Briefing on Bachelor of Computing Computer Science and Information Security 2017/18
A/P Ooi Wei Tsang
Deputy Head (CS Programs)
A/P Chang Ee-Chien
A/P Roland Yap
A/P Rudy Setiono
InfoSec Joint Academic Committee
1. Degree Requirements for BComp(CS)
2. Degree Requirements for BComp(InfoSec)
3. Tips for Study Planning
4. Q&A
Disclaimer: Information on this set of slides have been simplified to a form suitable for a 40-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.
Degree Requirements
(cohort 17/18)
BComp(CS) Degree Requirement (cohort 17/18)

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

32 MCs
Unrestricted Electives

20 MCs
Uni-level Requirements
“Programming Fundamentals”

CS1010 Programming Methodology

CS2030 Programming Methodology II

CS2040 Data Structures & Algorithms
CS Foundations

“Programming Fundamentals”

- **CS1101S**
  - Programming Methodology

- **CS1010**
  - Programming Methodology

- **CS2030**
  - Programming Methodology II

- **CS2040**
  - Data Structures & Algorithms
“Computer Systems

CS1010 Programming Methodology

CS2030 Programming Methodology II

CS2040 Data Structures & Algorithms

CS2100 Computer Organisation

CS2105 Intro. to Computer Networks

CS2106 Intro. to Operating Systems

or
“Theoretical Foundations”

- CS1010 Programming Methodology
- CS2040 Data Structures & Algorithms
- CS2100 Computer Organisation
- CS2105 Intro. to Computer Networks
- CS2106 Intro. to Operating Systems
- 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
Artificial Intelligence

- CS1231 Discrete Structures
- CS2040 Data Structures & Algorithms
- CS3240 Intro. to AI
- CS3244 Knowledge-based Systems
- CS3244 Machine Learning
- CS4244 Machine Learning
- CS4246 AI Planning & Decision Making

Supporting Courses:

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

CS2105  Intro. to Computer Networks

CS3103  Comp. Networks Practice

CS4226  Internet Architecture

CS4222  Wireless Networking

ST2334  Probability and Statistics
Database Systems

CS1231
Discrete Structures

CS2030
Programming Methodology II

CS2040
Data Structures and Algorithms

CS2102
Database Systems

CS4221
DB App Design and Tuning

CS4224
Distributed DB

CS3223
DB Sys. Implementation
Multimedia Information Retrieval

- CS2040 Data Structures & Algorithms
- CS2030 Programming Methodology II
- CS3245 Information Retrieval
- CS2108 Intro to Media 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

CS4247 Graphics Rendering Techniques
CS3247 Game Development
PC1221 Fundamental of Physics I
MA1521 Calculus for Computing

CS4350 Game Dev Project
Parallel Computing

CS2100 Computer Organisation
CS2106 Intro to OS
CS3211 Parallel & Concurrent Programming
CS3210 Parallel Computing
CS4223 Multi-core Architecture
CS4231 Parallel & Distributed Algo
CS3230 Design & Analysis of Algo
CS2106 Intro to OS
Programming Languages

CS2104
Prog. Lang. Concepts

CS2030
Programming Methodology II

CS2040
Data Structures & Algorithms

CS2106
Intro to OS

CS3211
Parallel & Concurrent Programming

CS4212
Compiler Design

CS4215
Prog. Lang. Implementation
Software Engineering

- CS2103: Software Engineering
- CS3219: S.E. Principles and Patterns
- CS4211: Formal Methods for Software Engineering
- CS4218: Software Testing
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
Complete >= 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 Management of Technology
- Minor in Technopreneurship
- and many others

BComp(CS)
Study Planning
(cohort 17/18)
(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
"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
BComp(CS)
Degree Requirement
(cohort 17/18)
Turing Programme
von Neumann Programme
Turing Programme

for students who like to tackle technically challenging (possible fundamental) problems
von Neumann Programme

for students who like to solve complex, real-world, computing problems
BComp(InfoSec) Degree Requirements (cohort 17/18)
<table>
<thead>
<tr>
<th>CS</th>
<th>InfoSec</th>
<th>Remarks</th>
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</thead>
<tbody>
<tr>
<td>CS2040</td>
<td>CS2040C</td>
<td>In C++ instead of Java</td>
</tr>
<tr>
<td>CS2030, CS2103T</td>
<td>CS2113T</td>
<td>Combined SE and OOP</td>
</tr>
<tr>
<td>ES2660</td>
<td>IS3103</td>
<td>IS Leadership &amp; Communication</td>
</tr>
<tr>
<td>CS3230</td>
<td>CS2102</td>
<td>Database replaces Algorithms</td>
</tr>
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**SoftEng Project** | **InfoSec Project**

**CS Electives** | **InfoSec Core + Electives**

**1 Sci Module** | **2 SoC Electives** Any CP/IS/CS coded modules
CS2107 and CS3235 are on the critical path to many modules. Take them early!
Tips for Study Planning

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1. Know Your Degree Requirements (including updates)
2. Talk To Your Mentor / Academic Advisor / UG Office / Curriculum Chair
Admin / Implementation:
socug@comp.nus.edu.sg

Academic:
cs-curriculum@comp.nus.edu.sg
3. Refer to Study Planner Online

http://www.comp.nus.edu.sg/images/resources/content/undergraduates/study_planner-1718.numbers.pdf
4. Plan Early
Q&A