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

## Bachelor of Computing (Information Security) with Second Major in Innovation & Design

## Cohort AY2025/2026

| Course Requirements | Units |
|---|---|
| **Common Curriculum** | |
| CS1010 Programming Methodology [1] | 4 |
| GE: Critique and Expression [2] | 4 |
| GE: Communities and Engagement [2] | 4 |
| GE: Cultures and Connections [2] | 4 |
| GE: Data Literacy | 4 |
| GE: Singapore Studies [2] | 4 |
| IS1108 Digital and AI Ethics | 4 |
| Interdisciplinary Courses [3] | 8 |
| Elective 1 for Second Major (from List I) [3]<br>(double-counted as Cross-disciplinary Course) | 4 |
| **Sub-total for Common Curriculum** | **40** |
| **Programme Requirements** | |
| CS1231S Discrete Structures | 4 |
| CS2030 Programming Methodology II | 4 |
| CS2040C Data Structures and Algorithms | 4 |
| CS2100 Computer Organisation | 4 |
| CS2101 Effective Communication for Computing Professionals [4] | 4 |
| CS2103T Software Engineering [4] | 4 |
| CS2105 Introduction to Computer Networks | 4 |
| CS2106 Introduction to Operating Systems | 4 |
| CS2107 Introduction to Information Security | 4 |
| CS3235 Computer Security | 4 |
| IS4231 Information Security Management | 4 |
| MA1521 Calculus for Computing | 4 |
| MA1522 Linear Algebra for Computing | 4 |
| ST2334 Probability and Statistics | 4 |
| IFS4205 Information Security Capstone Project<br>or CS4238 Computer Security Practice and IFS4103 Penetration Testing Practice | 8 |
| Programme electives | 8 |
| Computing requirements [5] | 12 |
| **Sub-total for Programme Requirements** | **84** |
| **Unrestricted Electives** | |
| CDE3301 Ideas to Proof-of-Concept (over 2 consecutive semesters) [3] | 12 |
| CDE4301 Innovation & Design Capstone or CDE4301A Ideas to Start-up<br>(over 2 consecutive semesters) | 12 |
| Other electives for Second Major [3] | 12 |
| **Sub-total for Unrestricted Electives** | **36** |
| **Total** | **160** |

*(updated 12 July 2025)*

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Notes:

[1] Digital Literacy is satisfied by CS1010.

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

[3] Students in this Second Major are highly recommended to read DTK1234 Design Thinking or EG1311 Design and Make as an Interdisciplinary Course if they are planning to read CDE2300 Product Design and Innovation or CDE2310 Fundamentals of Systems Design, respectively. DTK1234 should be read before CDE2300 and EG1311 before CDE2310.

Students should clear at least one elective course from List I prior to CDE3301.

[4] Students taking CS2103T must take CS2101 in the same semester.

[5] Students are required to satisfy at least 6 units of Industrial Experience Requirement. Those with GPA of 4.00 or higher may opt to replace Industry Experience Requirement with CP4101 B.Comp. Dissertation.

*(updated 12 July 2025)*

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## Recommended semester schedule

(for students who opt for vacation internship)

| Semester 1 | Units | Semester 2 | Units |
|---|---|---|---|
| MA1521 Calculus for Computing | 4 | MA1522 Linear Algebra for Computing | 4 |
| CS1010 Programming Methodology | 4 | ST2334 Probability and Statistics | 4 |
| CS1231S Discrete Structures | 4 | CS2030 Programming Methodology II | 4 |
| IS1108 Digital and AI Ethics | 4 | CS2040C Data Structures and Algorithms | 4 |
| Interdisciplinary Course 1 * | 4 | CS2100 Computer Organisation | 4 |
| | | Elective 1 for Second Major (from List I) | 4 |
| **Sub-total** | **20** | **Sub-total** | **24** |

| Semester 3 | Units | Semester 4 | Units |
|---|---|---|---|
| CS2105 Introduction to Computer Networks | 4 | CS2101 Effective Communication for Computing Professionals | 4 |
| CS2106 Introduction to Operating Systems | 4 | CS2103T Software Engineering | 4 |
| CS2107 Introduction to Information Security | 4 | CS3235 Computer Security | 4 |
| GE | 4 | GE | 4 |
| Elective 2 for Second Major (from List I) | 4 | CDE3301 Ideas to Proof-of-Concept | 6 |
| **Sub-total** | **20** | **Sub-total** | **22** |

