Innovation & Design Programme
NUS College of Design and Engineering

Bachelor of Computing (Computer Science) with Second Major in Innovation & Design

Cohort AY2024/2025

Course Requirements	Units
Common Curriculum	
CS1101S Programming Methodology [1]	4
ES2660 Communicating in the Information Age [1]	4
GE: Data Literacy [2]	4
GE: Communities and Engagement [2]	4
GE: Cultures and Connections [2]	4
GE: Singapore Studies [2]	4
IS1108 Digital Ethics and Data Privacy	4
Interdisciplinary Courses [3]	8
Group A course for Second Major [3] (double-counted as Cross-disciplinary Course)	4
Sub-total for Common Curriculum	**40**
Programme Requirements	
CS1231S Discrete Structures	4
CS2030S Programming Methodology II	4
CS2040S Data Structures and Algorithms	4
CS2100 Computer Organisation	4
CS2101 Effective Communication for Computing Professionals [4]	4
CS2103T Software Engineering [4]	4
CS2106 Introduction to Operating Systems	4
CS2109S Introduction to AI and Machine Learning	4
CS3230 Design and Analysis of Algorithms	4
MA1521 Calculus for Computing	4
MA1522 Linear Algebra for Computing	4
ST2334 Probability and Statistics	4
Computer Science Breadth and Depth courses	32
Sub-total for Programme Requirements	**80**
Unrestricted Electives	
Group B course for Second Major	4
Group C course for Second Major (Innovation & Enterprise electives)	8
CDE3301 Ideas to Proof-of-Concept (over 2 consecutive semesters)	12
CDE4301 Innovation & Design Capstone or CDE4301A Ideas to Start-up (over 2 consecutive semesters)	12
Other unrestricted electives	4
Sub-total for Unrestricted Electives	**40**
Total	**160**

(updated 29 June 2024)

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Notes:

[1] Digital Literacy and Critique and Expression pillars are satisfied by CS1101S and ES2660, respectively.

[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 before taking the Group A course.

[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.

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Recommended semester schedule

Semester 1	Units	Semester 2	Units
MA1521 Calculus for Computing	4	MA1522 Linear Algebra for Computing	4
CS1101S Programming Methodology	4	CS2030S Programming Methodology II	4
CS1231S Discrete Structures	4	CS2040S Data Structures and Algorithms	4
IS1108 Digital Ethics and Data Privacy	4	CS2100 Computer Organisation	4
Interdisciplinary Course 1 ^	4	Group A/B course for Second Major	4
Sub-total	**20**	**Sub-total**	**20**

Semester 3	Units	Semester 4	Units
CS2101 Effective Communication for Computing Professionals	4	CS2109S Introduction to AI and Machine Learning	4
CS2103T Software Engineering	4	CS3230 Design and Analysis of Algorithms	4
CS2106 Introduction to Operating Systems	4	ES2660 Communicating in the Information Age	4
ST2334 Probability and Statistics	4	GE	4
Group A/B course for Second Major	4	CDE3301 Ideas to Proof-of-Concept	6
Sub-total	**20**	**Sub-total**	**22**

Semester 5	Units	Semester 6 – can be used for SEP or IA	Units
CDE3301 Ideas to Proof-of-Concept	6	Innovation & Enterprise Elective 1	4
Interdisciplinary Course 2	4	Innovation & Enterprise Elective 2	4
GE *	4	CS Breadth / Depth course 1	4
GE *	4	CS Breadth / Depth course 2	4
GE *	4	CS Breadth / Depth course 3	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
CS Breadth / Depth course 4	4	CS Breadth / Depth course 7	4
CS Breadth / Depth course 5	4	CS Breadth / Depth course 8	4
CS Breadth / Depth course 6	4	UE	4
Sub-total	**18**	**Sub-total**	**18**

^ Students in this Second Major are highly recommended to read DTK1234 Design Thinking or EG1311 Design and Make as an Interdisciplinary Course before taking the Group A course.

* Students in UTCP and RVRC will need to overload in Semesters 2 to 4 in order to clear these courses earlier.

