NETWORK SYSTEMS & SECURITY COURSE MODULES

With the recent news of the Singapore government rolling out Internet segregation plans, you can't deny the growing need to secure our computer networks. If you look forward to fighting cyber threats like hacking and Internet hoaxes, enrol in the Diploma in Network Systems & Security [NSS] to arm yourself for battle.

Thanks to our strong partnerships with Cisco Systems [USA]. NSS uses the latest technology to give you topnotch infocomm training in areas such as design, implementation, security and maintenance of network infrastructure. You will also get the chance to install and manage physical and virtual servers in data centres that support cloud computing in our Cloud Computing Centre. What's more, you will be well prepared to obtain world-recognised certifications such as CCNA, CCNP, CCNA Security, 1Pv6 Forum Certified Network Engineer and EC Council Certifications.

This course will teach you the technology on the workings of a secured IT network. You will learn all about implementing wired and wireless network solutions and securing networking devices. In your first year, you will acquire a strong foundation in network fundamentals including basic routing and switching, servers, IT service management and basic computer programming. In your second year, you will get to choose a specialisation option - either network & cloud architecture or data security & forensics. To prepare you for internship, you will also be taught how to manage an IT project.

In your final year, you will hone your skills through a six-month internship with national organisations such as Centre for Strategic Infocomm Technologies [CSIT]. Home Team, A*STAR, DSD National Laboratories and InterPol or industry heavyweights such as IBM, Singtel, MyRepub lic, Robert Bosch, Global Cloud Xchange, Westcon Group and Superlnternet. You also stand a good chance to receive attractive scholarships from reputable organisations such as IMDA, DSD, CSIT and SingTel.

LEVEL 3.1

Cloud Architecture & Security

This module is intended to deepen the understanding of cloud operations and its related security. At the end of this module, students should be able to comprehend the key topics covered in this module which include its architecture, security and risks, Virtualization Security, Data Security, and Cloud Identity. The assessment modes are Practical Workshop, Laboratory Test, Assignments, Common Test, and Examination.

Network & Cloud Design

The purpose of this module is to engage the students to apply the networking and cloud design knowledge to real life example. It is an assessment of the students' understanding and the application of the internetworking knowledge from the modules that students have been taught in the earlier semesters. Using this knowledge, the student will have to complete three mini-projects. Student must submit a report and complete a presentation for each of the project.

Project ID - Connecting the Dots (IS Module)

This module aims to prepare students for an increasingly globalized and interconnected world where problems are multi-faceted and require interdisciplinary research and collaboration to solve. Using a project-based learning approach, students will have the opportunity to work in a multi-disciplinary team to investigate and propose comprehensive recommendations for a pressing real-world problem affecting Singapore. They will be guided to step out of their disciplinary silos and effectively communicate and collaborate with peers from different backgrounds. Ultimately, the module seeks to develop independent learning skills and the ability to synthesize diverse strands of knowledge to solve a complex problem, while impressing on students the importance of being a responsible global citizen.

NETWORK & CLOUD ARCHITECTURE OPTION

Advanced Routing

At the end of the module, the student will be able to use advanced IP addressing and routing to implement scalable and highly secure Cisco routers that are connected to LANs, WANs, and IPv6 networks.

Advanced Switching

At the end of this module, students will be able to plan, design, configure, secure, monitor, troubleshoot and maintain an enterprise campus network. Key concepts in their learning includes the use of SDM, VLANs, MST, inter-VLAN routing with multilayer switches and high availability networks. With Project-based learning as its signature pedagogy, the 10-week project work will assess them on their technical knowledge and skills, problem solving /troubleshooting skills, project management, documentation, presentation, teamwork and attitude.

DATA SECURITY & FORENSICS OPTION

Computer & Network Forensics

This module is multi-discipline in nature covering legal, ethics, case study, detective work and engineering. The module goal is to impart skills to our students so that they can determine the root cause of a hacker attack, collect evidence that is legally admissible in court, and protect corporate assets and reputation. This module teaches students the basic concepts and techniques to perform systematic and identification of evidences in computer related crimes and abuse cases. This includes tracing a hacker to a client's systems, to tracing the originator of defamatory emails to recovering signs of fraud.

Ethical Hacking & Countermeasures

This module intends to introduce concepts, frameworks, methodologies and techniques of penetration testing to the students. At the end of this module, students will learn and appreciate the need for information security and identify countermeasures to protect against cyber-attacks. Key topics covered in this module include reconnaissance, scanning, Trojans, password cracking and data sniffing. Students will need to show their technical proficiency by completing labs, mini project and practical test.

LEVEL 3.2

Six-Month Internship

Six Month Internship is a module whereby students will be attached to sponsoring companies for a period of approximately 22 weeks. During their internships, they will undertake projects assigned by the company or be involved in operations or maintenance-related work. Activities may be related to operations, research, project, maintenance, etc. Student internships may be undertaken locally or overseas.

Module Name	Credit Units
YEAR 3	
Level 3.1 (24 hours per week)	
Common Modules	
Cloud Architecture & Security	5
Network & Cloud Design	5
Project ID: Connecting the Dots ^	4
NETWORK & CLOUD ARCHITECTURE OPTION	
Advanced Routing #	5
Advanced Switching #	5
DATA SECURITY & FORENSICS OPTION	
Computer & Network Forensics	5
Ethical Hacking & Countermeasures	5
Level 3.2 (22 hours per week)	
6-Month Internship	22

Notes:

Advanced Routing and Advanced Switching will help students prepare for CCNP Routing & Switching certification (provided by external test centres).

^ For more details on Interdisciplinary Studies (IS) electives, please log on to www.np.edu.sg/is/

IS Modules
The School of Interdisciplinary Studies (IS) delivers a broad-based curriculum, which nurtures a new generation of professionals with multidisciplinary skills and an innovative and entrepreneurial spirit to meet the challenges of a knowledge economy. IS offers both prescribed modules and electives to challenge boundaries. Prescribed modules develop students' competencies in core areas such as Communication, Innovation and Enterprise, Culture and Communication, and Personal Mastery and Development, while elective modules provide insights into Arts and Humanities, Business, Design, and Science and Technology.