| Summer vacation between Semesters 4 and 5 | Units |
|---|---|
| CP3200 Internship | 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 |
| IFS4205 Information Security Capstone Project | 8 | Elective 4 for Second Major | 4 |
| GE | 4 | Computing course 1 | 4 |
| GE | 4 | Interdisciplinary Course 2 | 4 |
| | | GE | 4 |
| **Sub-total** | **22** | **Sub-total** | **20** |

| 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 |
| Programme elective 1 | 4 | IS4231 Information Security Management | 4 |
| Computing course 2 | 2 | Programme elective 2 | 4 |
| **Sub-total** | **12** | **Sub-total** | **14** |

* Students are highly recommended to read DTK1234 Design Thinking or EG1311 Design and Make as an Interdisciplinary Course if they are planning to read CDE2300 Product Design and Innovation or CDE2310 Fundamentals of Systems Design as Elective 1 for the Second Major (which can be double-counted as Cross-disciplinary Course).

*(updated 12 July 2025)*

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## Recommended semester schedule

(for students who opt for full-semester internship)

| Semester 1 | Units | Semester 2 | Units |
|---|---|---|---|
| MA1521 Calculus for Computing | 4 | MA1522 Linear Algebra for Computing | 4 |
| CS1010 Programming Methodology | 4 | ST2334 Probability and Statistics | 4 |
| CS1231S Discrete Structures | 4 | CS2030 Programming Methodology II | 4 |
| IS1108 Digital and AI Ethics | 4 | CS2040C Data Structures and Algorithms | 4 |
| Interdisciplinary Course 1 * | 4 | CS2100 Computer Organisation | 4 |
| | | Elective 1 for Second Major (from List I) | 4 |
| **Sub-total** | **20** | **Sub-total** | **24** |

| Semester 3 | Units | Semester 4 | Units |
|---|---|---|---|
| CS2105 Introduction to Computer Networks | 4 | CS2101 Effective Communication for Computing Professionals | 4 |
| CS2106 Introduction to Operating Systems | 4 | CS2103T Software Engineering | 4 |
| CS2107 Introduction to Information Security | 4 | CS3235 Computer Security | 4 |
| GE | 4 | GE | 4 |
| Elective 2 for Second Major (from List I) | 4 | CDE3301 Ideas to Proof-of-Concept | 6 |
| **Sub-total** | **20** | **Sub-total** | **22** |

| Semester 5 | Units | Semester 6 | Units |
|---|---|---|---|
| CDE3301 Ideas to Proof-of-Concept | 6 | CP3880 Advanced Technology Attachment Programme ^ | 12 |
| IFS4205 Information Security Capstone Project | 8 | | |
| GE | 4 | | |
| GE | 4 | | |
| **Sub-total** | **22** | **Sub-total** | **12** |

| 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 |
| Elective 3 for Second Major | 4 | Elective 4 for Second Major | 4 |
| Programme elective 1 | 4 | IS4231 Information Security Management | 4 |
| GE | 4 | Programme elective 2 | 4 |
| Interdisciplinary Course 2 | 4 | | |
| **Sub-total** | **22** | **Sub-total** | **18** |

* Students are highly recommended to read DTK1234 Design Thinking or EG1311 Design and Make as an Interdisciplinary Course if they are planning to read CDE2300 Product Design and Innovation or CDE2310 Fundamentals of Systems Design as Elective 1 for the Second Major (which can be double-counted as Cross-disciplinary Course).

^ Students with GPA of 4.00 or higher after completing 112 units may opt to replace CP3880 with CP4101 in their final year.