(updated 29 June 2024)

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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
CS1101S Programming Methodology	4	CS2030S Programming Methodology II	4
CS1231S Discrete Structures	4	CS2040S Data Structures and Algorithms	4
IS1108 Digital Ethics and Data Privacy	4	CS2100 Computer Organisation	4
Interdisciplinary Course 1 ^	4	Group A/B course for Second Major	4
Sub-total	**20**	**Sub-total**	**20**

Semester 3	Units	Semester 4	Units
CS2101 Effective Communication for Computing Professionals	4	CS2109S Introduction to AI and Machine Learning	4
CS2103T Software Engineering	4	CS3230 Design and Analysis of Algorithms	4
CS2106 Introduction to Operating Systems	4	ES2660 Communicating in the Information Age	4
ST2334 Probability and Statistics	4	GE	4
Group A/B course for Second Major	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	
Interdisciplinary Course 2	4		
GE *	4		
GE *	4		
GE *	4		
Sub-total	**22**	**Sub-total**	**20**

Semester 7 - NOC	Units	Semester 8	Units
NOC		CS Breadth / Depth course 1	4
		CS Breadth / Depth course 2	4
		CS Breadth / Depth course 3	4
		CS Breadth / Depth course 4	4
		UE	2
Sub-total	**18**	**Sub-total**	**18**

^ Students in this Second Major are highly recommended to read DTK1234 Design Thinking or EG1311 Design and Make as an Interdisciplinary Course before taking the Group A course.

* Students in UTCP and RVRC will need to overload in Semesters 2 to 4 in order to clear these courses earlier.

A year-long NOC programme comprises the following courses:

- 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 CS3882 Breakthrough Ideas for Digital Markets (4 units)
- ETP2271 Discovering Resilience and Purpose (2 units) – counted as UE (2 units)
- Entrepreneurship courses (4 or 8 units) – replaces Innovation & Enterprise electives (up to 8 units – students will need to complete additional Innovation & Enterprise Electives in NUS if they are unable to complete 8 units of entrepreneurship courses during NOC)

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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
CS1101S Programming Methodology	4	CS2030S Programming Methodology II	4
CS1231S Discrete Structures	4	CS2040S Data Structures and Algorithms	4
IS1108 Digital Ethics and Data Privacy	4	CS2100 Computer Organisation	4
Interdisciplinary Course 1 ^	4	Group A/B course for Second Major	4
Sub-total	**20**	**Sub-total**	**20**

Semester 3	Units	Semester 4	Units
CS2101 Effective Communication for Computing Professionals	4	CS2109S Introduction to AI and Machine Learning	4
CS2103T Software Engineering	4	CS3230 Design and Analysis of Algorithms	4
CS2106 Introduction to Operating Systems	4	ES2660 Communicating in the Information Age	4
ST2334 Probability and Statistics	4	GE	4
Group A/B course for Second Major	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	
Interdisciplinary Course 2	4		
GE *	4		
GE *	4		
GE *	4		
Sub-total	**22**	**Sub-total**	**22**

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
CS Breadth / Depth course 1	4	CS Breadth / Depth course 4	4
CS Breadth / Depth course 2	4	CS Breadth / Depth course 5	4
CS Breadth / Depth course 3	4	UE	2
Sub-total	**18**	**Sub-total**	**16**

^ Students in this Second Major are highly recommended to read DTK1234 Design Thinking or EG1311 Design and Make as an Interdisciplinary Course before taking the Group A course.

* Students in UTCP and RVRC will need to overload in Semesters 2 to 4 in order to clear these courses earlier.

A one-semester NOC programme comprises the following courses:

- ETP3201L Innovation & Enterprise Internship (12 units) – fulfils Industrial Experience Requirement (12 units)
- ETP3204S Innovation & Enterprise Internship Practicum (4 units) – replaces Innovation & Enterprise Elective 1 (4 units)
- Entrepreneurship course (4 units) – replaces Innovation & Enterprise Elective 2 (4 units)
- ETP2271 Discovering Resilience and Purpose (2 units) – counted as UE (2 units)

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