

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

Cohort AY2022/2023

Modular Requirements	Modular Credits (MCs)
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 Modules ³	8
Group A module for Second Major ³ (double-counted as Cross-disciplinary Module)	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
MA2001 Linear Algebra I	4
ST2334 Probability and Statistics	4
Computer Science Breadth and Depth modules	32
Sub-total for Programme Requirements	80
Unrestricted Electives	
Group B module for Second Major	4
Group C modules for Second Major (Innovation & Enterprise electives)	8
EG3301R DCP Project (over 2 consecutive semesters)	12
EG4301 DCP Dissertation <i>or</i> EG4301A Ideas to Start-up (over 2 consecutive semesters)	12
Other unrestricted electives	4
Sub-total for Unrestricted Electives	40
Total	160

Notes:

- ¹ Digital Literacy and Critique and Expression pillars are satisfied by CS1101S and ES2660, respectively.
- ² Students may read equivalent modules in USP/NUSC, UTCP, and RVRC.
- ³ Students in this Second Major are highly recommended to read DTK1234 Design Thinking or EG1311 Design and Make as an Interdisciplinary Module before taking the Group A module.
- ⁴ Students taking CS2103T must take CS2101 in the same semester.

Recommended semester schedule

Semester 1	MCs	Semester 2	MCs
MA1521 Calculus for Computing	4	MA2001 Linear Algebra I	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 Module 1 ^	4	Group A module for Second Major	4
Sub-total	20	Sub-total	20

Semester 3	MCs	Semester 4	MCs
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 B module for Second Major	4	EG3301R DCP Project	6
Sub-total	20	Sub-total	22

Semester 5	MCs	Semester 6 – can be used for SEP or IA	MCs
EG3301R DCP Project	6	Innovation & Enterprise Elective 1	4
Interdisciplinary Module 2	4	Innovation & Enterprise Elective 2	4
GE *	4	CS Breadth / Depth module 1	4
GE *	4	CS Breadth / Depth module 2	4
GE *	4	CS Breadth / Depth module 3	4
Sub-total	22	Sub-total	20

Semester 7	MCs	Semester 8	MCs
EG4301 DCP Dissertation or EG4301A Ideas to Start-up	6	EG4301 DCP Dissertation or EG4301A Ideas to Start-up	6
CS Breadth / Depth module 4	4	CS Breadth / Depth module 7	4
CS Breadth / Depth module 5	4	CS Breadth / Depth module 8	4
CS Breadth / Depth module 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 Module before taking the Group A module.

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

Recommended semester schedule

(for students in year-long NOC programmes)

Semester 1	MCs	Semester 2	MCs
MA1521 Calculus for Computing	4	MA2001 Linear Algebra I	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 Module 1 ^	4	Group A module for Second Major	4
Sub-total	20	Sub-total	20

Semester 3	MCs	Semester 4	MCs
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 B module for Second Major	4	EG3301R DCP Project	6
Sub-total	20	Sub-total	22

Semester 5	MCs	Semester 6 – NOC	MCs
EG3301R DCP Project	6	NOC	
Interdisciplinary Module 2	4		
GE *	4		
GE *	4		
GE *	4		
Sub-total	22	Sub-total	20

Semester 7 - NOC	MCs	Semester 8	MCs
NOC		CS Breadth / Depth module 1	4
		CS Breadth / Depth module 2	4
		CS Breadth / Depth module 3	4
		CS Breadth / Depth module 4	4
		CS Breadth / Depth module 5	4
Sub-total	20	Sub-total	20

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

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

A year-long NOC programme comprises the following modules:

- TR3201N Entrepreneurship Practicum (8 MCs) – replaces EG4301A (4 MCs out of 12 MCs) and UE (4 MCs)
- TR3202N Start-up Internship Programme (12 MCs) – fulfils Industrial Experience Requirement (12 MCs)
- TR3203N Start-up Case Study and Analysis (8 MCs) – replaces EG4301A (8 MCs out of 12 MCs)
- Entrepreneurship courses (up to 12 MCs) – replaces Innovation & Enterprise electives (up to 8 MCs) while the rest are counted as UE

Recommended semester schedule
(for students in one-semester NOC programmes)

Semester 1	MCs	Semester 2	MCs
MA1521 Calculus for Computing	4	MA2001 Linear Algebra I	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 Module 1 ^	4	Group A module for Second Major	4
Sub-total	20	Sub-total	20

Semester 3	MCs	Semester 4	MCs
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 B module for Second Major	4	EG3301R DCP Project	6
Sub-total	20	Sub-total	22

Semester 5	MCs	Semester 6 – NOC	MCs
EG3301R DCP Project	6	NOC	
Interdisciplinary Module 2	4		
GE *	4		
GE *	4		
GE *	4		
Sub-total	22	Sub-total	20

Semester 7	MCs	Semester 8	MCs
EG4301 DCP Dissertation or EG4301A Ideas to Start-up	6	EG4301 DCP Dissertation or EG4301A Ideas to Start-up	6
CS Breadth / Depth module 1	4	CS Breadth / Depth module 4	4
CS Breadth / Depth module 2	4	CS Breadth / Depth module 5	4
CS Breadth / Depth module 3	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 Module before taking the Group A module.

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

A one-semester NOC programme comprises the following modules:

- TR3202S Start-up Internship Programme (12 MCs) – fulfils Industrial Experience Requirement (12 MCs)
- TR3204 Entrepreneurship Practicum (4 MCs) – replaces Innovation & Enterprise Elective 1
- Entrepreneurship course (4 MCs) – replaces Innovation & Enterprise Elective 2