in competition teams may enrol in CDE3301C Complex Systems Design: From Mission to Prototype in Semester 3 to Semester 4 (Year 2) or Semester 5 to Semester 6 (Year 3).

Sample study plan – 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	IPM1103I Digitalisation in the Built Environment	4
IPM1104 Built Environment Engineering Principles and Practice	4	CS1010E Programming Methodology	4
GEA1000 Quantitative Reasoning with Data	4	EG1311 Design and Make or EG1311BE Design and Make	4
DTK1234 Design Thinking	4	MA1511 Engineering Calculus	2
MA1513 Linear Algebra with Differential Equations	2	CE2407B Introduction to Numerical Methods for Engineers	2
CE2407A Uncertainty Analysis for Engineers	2	Elective 1 for Second Major (from List I)	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
IPM2105 Structural Systems	4	IPM2106 Mechanical and Electrical Systems	4
EE2211 Introduction to Machine Learning or EE2213 Introduction to Artificial Intelligence	4	ES2631 Critique and Communication of Thinking and Design	4
PF1101A Project Management and Finance	4	CDE3301 Ideas to Proof-of-Concept	6
Elective 2 for Second Major (from List I)	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 Ideas to Proof-of-Concept	6	Elective 3 for Second Major	4
IPM3102 Infrastructure and Facilities Management	4	Elective 4 for Second Major	4
IPM3103 Project Finance	4	GE	4
CDE2501 Sustainable Systems for Liveable Cities	4	GE	4
EG2401A Engineering Professionalism	2	UE	4
Sub-total	20	Sub-total	20

NUS Innovation & Design Programme
College of Design and Engineering

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
IPM4102 Project Execution	4	UE	4
IPM4103 Contract and Procurement Management	4		
Sub-total	14	Sub-total	10

Sample study plan – 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	IPM1103I Digitalisation in the Built Environment	4
IPM1104 Built Environment Engineering Principles and Practice	4	CS1010E Programming Methodology	4
GEA1000 Quantitative Reasoning with Data	4	EG1311 Design and Make <u>or</u> EG1311BE Design and Make	4
DTK1234 Design Thinking	4	MA1511 Engineering Calculus	2
MA1513 Linear Algebra with Differential Equations	2	CE2407B Introduction to Numerical Methods for Engineers	2
CE2407A Uncertainty Analysis for Engineers	2	Elective 1 for Second Major (from List I)	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
IPM2105 Structural Systems	4	IPM2106 Mechanical and Electrical Systems	4
EE2211 Introduction to Machine Learning <u>or</u> EE2213 Introduction to Artificial Intelligence	4	ES2631 Critique and Communication of Thinking and Design	4
PF1101A Project Management and Finance	4	CDE3301 Ideas to Proof-of-Concept	6
Elective 2 for Second Major (from List I)	4		
Sub-total	24	Sub-total	22

Semester 5	Units	Semester 6	Units
CDE3301 Ideas to Proof-of-Concept	6	EG3611A Industrial Attachment	10
IPM3102 Infrastructure and Facilities Management	4		
IPM3103 Project Finance	4		
CDE2501 Sustainable Systems for Liveable Cities	4		
EG2401A Engineering Professionalism	2		
Sub-total	20	Sub-total	10

Semester 7	Units	Semester 8	Units
CDE4301 Innovation & Design Capstone <u>or</u> CDE4301A Ideas to Start-up	6	CDE4301 Innovation & Design Capstone <u>or</u> CDE4301A Ideas to Start-up	6
IPM4102 Project Execution	4	Elective 3 for Second Major	4
IPM4103 Contract and Procurement Management	4	Elective 4 for Second Major	4
GE	4	UE	4
GE	4	UE	4
Sub-total	22	Sub-total	22

Sample study plan – JC-intake students or equivalent
(for students in year-long NOC programmes)

Semester 1	Units	Semester 2	Units
IPM1102 Infrastructure and Project Management Law	4	IPM1103I Digitalisation in the Built Environment	4
IPM1104 Built Environment Engineering Principles and Practice	4	CS1010E Programming Methodology	4
GEA1000 Quantitative Reasoning with Data	4	EG1311 Design and Make <u>or</u> EG1311BE Design and Make	4
DTK1234 Design Thinking	4	MA1511 Engineering Calculus	2
MA1513 Linear Algebra with Differential Equations	2	CE2407B Introduction to Numerical Methods for Engineers	2
CE2407A Uncertainty Analysis for Engineers	2	Elective 1 for Second Major (from List I)	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
IPM2105 Structural Systems	4	IPM2106 Mechanical and Electrical Systems	4
EE2211 Introduction to Machine Learning <u>or</u> EE2213 Introduction to Artificial Intelligence	4	ES2631 Critique and Communication of Thinking and Design	4
PF1101A Project Management and Finance	4	CDE3301 Ideas to Proof-of-Concept	6
Elective 2 for Second Major (from List I)	4		
Sub-total	24	Sub-total	22

