INDUSTRIAL AND SYSTEMS ENGINEERING – SPECIALISATION + SPECIALISATION

FOR COHORT AY2026/2027	UNITS
Common Curriculum	**40**
CDE2501 Sustainable Systems for 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
IE3103 Foundations of Analytics and Decision Intelligence	4
CS2040DE Data Structures and Algorithms	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	
• IE4215 Machine Learning for Industrial Engineering	
• IE4243 Decision Modelling and Risk Analysis	
• IE4280 Generative AI and FinTech Technologies	
• 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 AY2026/2027	UNITS
Common Curriculum	**40**
CDE2501 Sustainable Systems for Liveable Cities	4
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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
IE3103 Foundations of Analytics and Decision Intelligence	4
CS2040DE Data Structures and Algorithms	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	
• IE5210 Value Chain Carbon Accounting and Sustainability	
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 – SPECIALISATION + SPECIALISATION

FOR COHORT AY2026/2027	UNITS
Common Curriculum	**40**
CDE2501 Sustainable Systems for 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
IE3103 Foundations of Analytics and Decision Intelligence	4
CS2040DE Data Structures and Algorithms	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	
• IE5210 Value Chain Carbon Accounting and Sustainability	
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 FinTech Technologies	
• 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 – MINOR + SPECIALISATION

FOR COHORT AY2026/2027	UNITS
Common Curriculum	**40**
CDE2501 Sustainable Systems for 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
IE3103 Foundations of Analytics and Decision Intelligence	4
CS2040DE Data Structures and Algorithms	4
ISE Technical Electives	16
Minor in Data Engineering (click here for details)	**20**
EE3801 Data Engineering Principles	4
IT2002 Database Technology and Management or 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 AY2026/2027	UNITS
Common Curriculum	**40**
CDE2501 Sustainable Systems for 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
IE3103 Foundations of Analytics and Decision Intelligence	4
CS2040DE Data Structures and Algorithms	4
ISE Technical Electives	16
Minor in Management (click here for details)	**20**
Level-1000 courses (Choose any two):	8
MNO1706X Organisational Behaviour *or* PL3239 Industrial & Organisational Psychology	
ACC1701X Accounting for Decision Makers *or* EC2204 Financial Accounting for Economists	
MKT1705X Principles of Marketing	
BSP1702X Legal Environment of Business	
BSP1703/X Managerial Economics *or* 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 AY2026/2027	UNITS
Common Curriculum	**40**
CDE2501 Sustainable Systems for 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
IE3103 Foundations of Analytics and Decision Intelligence	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 AY2026/2027	UNITS
Common Curriculum	**40**
CDE2501 Sustainable Systems for 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
IE3103 Foundations of Analytics and Decision Intelligence	4
CS2040DE Data Structures and Algorithms	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.