3.3.10.4 Minor in Information Security

The objectives of the Minor in Information Security (InfoSec) are:

- to provide an introduction to information security within NUS for non-computing students;
- to prepare non-computing students to pursue deeper knowledge in information security; and
- to contribute to the national focus on growing the pool of cyber security professionals in Singapore.

The aim of this minor is to provide students basic understanding on cyber security issues and to prepare the students for further education in cyber security, with the ultimate goal of training cyber security manpower for Singapore.

**Student Learning Outcomes**

The Minor in InfoSec enables students to attain, by the time of graduation:

- Knowledge of IT systems, including (a) familiarity with common themes and principles in computer systems, and (b) high-level understanding of systems as a whole,
- Recognition of the information security needs of a computer-based system, process, components, or program.
- Recognition of the need for and an ability to engage in continuing professional development

**Eligibility**

Direct admission is available to students in the following degree programmes:

- B. Sc. (Statistics)
- B. Sc. (Business Analytics)
- B. Sc. (Applied Math)
- B. Sc. (Quantitative Finance)
- B. Sc. (Computational Biology)
- B. Eng. (Biomedical Engineering)
- B. Eng. (Electrical Engineering)
- B. Eng. (Industrial & Systems Engineering)
- B. Eng. (Materials Science and Engineering)
- B. Eng. (Mechanical Engineering)
Students applying for the Minor in InfoSec under direct admission must meet the entry requirement:

- For diploma holders: Diploma with at least an A2 grade in GCE O-level Elementary Mathematics or at least a B4 grade in GCE O-level Additional Mathematics.

- For A-Level Holders: H2 pass in Computing or Mathematics or Physics; or a good pass in H1 Mathematics.

In-Progress admissions: Current students from cohort 2015/16 or later who are not in these degree programmes can apply to enter in the Minor in InfoSec programme after completing CS1010 or its equivalents (CS1010E, CS1010J, CS1010S, CS1010X, CS1010FC, CS1101S).

The Minor in InfoSec programme is not available to students in the following degree programmes offered by the School of Computing:

- B. Comp. (Information Security)
- B. Comp. (Computer Science)
- B. Comp. (Computational Biology)
- B. Eng. (Computer Engineering)
- B. Comp. (Information Systems)

**Continuation and graduation requirements**

Students need to obtain B+ or above in CS2107 or its equivalent to continue in the programme. The Minor in InfoSec will be awarded to students who completed the 24 MCs minor requirement. Students will need to complete the major requirement to graduate.

**Structure**

Students need to complete CS1010 or its equivalents (CS1010E, CS1010J, CS1010S, CS1010X, CS1101S) before enrolling into this minor. To complete the minor, students must complete 24 MCs with the following modules:

<table>
<thead>
<tr>
<th>CODE</th>
<th>TITLE</th>
<th>MCS</th>
</tr>
</thead>
<tbody>
<tr>
<td>CS2040/CS2040C</td>
<td>Data Structures and Algorithms (^1)</td>
<td>4</td>
</tr>
<tr>
<td>CS2107</td>
<td>Introduction to Information Security</td>
<td>4</td>
</tr>
</tbody>
</table>

Complete 16 MCs from the following list of Information Security electives, with at least 4 MCs at level-3000 or above:
<table>
<thead>
<tr>
<th>CODE</th>
<th>TITLE</th>
<th>MCS</th>
</tr>
</thead>
<tbody>
<tr>
<td>IS1103/X</td>
<td>IS Innovations in Organisations and Society</td>
<td>4</td>
</tr>
<tr>
<td>CS2100</td>
<td>Computer Organisation(^2)</td>
<td>4</td>
</tr>
<tr>
<td>CS2105</td>
<td>Introduction to Computer Networks(^3)</td>
<td>4</td>
</tr>
<tr>
<td>CS2106</td>
<td>Introduction to Operating Systems(^4)</td>
<td>4</td>
</tr>
<tr>
<td>CS3235</td>
<td>Computer Security</td>
<td>4</td>
</tr>
<tr>
<td>IS3103</td>
<td>Information Systems Leadership and Communication</td>
<td>4</td>
</tr>
<tr>
<td>IS4231</td>
<td>Information Security Management</td>
<td>4</td>
</tr>
</tbody>
</table>

A minimum 16 MCs of the Minor requirements must be earned from modules read in NUS. The other 8 MCs may be earned through credit transfers, advanced placement and exemptions, provided these MCs are earned from modules deemed relevant to the particular Minor programme.

Footnotes:

1. Existing students from earlier cohorts who have completed CS2020 Data Structures and Algorithms Accelerated may replace (CS1020/E or CS2040/C) with CS2020. Students who are waived from completing CS2040 or its equivalent must complete another 4 MCs of modules listed under Information Security electives.

2. CS2100 Computer Organisation can be replaced by EE2024 Programming for Computer Interfaces or (EE2028 Microcontroller Programming and Interfacing and its prerequisite EE2026 Digital Design).

3. Students who are precluded from taking CS2105 may take EE3204/E Computer Communication Networks I or EE4024/E Computer Networks in lieu of CS2105.

4. Students who are precluded from taking CS2106 may take CG2271 Real-Time Operating Systems in lieu of CS2106.