Semester 5	Units	Semester 6 – NOC	Units
CDE3301 Ideas to Proof-of-Concept	6	NOC	
IPM3102 Infrastructure and Facilities Management	4		
IPM3103 Project Finance	4		
IPM4102 Project Execution	4		
IPM4103 Contract and Procurement Management	4		
Sub-total	22	Sub-total	20

Semester 7 – NOC	Units	Semester 8	Units
NOC		GE	4
		GE	4
		CDE2501 Sustainable Systems for Liveable Cities	4
Sub-total	20	Sub-total	12

NUS Innovation & Design Programme
College of Design and Engineering

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)

Sample study plan – JC-intake students or equivalent
(for students in one-semester NOC programmes)

Semester 1	Units	Semester 2	Units
IPM1102 Infrastructure and Project Management Law	4	IPM1103I Digitalisation in the Built Environment	4
IPM1104 Built Environment Engineering Principles and Practice	4	CS1010E Programming Methodology	4
GEA1000 Quantitative Reasoning with Data	4	EG1311 Design and Make <u>or</u> EG1311BE Design and Make	4
DTK1234 Design Thinking	4	MA1511 Engineering Calculus	2
MA1513 Linear Algebra with Differential Equations	2	CE2407B Introduction to Numerical Methods for Engineers	2
CE2407A Uncertainty Analysis for Engineers	2	Elective 1 for Second Major (from List I)	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
IPM2105 Structural Systems	4	IPM2106 Mechanical and Electrical Systems	4
EE2211 Introduction to Machine Learning <u>or</u> EE2213 Introduction to Artificial Intelligence	4	ES2631 Critique and Communication of Thinking and Design	4
PF1101A Project Management and Finance	4	CDE3301 Ideas to Proof-of-Concept	6
Elective 2 for Second Major (from List I)	4		
Sub-total	24	Sub-total	22

Semester 5	Units	Semester 6 – NOC	Units
CDE3301 Ideas to Proof-of-Concept	6	NOC	
IPM3102 Infrastructure and Facilities Management	4		
IPM3103 Project Finance	4		
CDE2501 Sustainable Systems for Liveable Cities	4		
Sub-total	18	Sub-total	20

Semester 7	Units	Semester 8	Units
CDE4301 Innovation & Design Capstone <u>or</u> CDE4301A Ideas to Start-up	6	CDE4301 Innovation & Design Capstone <u>or</u> CDE4301A Ideas to Start-up	6
IPM4102 Project Execution	4	GE	4
IPM4103 Contract and Procurement Management	4	UE	4
GE	4	UE	4
Sub-total	18	Sub-total	18

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)

Sample study plan – JC-intake students or equivalent

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

Semester 1	Units	Semester 2	Units
IPM1102 Infrastructure and Project Management Law	4	IPM1103I Digitalisation in the Built Environment	4
IPM1104 Built Environment Engineering Principles and Practice	4	IPM2103 Measurement (Building Works)	4
GEA1000 Quantitative Reasoning with Data	4	CE2407B Introduction to Numerical Methods for Engineers	2
DTK1234 Design Thinking	4	RVRC/UTCP course 2 (replaces GE)	4
MA1513 Linear Algebra with Differential Equations	2	Elective 1 for Second Major (from List I)	4
CE2407A Uncertainty Analysis for Engineers	2	CDE3301 Ideas to Proof-of-Concept	6
RVRC/UTCP course 1 (replaces GE)	4		
Sub-total	24	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 – can be used for SEP	Units
IPM2101 Introduction to Building Performance	4	IPM2104 Project Cost Management	4
IPM2102 Construction Technology	4	IPM2106 Mechanical and Electrical Systems	4
IPM2105 Structural Systems	4	EE2211 Introduction to Machine Learning or EE2213 Introduction to Artificial Intelligence	4
PF1101A Project Management and Finance	4	RVRC/UTCP course 4 (replaces ES2631)	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

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
IPM3102 Infrastructure and Facilities Management	4	Elective 3 for Second Major	4
IPM3103 Project Finance	4	Elective 4 for Second Major	4
IPM4102 Project Execution	4	UE	4
IPM4103 Contract and Procurement Management	4	UE	2
EG2401A Engineering Professionalism	2		
Sub-total	24	Sub-total	20

NUS Innovation & Design Programme
College of Design and Engineering

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) – replaces MA511 Engineering Calculus (2 units) and counted as UE (2 units)

