

**Bachelor of Engineering (Industrial & Systems Engineering)**  
**Degree Requirements for Students Matriculated in AY2026/2027**

| <b>MODULAR REQUIREMENTS</b>                                                                      | <b>Units</b> |
|--------------------------------------------------------------------------------------------------|--------------|
| <b>COMMON CURRICULUM REQUIREMENTS</b> - see Annex A                                              | <b>40</b>    |
| <b>General Education (GE) Courses</b>                                                            | <b>24</b>    |
| Singapore Studies - CDE2501 Sustainable Systems for Liveable Cities                              | 4            |
| Cultures and Connections - GEC                                                                   | 4            |
| Communities and Engagement - GEN                                                                 | 4            |
| Critique and Expression - ES2631 Critique and Communication of Thinking and Design               | 4            |
| Data Literacy - IE1111R Industrial & Systems Engineering Principles & Practice I <sup>[1]</sup>  | 4            |
| Digital Literacy - CS1010E Programming Methodology                                               | 4            |
| <b>CDE Common Courses</b>                                                                        | <b>16</b>    |
| DTK1234 Design Thinking                                                                          | 4            |
| EG1311/EG1311BE Design and Make                                                                  | 4            |
| EE2211 Introduction to Machine Learning <u>or</u> EE2213 Introduction to Artificial Intelligence | 4            |
| PF1101A Project Management and Finance                                                           | 4            |
| <b>MAJOR REQUIREMENTS</b>                                                                        | <b>80</b>    |
| <b>Engineering Core</b>                                                                          | <b>20</b>    |
| MA1511 Engineering Calculus                                                                      | 2            |
| MA1512 Differential Equations for Engineering                                                    | 2            |
| MA1508E Linear Algebra for Engineering                                                           | 4            |
| EG2401A Engineering Professionalism                                                              | 2            |
| EG3611A Industrial Attachment <sup>[2]</sup> (or equivalent)                                     | 10           |
| <b>ISE Discipline Core</b>                                                                       | <b>60</b>    |
| IE1111R Industrial & Systems Engineering Principles & Practice I <sup>[1]</sup>                  | 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 – see Annex B                                                            | 16           |
| <b>UNRESTRICTED ELECTIVES (UE) REQUIREMENTS</b>                                                  | <b>40</b>    |
| <a href="#">Build Your Own Degree</a>                                                            |              |
| <b>TOTAL</b>                                                                                     | <b>160</b>   |

<sup>[1]</sup> IE1111R is double counted to fulfill both the ISE major requirements and data literacy pillar in Common Curriculum. ISE students will need to read an additional 4 Units of UE to meet the minimum 160 Units graduation requirements.

<sup>[2]</sup> Students may take up to 20 Units of credit-bearing internships, of which up to 10 Units can be used to fulfil the major internship requirement and the remaining will be counted towards Unrestricted Electives. Poly-Direct Entry students receive Advanced Placement Credits for EG3611P Industrial Attachment (10 units), but still have the option to take up to 10 units of unit-bearing internships that are counted towards Unrestricted Electives.

<https://cde.nus.edu.sg/undergraduate/engineering-internships/student-info/>

Students should not read more than 60 Units of level 1000 courses towards their degree requirements.

## **Annex A**

|                                 | <b>BEng.</b>                                                                                                            |
|---------------------------------|-------------------------------------------------------------------------------------------------------------------------|
| <b>Common Curriculum Pillar</b> | <b>Basket of Courses<sup>[3]</sup></b>                                                                                  |
| Singapore Studies               | CDE2501 Sustainable Systems for Liveable Cities                                                                         |
| Cultures and Connections        | Students may read any course from the basket of courses approved by the NUS General Education Committee for this pillar |
| Communities and Engagement      | Students may read any course from the basket of courses approved by the NUS General Education Committee for this pillar |
| Critique and Expression         | ES2631 Critique and Communication of Thinking and Design                                                                |
| Digital Literacy                | CS1010% Programming Methodology                                                                                         |
| Data Literacy                   | IE1111R Industrial & Systems Engineering Principles & Practice I                                                        |
| Design Thinking                 | DTK1234 Design Thinking                                                                                                 |
| Maker Space                     | EG1311/EG1311BE Design and Make                                                                                         |
| Artificial Intelligence         | EE2211 Introduction to Machine Learning <u>or</u><br>EE2213 Introduction to Artificial Intelligence                     |
| Project Management              | PF1101A Project Management and Finance                                                                                  |

<sup>[3]</sup> The listing of courses is expected to grow and evolve over time, to suit curricular needs.

## **Annex B**

| List of Technical Electives <sup>[3]</sup>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>IE3105 Fundamentals of Systems Engineering and Architecture<br/>IE3120 Manufacturing Logistics<br/>IE4100R BEng Dissertation (8 Units)<br/>IE4108 Analytics for E-Commerce<br/>IE4210 Operations Research II<br/>IE4211 Modelling and Analytics<br/>IE4213 Learning from Data<br/>IE4214 Revenue Management and Pricing Analytics<br/>IE4215 Machine Learning for Industrial Engineering<br/>IE4220 Supply Chain Modeling<br/>IE4221 Transportation Demand Modelling and Economics<br/>IE4229 Selected Topics in Logistics<br/>IE4239 Selected Topics in Quality Engineering<br/>IE4242 Cost Analysis and Management<br/>IE4243 Decision Modeling and Risk Analysis<br/>IE4246 Decarbonisation: Principles, Metrics and Cases<br/>IE4248 Energy and Green Economy<br/>IE4259 Selected Topics in Systems Engineering<br/>IE4280 Generative AI and FinTech Technologies<br/>IE4299 Selected Topics in Industrial Engineering<br/>CS2103DE Software Engineering<br/>IE5108 Facility Layout and Location<br/>IE5121 Quality Planning and Management<br/>IE5202 Applied Forecasting Methods<br/>IE5205 Healthcare Systems and Analytics<br/>IE5206 Energy and Sustainability: A Systems Approach<br/>IE5207 Energy Systems Modelling and Market Mechanisms<br/>IE5208 Systems Approach to Project Management<br/>IE5210 Value Chain Carbon Accounting and Sustainability<br/>IE5213 Service Innovation and Management<br/>IE5221 Transportation Modeling and Economics<br/>IE5231 Statistical Methods for Process Design and Control<br/>IE5301 Human Factors in Engineering &amp; Design<br/>IE5603 Statistical Learning in Engineering II<br/>IE5604 Practical Deep Learning Methods for Decision Making<br/>MT5023G Technology-Based Entrepreneurial Strategy</p> |

Only students with level 4 standing and GPA  $\geq 3.5$  are allowed to read level-5000 courses. A maximum of four level-5000 courses (16 Units) is allowed to count towards Major Requirements.