Briefing on Bachelor of Computing Computer Science 2018/19
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1. Degree Requirements for BComp(CS)
2. General Advice
3. Q&A
Why are you here?
Why are you here?

A. I love CS. It’s what I want.
B. I heard CS is fun and want to try
C. The prospect is good
D. My parents want me to
Degree Requirements (cohort 18/19)
Disclaimer: Information on this set of slides have been simplified to a form suitable for a 60-min presentation, and should not be treated as official degree requirements. Students should always refer to official SoC Website and NUS Bulletin for complete, up-to-date, information.
BComp(CS)
Degree Requirement
(cohort 18/19)

Special Programmes & Double Degree Programmes requirements are slightly different
108 MCs 
Program Requirements

32 MCs 
Unrestricted Electives

20 MCs 
Uni-level Requirements
24 MCs
Breadth & Depth

12 MCs
Industrial Experience

16 MCs
Math & Sci

36 MCs
CS Foundations

8 MCs
Team Project

12 MCs
IT Professionalism
“Programming Fundamentals”

CS Foundations

CS1101S Programming Methodology

CS2030 Programming Methodology II

CS2040 Data Structures & Algorithms
CS Foundations

“Computer Systems

CS1101S Programming Methodology

CS2030 Programming Methodology II

CS2040 Data Structures & Algorithms

CS1101S Programming Methodology

CS2040 Data Structures & Algorithms

CS2100 Computer Organisation

CS2105 Intro. to Computer Networks

CS2106 Intro. to Operating Systems

or
“Theoretical Foundations”

CS Foundations

CS1101S Programming Methodology

CS2030 Programming Methodology II

CS1101S Programming Methodology → CS2040 Data Structures & Algorithms

CS2040 Data Structures & Algorithms → CS2100 Computer Organisation

CS2040 Data Structures & Algorithms → CS2105 Intro. to Computer Networks

CS2105 Intro. to Computer Networks → CS2106 Intro. to Operating Systems

CS2100 Computer Organisation → CS2106 Intro. to Operating Systems

CS2105 Intro. to Computer Networks → CS3230 Design & Analysis of Algorithms

CS3230 Design & Analysis of Algorithms

CS1231 Discrete Structures
“Software Engineering and Practices”
Industrial Experience

- CP3880 ATAP
- CP3200 SIP I
- CP3201 SIP II
- IS4010
- iLead
- NOC
- FYP*
Math and Science

MA1521
Calculus for Computing

MA1101R
Linear Algebra I

ST2334
Probability and Statistics

PC1221
Fundamental of Physics I

or

PC1222
Fundamental of Physics II

or

Science Module
(with A-Level Physics)

If no A-level/H2 Math

MA1301
Introductory Mathematics
Complete $\geq 12$ MCs at Level-4000 or above

Satisfy at least one CS Focus Area: by completing three modules in Area Primaries (at least one at Level-4000 or above)
Algorithms & Theory

- CS1231: Discrete Structures
- CS3230: Design & Analysis of Algorithms
- CS4232: Theory of Computation
- CS4231: Parallel & Distributed Algorithms
- CS4234: Optimisation Algorithms
- ST2334: Prob and Stats
- CS3236: Intro to Info Theory
Artificial Intelligence

- CS1231 Discrete Structures
- CS2040 Data Structures & Algorithms
- CS3243 Intro. to AI
- CS3244 Machine Learning
- CS4244 Knowledge-based Systems
- CS4246 AI Planning & Decision Making

- MA1521 Calculus for Computing
- MA1101R Linear Algebra
- ST2334 Probability and Statistics
Computer Security

CS1101S
Prog. Methodology

CS2105
Intro. to Computer Networks

CS2106
Intro. to Operating Systems

CS2107
Intro. to Info. Security

CS3235
Comp. Security

CS2103
Software Engineering

CS4236
Crypto Theory & Practice

CS4238
Computer Security Practices

CS4239
Software Security

CS1231
Discrete Structures

CS2040
Data Structures & Algorithms
Multimedia Information Retrieval

- CS2040 Data Structures & Algorithms
- CS2030 Programming Methodology II
- CS2108 Intro to Media Computing
- CS3245 Information Retrieval
- CS4347 Sound & Music Computing
- CS4248 Natural Lang. Processing
- CS4242 Social Media Computing
- ST2334 Probability and Statistics
Computer Graphics & Games