*(updated 12 July 2025)*

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## Recommended semester schedule

(for students in year-long NOC programmes)

| Semester 1 | Units | Semester 2 | Units |
|---|---|---|---|
| MA1521 Calculus for Computing | 4 | MA1522 Linear Algebra for Computing | 4 |
| CS1010 Programming Methodology | 4 | ST2334 Probability and Statistics | 4 |
| CS1231S Discrete Structures | 4 | CS2030 Programming Methodology II | 4 |
| IS1108 Digital and AI Ethics | 4 | CS2040C Data Structures and Algorithms | 4 |
| Interdisciplinary Course 1 * | 4 | CS2100 Computer Organisation | 4 |
| | | Elective 1 for Second Major (from List I) | 4 |
| **Sub-total** | **20** | **Sub-total** | **24** |

| Semester 3 | Units | Semester 4 | Units |
|---|---|---|---|
| CS2105 Introduction to Computer Networks | 4 | CS2101 Effective Communication for Computing Professionals | 4 |
| CS2106 Introduction to Operating Systems | 4 | CS2103T Software Engineering | 4 |
| CS2107 Introduction to Information Security | 4 | CS3235 Computer Security | 4 |
| GE | 4 | GE | 4 |
| GE | 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 | |
| IFS4205 Information Security Capstone Project | 8 | | |
| GE | 4 | | |
| GE | 4 | | |
| **Sub-total** | **22** | **Sub-total** | **20** |

| Semester 7 – NOC | Units | Semester 8 | Units |
|---|---|---|---|
| NOC | | IS4231 Information Security Management | 4 |
| | | Programme elective 1 | 4 |
| | | Programme elective 2 | 4 |
| | | Interdisciplinary Course 2 | 4 |
| **Sub-total** | **20** | **Sub-total** | **16** |

* Students are highly recommended to read DTK1234 Design Thinking or EG1311 Design and Make as an Interdisciplinary Course if they are planning to read CDE2300 Product Design and Innovation or CDE2310 Fundamentals of Systems Design as Elective 1 for the Second Major (which can be double-counted as Cross-disciplinary Course).

A year-long NOC programme comprises the following courses (up to 40 units):

- ETP3206L Innovation & Enterprise Internship (12 units) – fulfils Industrial Experience Requirement (12 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)

*(updated 12 July 2025)*

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## Recommended semester schedule

(for students in one-semester NOC programmes)

| Semester 1 | Units | Semester 2 | Units |
|---|---|---|---|
| MA1521 Calculus for Computing | 4 | MA1522 Linear Algebra for Computing | 4 |
| CS1010 Programming Methodology | 4 | ST2334 Probability and Statistics | 4 |
| CS1231S Discrete Structures | 4 | CS2030 Programming Methodology II | 4 |
| IS1108 Digital and AI Ethics | 4 | CS2040C Data Structures and Algorithms | 4 |
| Interdisciplinary Course 1 * | 4 | CS2100 Computer Organisation | 4 |
| | | Elective 1 for Second Major (from List I) | 4 |
| **Sub-total** | **20** | **Sub-total** | **24** |

| Semester 3 | Units | Semester 4 | Units |
|---|---|---|---|
| CS2105 Introduction to Computer Networks | 4 | CS2101 Effective Communication for Computing Professionals | 4 |
| CS2106 Introduction to Operating Systems | 4 | CS2103T Software Engineering | 4 |
| CS2107 Introduction to Information Security | 4 | CS3235 Computer Security | 4 |
| GE | 4 | GE | 4 |
| Elective 2 for Second Major (from List I) | 4 | CDE3301 Ideas to Proof-of-Concept | 6 |
| **Sub-total** | **20** | **Sub-total** | **22** |

| Semester 5 | Units | Semester 6 – NOC | Units |
|---|---|---|---|
| CDE3301 Ideas to Proof-of-Concept | 6 | NOC | |
| IFS4205 Information Security Capstone Project | 8 | | |
| GE | 4 | | |
| GE | 4 | | |
| **Sub-total** | **22** | **Sub-total** | **20** |

| 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 |
| Programme elective 1 | 4 | IS4231 Information Security Management | 4 |
| Interdisciplinary Course 2 | 4 | Programme elective 2 | 4 |
| GE | 4 | | |
| **Sub-total** | **18** | **Sub-total** | **14** |

* Students are highly recommended to read DTK1234 Design Thinking or EG1311 Design and Make as an Interdisciplinary Course if they are planning to read CDE2300 Product Design and Innovation or CDE2310 Fundamentals of Systems Design as Elective 1 for the Second Major (which can be double-counted as Cross-disciplinary Course).

A one-semester NOC programme comprises the following courses (up to 20 units):

- ETP3201S Innovation & Enterprise Internship (12 units) – fulfils Industrial Experience Requirement (12 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)

*(updated 12 July 2025)*