

INDUSTRIAL AND SYSTEMS ENGINEERING – SPECIALISATION + SPECIALISATION



FOR COHORT AY2025/2026 ONWARDS	UNITS
Common Curriculum	40
CDE2501 Liveable Cities	4
Cultures and Connections	4
Communities and Engagement	4
ES2631 Critique and Communication of Thinking and Design	4
CS1010E Programming Methodology	4
IE1111R Industrial and Systems Engineering Principles & Practice I	4
DTK1234 Design Thinking	4
EG1311/EG1311BE Design and Make	4
EE2211 Introduction to Machine Learning	4
PF1101A Project Management and Finance	4
Major Requirements	80
MA1508E Linear Algebra for Engineering	4
MA1511 Engineering Calculus	2
MA1512 Differential Equations for Engineering	2
EG2401A Engineering Professionalism	2
EG3611A Industrial Attachment	10
IE1111R Industrial & Systems Engineering Principles & Practice I	4
IE2111 Industrial & Systems Engineering Principles & Practice II	4
IE2100 Probability Models with Applications	4
IE2110 Operations Research I	4
IE2141 Systems Thinking and Dynamics	4
IE3100R Systems Design Project	8
IE3101 Statistics for Engineering Applications	4
IE3110R Simulation	4
CS2040 Data Structures and Algorithms	4
ST2334 Probability and Statistics	4
ISE Technical Electives	16
Specialisation in Supply Chain Analytics (click here for details)	20
IE4100R BEng Dissertation	8
Select any three elective courses from the list below:	12
• IE3120 Manufacturing Logistics	
• IE4108 Analytics for E-Commerce	
• IE4220 Supply Chain Modeling	
• IE4210 Operations Research II	
• IE4214 Revenue Management & Pricing Analytics	
• IE4229 Selected Topics in Logistics	
• IE5108 Facility Layout & location	
• IE5202 Applied Forecasting Methods	
• IE5221 Transportation Modelling and Economics	
Specialisation in Analytics and Decision Intelligence (click here for details)	20
IE4100R BEng Dissertation	8
Select any three elective courses from the list below:	12
• IE4210 Operations Research II	
• IE4211 Modelling and Analytics	
• IE4213 Learning from Data	
• IE4243 Decision Modelling and Risk Analysis	
• IE5202 Applied Forecasting Methods	
• IE5205 Healthcare Systems and Analytics	
• IE5231 Statistical Methods for Process Design and Control	
• IE5603 Statistical Learning in Engineering II	
• IE5604 Practical Deep Learning Methods for Decision Making	
TOTAL	160

- In the event of double counting, students are required to make up the remaining Units for graduation with unrestricted electives. Refer to NUS double counting policy for [Specialisation](#).

- Students who read two specialisations require to read 20 Units of courses which include a BEng Dissertation (IE4100R) in the first specialisation and read 20 Units of courses from the list of elective courses (excluding IE4100R) in the second specialisation.

INDUSTRIAL AND SYSTEMS ENGINEERING – SPECIALISATION + SPECIALISATION



FOR COHORT AY2025/2026 ONWARDS	UNITS
Common Curriculum	40
CDE2501 Liveable Cities	4
Cultures and Connections	4
Communities and Engagement	4
ES2631 Critique and Communication of Thinking and Design	4
CS1010E Programming Methodology	4
IE1111R Industrial and Systems Engineering Principles & Practice I	4
DTK1234 Design Thinking	4
EG1311/EG1311BE Design and Make	4
EE2211 Introduction to Machine Learning	4
PF1101A Project Management and Finance	4
Major Requirements	80
MA1508E Linear Algebra for Engineering	4
MA1511 Engineering Calculus	2
MA1512 Differential Equations for Engineering	2
EG2401A Engineering Professionalism	2
EG3611A Industrial Attachment	10
IE1111R Industrial & Systems Engineering Principles & Practice I	4
IE2111 Industrial & Systems Engineering Principles & Practice II	4
IE2100 Probability Models with Applications	4
IE2110 Operations Research I	4
IE2141 Systems Thinking and Dynamics	4
IE3100R Systems Design Project	8
IE3101 Statistics for Engineering Applications	4
IE3110R Simulation	4
CS2040 Data Structures and Algorithms	4
ST2334 Probability and Statistics	4
ISE Technical Electives	16
Specialisation in Sustainability Analytics (click here for details)	20
Option A: Pass IE4100R BEng Dissertation (8 Units) and three electives in Basket A and Basket B with at least one elective from each basket.	
Option B: Pass five electives in Basket A and Basket B with at least two electives from each basket.	
IE4100R BEng Dissertation	
Basket A Electives	
• IE4211 Modelling and Analytics	
• IE4213 Learning from Data	
• IE5202 Applied Forecasting Methods	
Basket B Electives	
• IE4246 Decarbonisation: Principles, Metrics and Cases	
• IE4248 Energy and Green Economy	
• IE5207 Energy Systems Modelling and Market Mechanisms	
Specialisation in Analytics and Decision Intelligence (click here for details)	20
IE4100R BEng Dissertation	8
Select any three elective courses from the list below:	12
• IE4210 Operations Research II	
• IE4211 Modelling and Analytics	
• IE4213 Learning from Data	
• IE4243 Decision Modelling and Risk Analysis	
• IE5202 Applied Forecasting Methods	
• IE5205 Healthcare Systems and Analytics	
• IE5231 Statistical Methods for Process Design and Control	
• IE5603 Statistical Learning in Engineering II	
• IE5604 Practical Deep Learning Methods for Decision Making	
TOTAL	160

