INFORMATION SECURITY
ABOUT US

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Y3 Information Security Student
Intern @ Singapore Airlines

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Y2 Information Security Student
Intern @ A-STAR
WHAT WE'LL BE SHARING TODAY!

01 Introduction to Information Security
What can I do in the future?

02 School Modules
Tips and Tricks

03 Module Planning
Modreg & NUSmods

04 University Life
Hall, Residences, Clubs & Societies, CCAs

05 Internship Sharing
Expectation and experience

06 Q&A
WELCOME TO INFORMATION SECURITY

WITH THE LOCKDOWN YOU WILL HAVE SOME TIME TO REST

I WORK IN CYBERSECURITY
OUTLINE OF TOPICS TAUGHT

01 Programming
C, C++, Python and Java

02 Network
Computer networks, network application programming and network security

03 Operating Systems
OS Structuring and architecture, processes, memory management and system security

04 Information Security
Software security, Database security, Web Security etc.

05 Software Engineering
Systematic and rigorous development of software systems

06 Management
Legal aspects, communication, managerial aspects of information security
WHERE CAN I WORK/INTERNSHIP

- SINGAPORE AIRLINES
- CSTI (Centre for Strategic Infocomm Technologies)
- CISCO
- Google
- Huawei
- Meta
- Agency for Science, Technology and Research (A*STAR)
- MINDEF (Ministry of Defence, Singapore)
- OCBC Bank
- GOVTECH (Government Technology Agency, Singapore)
- EY
- NCS
- Singtel
TYPES OF JOBS AVAILABLE

Chief Information Security Officer (CISO)
Senior-level officer who ensures the complete safety of information in an organization (Usually requires experience in other cybersecurity jobs)

Security Architect
Responsible for designing robust security structures that are used to prevent malware attacks

Cybersecurity Engineer
Planning security measures to prevent the organization from a cyber attack, responsible for protecting the organization’s networks and data
TYPES OF JOBS AVAILABLE

**Malware Analyst**
Identifies and examines cyber threats such as viruses, worms, bots, and trojans to understand their nature.

**Penetration Tester**
Commonly known as an ethical hacker, is a network security consultant who exploits a system’s vulnerabilities just like a hacker would.

**Computer Forensics Analyst**
Work on cyberattack cases to gather digital evidence to retrieve data and recover deleted, manipulated, or stolen data.
INTRODUCTION TO SCHOOL MODULES

What is this?

I don't even...
<table>
<thead>
<tr>
<th>Year 1</th>
<th>Year 2</th>
<th>Year 3</th>
<th>Year 4</th>
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<tr>
<td>MA1521 Calculus for Computing</td>
<td>MA1101R Linear Algebra I</td>
<td>CS2105 Introduction to Computer Network</td>
<td>CS2113T Software Engineering &amp; Object-Oriented Programming + CS2101 Effective Communication for Computing Professionals</td>
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<tr>
<td>CS1101 Programming Methodology</td>
<td>ST2334 Probability and Statistics or CS2107 Introduction to Q5</td>
<td>CS2106</td>
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<td><strong>CS2135 Discrete Structures</strong></td>
<td><strong>CS2100 Computer Organisation</strong></td>
<td><strong>CS2107 Introduction to Information Security</strong> or ST2334</td>
<td><strong>CS2235 Computer Security</strong></td>
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<td>Pillar 2 (IS 1103)</td>
<td><strong>CS2049C Data Structures and Algorithms</strong></td>
<td><strong>UE 2</strong></td>
<td>InfoSec Elective 1^2 (CS2428)</td>
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<td><strong>CC1</strong></td>
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20 MCs | 24 MCs | 24 MCs | 20MC | 16MC | 20MC | 20 MCs

* Taken from OTH881 forum post by Prof Chang

https://www.comp.nus.edu.sg/programmes/ug/isc/curr/#degree-requirements
YEAR 1 MODULES

CS1010 - Programming Methodology
- Heavy Workload (weekly assignments and labs)
- Intro to fundamental programming (C)
- Very important to not fall behind and to cultivate good programming habits

CS1231S - Discrete Structures
- Heavy Workload (relatively hard content and tutorials)
- Teaches abstract mathematical concepts used widely in computer science
- Always clarify doubt and make sure you understand the concepts fully

CS2040C - Data Structures and Algorithms
- Medium - Heavy Workload (depending on your programming fundamentals)
- Covers basic data structures and algorithms that are fundamental in CS (C++)
- Goes beyond just correct codes, but emphasize on efficient codes
YEAR 1 MODULES