- CS2030 Programming Methodology II
- CS2040 Data Structures & Algorithms
- CS3241 Computer Graphics
- CS3242 3D Modelling & Animation
- MA1101R Linear Algebra I
- PC1221 Fundamental of Physics I
- CS4247 Graphics Rendering Techniques
- CS3247 Game Development
- CS4350 Game Dev Project
- MA1521 Calculus for Computing
- CS4247 Graphics Rendering Techniques
Parallel Computing

CS2100
Computer Organisation

CS2106
Intro to OS

CS3211
Parallel & Concurrent Programming

CS3210
Parallel Computing

CS4223
Multi-core Architecture

CS3230
Design & Analysis of Algo

CS4231
Parallel & Distributed Algo
Focus Area Electives

Each area has a list of electives for students who wants to learn more after meeting the focus area requirements.

http://www.comp.nus.edu.sg/undergraduates/cs_cs_focus.html
Breadth & Depth

Complete \( \geq 12 \) MCs at Level-4000 or above

Satisfy at least one CS Focus Area: by completing three modules in Area Primaries (at least one at Level-4000 or above)
Completely unrestricted. Options:

1. Gain broader / deeper knowledge in computing
2. Gain broader knowledge in a non-computing domain
3. Mix 1 & 2
Some interesting options:

- Second Major in Mathematics
- Second Major in Statistics
- Minor in Mathematics
- Minor in Statistics
- Minor in Financial Mathematics
- Minor in Life Science
- Minor in Geography Information Systems
- Minor in Interactive Media Development
- Minor in Management
- Minor in Technopreneurship

and many others

BComp(CS) Study Planning (cohort 18/19)
(A Rough Guideline)
“The Basic Foundation”

how to solve basic computing problems through programming; how does a computer work; basic computing math; ethical/legal/social issues on computing
Year 2

- CS2101 Communication
- CS2103T Software Engineering
- CS2105 Intro. to Comp. Networks
- CS2106 Intro. to OS
- CS3230 D&A of Algorithms

ES2006 Communication

+ ULR/UE + Math/Sci + Focus Area Basic

“The CS Core”

how to deal with complex systems and software;
advanced algorithms and data structures;
develop soft skills
"The Practical Year"
apply knowledge to projects, internships, NOC;
drilling deeper into focus areas
Year 4 + ULR/UE + Math/Sci + Focus Area

“Choose Your Own Adventure”

round up your training by pursuing advanced modules or projects of your interests
What to do during recess?

Orbital, CVWO, Internship, Summer School, Independent Project, etc.
BComp(CS)
Degree Requirement
(cohort 18/19)
Turing Programme
Turing Programme

participate in cutting-edge CS research happening in our dept.

for students who may want to pursue a research career in industry or academia.
Turing Programme

Take CS2309 (CS Research Methodology)

Do a UROP (UG Research Opportunity Project) under a professor’s mentorship
Degree Requirements
(cohort 18/19)
At NUS CS, learning is very different from your prior education.
less rote learning;
more open-ended problems;
more self-learning
learn how to learn
computing is a fast moving field;
ever stop learning.
learn what to learn
some principles remain constant
even though the hardware,
language, etc has changed.
don’t optimise for grades and CAPs
optimise your skills, knowledge and experience instead
don’t worry about bell curve
cooperate, not compete among yourselves
be involved
join clubs, teach, organise activities, form study groups, etc.
invest time to master the tools
(e.g., bash, vim, git, etc)
think long term benefits, not how to get things done now
plan your study;
make informed decision
many options: NOC, TP, SEP, DDP, DMP, Orbital, CVWO, Internship, independent projects
1. Be prepared to learn differently
2. Learn how/what to learn
3. Focus on learning, not grades
4. Participate, share, lead
5. Plan early
from your seniors:

Notes to CS Freshmen from the Future
Q&A