- In the event of double counting, students are required to make up the remaining Units for graduation with unrestricted electives. Refer to NUS double counting policy for [Specialisation](#).

- Students who read two specialisations require to read 20 Units of courses which include a BEng Dissertation (IE4100R) in the first specialisation and read 20 Units of courses from the list of elective courses (excluding IE4100R) in the second specialisation.

INDUSTRIAL AND SYSTEMS ENGINEERING – SPECIALISATION + SPECIALISATION



FOR COHORT AY2025/2026 ONWARDS	UNITS
Common Curriculum	40
CDE2501 Liveable Cities	4
Cultures and Connections	4
Communities and Engagement	4
ES2631 Critique and Communication of Thinking and Design	4
CS1010E Programming Methodology	4
IE1111R Industrial and Systems Engineering Principles & Practice I	4
DTK1234 Design Thinking	4
EG1311/EG1311BE Design and Make	4
EE2211 Introduction to Machine Learning	4
PF1101A Project Management and Finance	4
Major Requirements	80
MA1508E Linear Algebra for Engineering	4
MA1511 Engineering Calculus	2
MA1512 Differential Equations for Engineering	2
EG2401A Engineering Professionalism	2
EG3611A Industrial Attachment	10
IE1111R Industrial & Systems Engineering Principles & Practice I	4
IE2111 Industrial & Systems Engineering Principles & Practice II	4
IE2100 Probability Models with Applications	4
IE2110 Operations Research I	4
IE2141 Systems Thinking and Dynamics	4
IE3100R Systems Design Project	8
IE3101 Statistics for Engineering Applications	4
IE3110R Simulation	4
CS2040 Data Structures and Algorithms	4
ST2334 Probability and Statistics	4
ISE Technical Electives	16
Specialisation in Sustainability Analytics (click here for details)	20
Option A: Pass IE4100R BEng Dissertation and three electives in Basket A and Basket B with at least one elective from each basket.	
Option B: Pass five electives in Basket A and Basket B with at least two electives from each basket.	
IE4100R BEng Dissertation	
Basket A Electives	
• IE4211 Modelling and Analytics	
• IE4213 Learning from Data	
• IE5202 Applied Forecasting Methods	
Basket B Electives	
• IE4246 Decarbonisation: Principles, Metrics and Cases	
• IE4248 Energy and Green Economy	
• IE5207 Energy Systems Modelling and Market Mechanisms	
Specialisation in Supply Chain Analytics (click here for details)	20
IE4100R BEng Dissertation	8
Select any three elective courses from the list below:	12
• IE3120 Manufacturing Logistics	
• IE4108 Analytics for E-Commerce	
• IE4220 Supply Chain Modeling	
• IE4210 Operations Research II	
• IE4214 Revenue Management & Pricing Analytics	
• IE4229 Selected Topics in Logistics	
• IE5108 Facility Layout & location	
• IE5202 Applied Forecasting Methods	
• IE5221 Transportation Modelling and Economics	
TOTAL	160

- In the event of double counting, students are required to make up the remaining Units for graduation with unrestricted electives. Refer to NUS double counting policy for [Specialisation](#).

- Students who read two specialisations require to read 20 Units of courses which include a BEng Dissertation (IE4100R) in the first specialisation and read 20 Units of courses from the list of elective courses (excluding IE4100R) in the second specialisation.