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

Sample study plan – 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
IPM1102 Infrastructure and Project Management Law	4	IPM1103I Digitalisation in the Built Environment	4
IPM1104 Built Environment Engineering Principles and Practice	4	IPM2103 Measurement (Building Works)	4
GEA1000 Quantitative Reasoning with Data	4	CE2407B Introduction to Numerical Methods for Engineers	2
DTK1234 Design Thinking	4	RVRC/UTCP course 2 (replaces GE)	4
MA1513 Linear Algebra with Differential Equations	2	Elective 1 for Second Major (from List I)	4
CE2407A Uncertainty Analysis for Engineers	2	CDE3301 Ideas to Proof-of-Concept	6
RVRC/UTCP course 1 (replaces GE)	4	EE2211 Introduction to Machine Learning or EE2213 Introduction to Artificial Intelligence	4
Sub-total	24	Sub-total	28

Semester 3	Units	Semester 4 – NOC	Units
IPM2101 Introduction to Building Performance	4	NOC	
IPM2102 Construction Technology	4		
IPM2105 Structural Systems	4		
PF1101A Project Management and Finance	4		
RVRC/UTCP course 3 (replaces CDE2501)	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
IPM3102 Infrastructure and Facilities Management	4	Elective 2 for Second Major (from List I)	4
IPM3103 Project Finance	4	IPM2104 Project Cost Management	4
IPM4102 Project Execution	4	IPM2106 Mechanical and Electrical Systems	4
IPM4103 Contract and Procurement Management	4	UE	4
RVRC/UTCP course 4 (replaces ES2631)	4	UE	2
Sub-total	26	Sub-total	24

NUS Innovation & Design Programme
College of Design and Engineering

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) – replaces MA511 Engineering Calculus (2 units) and counted as UE (2 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)

Sample study plan – 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	IPM1103I Digitalisation in the Built Environment	4
IPM1104 Built Environment Engineering Principles and Practice	4	CS1010E Programming Methodology	4
GEA1000 Quantitative Reasoning with Data	4	MA1511 Engineering Calculus	2
MA1301 Introductory Mathematics * (UE)	4	CE2407B Introduction to Numerical Methods for Engineers	2
Elective 1 for Second Major (from List I)	4	Elective 2 for Second Major (from List I)	4
		CDE3301 Ideas to Proof-of-Concept	6
		GE	4
Sub-total	20	Sub-total	26

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
IPM2105 Structural Systems	4	IPM2106 Mechanical and Electrical Systems	4
PF1101A Project Management and Finance	4	ES2631 Critique and Communication of Thinking and Design	4
MA1513 Linear Algebra with Differential Equations *	2	EE2211 Introduction to Machine Learning or EE2213 Introduction to Artificial Intelligence	4
CE2407A Uncertainty Analysis for Engineers *	2	Elective 3 for Second Major	4
CDE3301 Ideas to Proof-of-Concept	6		
Sub-total	26	Sub-total	24

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
IPM3102 Infrastructure and Facilities Management	4	Elective 4 for Second Major	4
IPM3103 Project Finance	4	CDE2501 Sustainable Systems for Liveable Cities	4
IPM4102 Project Execution	4	GE	4
IPM4103 Contract and Procurement Management	4		
EG2401A Engineering Professionalism	2		
Sub-total	24	Sub-total	18

* 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 and Make (4 units)
- EG3611P Industrial Attachment (10 units)
- Unrestricted electives (20 units)

Sample study plan – poly-intake students
(for students who are exempted from PF1101A)

Semester 1	Units	Semester 2	Units
IPM1102 Infrastructure and Project Management Law	4	IPM1103I Digitalisation in the Built Environment	4
IPM1104 Built Environment Engineering Principles and Practice	4	CS1010E Programming Methodology	4
GEA1000 Quantitative Reasoning with Data	4	EG1311 Design and Make or EG1311BE Design and Make	4
DTK1234 Design Thinking	4	MA1511 Engineering Calculus	2
MA1301 Introductory Mathematics * (UE)	4	CE2407B Introduction to Numerical Methods for Engineers	2
		Elective 1 for Second Major (from List I)	4
		CDE3301 Ideas to Proof-of-Concept	6
Sub-total	20	Sub-total	26

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
IPM2105 Structural Systems	4	IPM2106 Mechanical and Electrical Systems	4
MA1513 Linear Algebra with Differential Equations	2	ES2631 Critique and Communication of Thinking and Design	4
CE2407A Uncertainty Analysis for Engineers	2	EE2211 Introduction to Machine Learning or EE2213 Introduction to Artificial Intelligence	4
Elective 2 for Second Major (from List I)	4	GE	4
CDE3301 Ideas to Proof-of-Concept	6		
Sub-total	26	Sub-total	24

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
IPM3102 Infrastructure and Facilities Management	4	Elective 3 for Second Major	4
IPM3103 Project Finance	4	Elective 4 for Second Major	4
IPM4102 Project Execution	4	CDE2501 Sustainable Systems for Liveable Cities	4
IPM4103 Contract and Procurement Management	4	GE	4
EG2401A Engineering Professionalism	2		
Sub-total	24	Sub-total	22

* 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:

- PF1101A Project Management and Finance (4 units)
- EG3611P Industrial Attachment (10 units)
- Unrestricted electives (20 units)