CS2100 - Computer Organisation
- Heavy Workload
- Intro to low-level system e.g. assembly language, design & implementation of CPU

MA521 - Calculus for Computing
- Light Workload
- Basic foundation for calculus and its related subjects required by computing students
- Mostly JC math with some new additional concepts

MA2001 (MA110 IR) - Linear Algebra I
- Heavy Workload (countless of new theories)
- Concepts of linear algebra in the context of the Euclidean spaces
- Do more practices!
YEAR 1 MODULES

ST2334 - Probability and Statistics
- Light Workload
- Basic probability theory and statistical inference
- A lot of JC math but beware of steep bellcurve

IS1103 (IS1108) - Digital Ethics and Data Privacy
- Light Workload
- Issues of digital ethics and data privacy
- Very steep bellcurve, very important to find a group of friends to journey with

GE modules
- Depending on the modules but generally light-medium workload
- Must complete under each pillar (GEA, GEC, GEX, GESS & GEN. CS1010 satisfy GEI)
- Follow your interests and find out more from seniors
MODULE PLANNING

(LIVE DEMO EDUREC & NUSMODS)
<table>
<thead>
<tr>
<th>Date</th>
<th>Event Description</th>
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<td>15-Jul-22</td>
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<td>18-Jul-22</td>
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<tr>
<td>21-Jul-22</td>
<td>Select Modules (Ref 1) (SIG and CPES) Ends 1700hrs</td>
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<td>24-Jul-22</td>
<td>Select Modules (Ref 1) (SIG and CPES)</td>
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<td>27-Jul-22</td>
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<tr>
<td>28-Jul-22</td>
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<td>3-Aug-22</td>
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<td>5-Aug-22</td>
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<td>11-Aug-22</td>
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<td>Select TUTORIALS/LABS (Ref 4) (All courses) (Note: Allocation process will be temporarily unavailable from 0800hrs to 1100hrs.)</td>
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Non-academic Modules

Yes they are compulsory!
MODREG TIPS & TRICKS

Plan in advance
- Prerequisite for higher level mods
- For tutorials/lab, check the venues and take into account your travels from class to class
- Plan for multiple timetables and bid for backup tutorial/lab slots

Know your preferences
- Rank your biddings according to your priorities and preferences
- Be aware that some slots are more popular due to timings and locations

Don't stress!
- It is common to not get your desired timetable in the end
- Take it as an opportunity to learn to become more flexible and adapt to your new schedule
- Surprising gains (meeting new classmates and tutors!)
ADVICE FOR ACADEMIC PLAN

Beware of prerequisites
Ensure that you have completed the prerequisites for a particular module that you plan on taking.

Relook and adjust your plans after each semester
Perhaps your decisions change after taking a particular module or you were unable to secure the prerequisite that semester.

Record down the MCs that you completed
Update the remaining credits left and ensure that you complete the necessary amount to graduate.

“A goal without a plan is just a wish.”
WHAT DO YOU WANT TO GET OUT OF UNIVERSITY?
THINGS TO GET OUT OF UNIVERSITY

01 Play
02 Do well for studies
03 Explore non-academic interests
04 Build on your portfolio
05 Make an impact
INTEREST EXTRACURRICULAR ACTIVITIES
GETTING REJECTED FROM AN INTERNSHIP BECAUSE YOU DON'T HAVE THE REQUIRED EXPERIENCE
Research Intern  
(Year 1 Summer)

Job Scope
• Development of Homomorphic Encrypted Transpiler
• Extension to python interface

Takeaways
• Be open-minded
• Have a purposeful plan (Startup, R&D, MNCs etc)
• Keep to your own pace
InfoSec Intern
(Year 2 Summer)

Job Scope
• Automation of Security Tools
• Research on Cybersecurity Frameworks
• Phishing Campaigns
• Incidence Response
• Anti-virus

Takeaways
• Be willing to learn
• Make good use of your time
• Try to be proactive
Linux Systems
Engineer Intern
(Year 2 Summer)

Job Scope
• Research on inner workings of the computer
• Development of security tools

Takeaways
• Make the best out of the internship
• Learn what you can

SOMEONE TELL ME, WHAT IS HAPPENING!
Job Scope
• Research into incorporation of data science with cyber security

Takeaways
• Role + Job description may not be 100% what you are doing
• Keep an open mind
• Don't expect to do what NUS has taught you
• Industry and school are totally different ball games
FINAL WORDS