INDUSTRIAL AND SYSTEMS ENGINEERING – MINOR + SPECIALISATION



FOR COHORT AY2025/2026 ONWARDS	UNITS
Common Curriculum	40
CDE2501 Liveable Cities	4
Cultures and Connections	4
Communities and Engagement	4
ES2631 Critique and Communication of Thinking and Design	4
CS1010E Programming Methodology	4
IE1111R Industrial and Systems Engineering Principles & Practice I	4
DTK1234 Design Thinking	4
EG1311/EG1311BE Design and Make	4
EE2211 Introduction to Machine Learning	4
PF1101A Project Management and Finance	4
Major Requirements	80
MA1508E Linear Algebra for Engineering	4
MA1511 Engineering Calculus	2
MA1512 Differential Equations for Engineering	2
EG2401A Engineering Professionalism	2
EG3611A Industrial Attachment	10
IE1111R Industrial & Systems Engineering Principles & Practice I	4
IE2111 Industrial & Systems Engineering Principles & Practice II	4
IE2100 Probability Models with Applications	4
IE2110 Operations Research I	4
IE2141 Systems Thinking and Dynamics	4
IE3100R Systems Design Project	8
IE3101 Statistics for Engineering Applications	4
IE3110R Simulation	4
CS2040DE Data Structures and Algorithms	4
ST2334 Probability and Statistics	4
ISE Technical Electives	16
Minor in Data Engineering (click here for details)	20
EE3801 Data Engineering Principles	4
IT2002 Database Technology and Management <u>or</u> CS2102 Database Systems	4
IE4213 Learning from Data	4
CS4225 Big Data Systems for Data Science	4
Elective Course	4
Specialisation in Analytics and Decision Intelligence (click here for details)	20
IE4100R BEng Dissertation	8
Select any three elective courses from the list below:	12
• IE4210 Operations Research II	
• IE4211 Modelling and Analytics	
• IE4213 Learning from Data	
• IE4215 Machine Learning for Industrial Engineering	
• IE4243 Decision Modelling and Risk Analysis	
• IE4280 Generative AI and Web3 in Industrial Engineering	
• IE5202 Applied Forecasting Methods	
• IE5205 Healthcare Systems and Analytics	
• IE5231 Statistical Methods for Process Design and Control	
• IE5603 Statistical Learning in Engineering II	
• IE5604 Practical Deep Learning Methods for Decision Making	
TOTAL	160

* In the event of double counting, students are required to make up the remaining Units for graduation with unrestricted electives. Refer to NUS double counting policy for [Minor](#) and [Specialisation](#).

INDUSTRIAL AND SYSTEMS ENGINEERING – MINOR + SPECIALISATION



FOR COHORT AY2025/2026 ONWARDS	UNITS
Common Curriculum	40
CDE2501 Liveable Cities	4
Cultures and Connections	4
Communities and Engagement	4
ES2631 Critique and Communication of Thinking and Design	4
CS1010E Programming Methodology	4
IE1111R Industrial and Systems Engineering Principles & Practice I	4
DTK1234 Design Thinking	4
EG1311/EG1311BE Design and Make	4
EE2211 Introduction to Machine Learning	4
PF1101A Project Management and Finance	4
Major Requirements	80
MA1508E Linear Algebra for Engineering	4
MA1511 Engineering Calculus	2
MA1512 Differential Equations for Engineering	2
EG2401A Engineering Professionalism	2
EG3611A Industrial Attachment	10
IE1111R Industrial & Systems Engineering Principles & Practice I	4
IE2111 Industrial & Systems Engineering Principles & Practice II	4
IE2100 Probability Models with Applications	4
IE2110 Operations Research I	4
IE2141 Systems Thinking and Dynamics	4
IE3100R Systems Design Project	8
IE3101 Statistics for Engineering Applications	4
IE3110R Simulation	4
CS2040DE Data Structures and Algorithms	4
ST2334 Probability and Statistics	4
ISE Technical Electives	16
Minor in Management (click here for details)	20
Level-1000 courses (Choose any two):	8
MNO1706X Organisational Behaviour <i>or</i> PL3239 Industrial & Organisational Psychology	
ACC1701X Accounting for Decision Makers <i>or</i> EC2204 Financial Accounting for Economists	
MKT1705X Principles of Marketing	
BSP1702X Legal Environment of Business	
BSP1703/X Managerial Economics <i>or</i> EC1101E Introduction to Economic Analysis	
DAO1704X Decision Analytics using Spreadsheets	
Level-2000 and Level-3000 courses** (3 courses)	12
- 2 Level-2000 courses	
- 1 Level-3000 course	
- Maximum 2 courses in any one of the 9 areas	
Specialisation in Supply Chain Analytics (click here for details)	20
IE4100R BEng Dissertation	8
Select any three elective courses from the list below:	12
• IE3120 Manufacturing Logistics	
• IE4108 Analytics for E-Commerce	
• IE4220 Supply Chain Modeling	
• IE4210 Operations Research II	
• IE4214 Revenue Management & Pricing Analytics	
• IE4229 Selected Topics in Logistics	
• IE5108 Facility Layout & location	
• IE5202 Applied Forecasting Methods	
• IE5221 Transportation Modeling and Economics	
TOTAL	160

* In the event of double counting, students are required to make up the remaining Units for graduation with unrestricted electives. Refer to NUS double counting policy for [Minor](#) and [Specialisation](#).

INDUSTRIAL AND SYSTEMS ENGINEERING – MINOR + MINOR



FOR COHORT AY2025/2026 ONWARDS	UNITS
Common Curriculum	40
CDE2501 Liveable Cities	4
Cultures and Connections	4
Communities and Engagement	4
ES2631 Critique and Communication of Thinking and Design	4
CS1010E Programming Methodology	4
IE1111R Industrial and Systems Engineering Principles & Practice I	4
DTK1234 Design Thinking	4
EG1311/EG1311BE Design and Make	4
EE2211 Introduction to Machine Learning	4
PF1101A Project Management and Finance	4
Major Requirements	80
MA1508E Linear Algebra for Engineering	4
MA1511 Engineering Calculus	2
MA1512 Differential Equations for Engineering	2
EG2401A Engineering Professionalism	2
EG3611A Industrial Attachment	10
IE1111R Industrial & Systems Engineering Principles & Practice I	4
IE2111 Industrial & Systems Engineering Principles & Practice II	4
IE2100 Probability Models with Applications	4
IE2110 Operations Research I	4
IE2141 Systems Thinking and Dynamics	4
IE3100R Systems Design Project	8
IE3101 Statistics for Engineering Applications	4
IE3110R Simulation	4
CS2040DE Data Structures and Algorithms	4
ST2334 Probability and Statistics	4
ISE Technical Electives	16
Minor in Economics (click here for details)	20
EC1101E Introduction to Economic Analysis	4
EC2101 Microeconomic Analysis I and/or EC2102 Macroeconomic Analysis I	4
EC-coded or EC-recognised courses (Maximum 4 units of EC-recognised course)	12
Minor in Quantitative Finance (click here for details)	20
QF1100 Introduction to Quantitative Finance	4
ST2334 Probability and Statistics	4
QF2104 Fundamentals of Quantitative Finance	4
QF3101 Investment Instruments and Risk Management	4
Pass one of the following courses:	4
• QF3103 Advanced Mathematics in Quantitative Finance	
• ST3131 Regression Analysis	
• EC3303 Econometrics I	
• FIN3702 Investment Analysis and Portfolio Management	
• FIN3716 Financial Modelling	
TOTAL	160

* In the event of double counting, students are required to make up the remaining units for graduation with unrestricted electives. Refer to NUS double counting policy for [Minor](#).



INDUSTRIAL AND SYSTEMS ENGINEERING – SECOND MAJOR

FOR COHORT AY2025/2026 ONWARDS	UNITS
Common Curriculum	40
CDE2501 Liveable Cities	4
Cultures and Connections	4
Communities and Engagement	4
ES2631 Critique and Communication of Thinking and Design	4
CS1010E Programming Methodology	4
IE1111R Industrial and Systems Engineering Principles & Practice I	4
DTK1234 Design Thinking	4
EG1311/EG1311BE Design and Make	4
EE2211 Introduction to Machine Learning	4
PF1101A Project Management and Finance	4
Major Requirements	80
MA1508E Linear Algebra for Engineering	4
MA1511 Engineering Calculus	2
MA1512 Differential Equations for Engineering	2
EG2401A Engineering Professionalism	2
EG3611A Industrial Attachment	10
IE1111R Industrial & Systems Engineering Principles & Practice I	4
IE2111 Industrial & Systems Engineering Principles & Practice II	4
IE2100 Probability Models with Applications	4
IE2110 Operations Research I	4
IE2141 Systems Thinking and Dynamics	4
IE3100R Systems Design Project	8
IE3101 Statistics for Engineering Applications	4
IE3110R Simulation	4
CS2040DE Data Structures and Algorithms	4
ST2334 Probability and Statistics	4
ISE Technical Electives	16
Second Major in Computing (Design & Engineering) (click here for details)	40
CS1010E Programming Methodology	4
EE2211 Introduction to Machine Learning	4
CS2030DE Programming Methodology II	4
CS2040DE Data Structures and Algorithms	4
CS2100DE Computer Organisation	4
CS2103DE Software Engineering	4
Elective Courses	16
TOTAL	160

* In the event of double counting, students are required to make up the remaining Units for graduation with unrestricted electives. Refer to NUS double counting policy for [Second Major](#).