



**BACHELOR OF ENGINEERING WITH HONOURS IN**

**INFORMATION AND COMMUNICATIONS  
TECHNOLOGY (INFORMATION SECURITY)**


## PROGRAMME INFORMATION

This four-year undergraduate degree programme, with a major in Information Security, is the first of its kind offered by a local autonomous university.

This degree programme will impart essential skills and knowledge to help students become Information Security professionals upon graduation. The degree programme aims to provide a holistic coverage of the entire information security process: from the securing of the software, to the defence, monitoring and recovery of information systems, and the governance and management of information security in an organisation. Covering a wide range of application domains from embedded systems and smart mobile devices to cyberspace and cloud computing, students' training will also include practical skills in technology and engineering. This will assist students in developing innovative solutions to help organisations enhance the protection of their sensitive resources against information security threats.

As ICT is an extremely dynamic field that advances very rapidly, the degree programme not only aims to produce graduates who are up-to-date, but also independent and self-directed learners. Students will be able to consistently 'Learn, Unlearn and Relearn' as they progress in their careers, staying relevant to the advancements in the industry and staying ahead of their peers.

## CURRICULUM STRUCTURE

		YEAR 
<b>TRIMESTER 1</b>	<b>ICT Foundations</b> <ol style="list-style-type: none"><li>1. Introduction to ICT</li><li>2. Programming Fundamentals</li><li>3. Computer Organisation and Architecture</li><li>4. Web Systems and Technologies</li><li>5. Mathematics and Statistics for ICT</li></ol>	
<b>TRIMESTER 2</b>	<b>ICT Foundations</b> <ol style="list-style-type: none"><li>1. ICT in Organisations</li><li>2. Operating Systems</li><li>3. Data Structures and Algorithms</li><li>4. Object-Oriented Programming</li><li>5. Computer Networks</li></ol>	
<b>TRIMESTER 3</b>	Break	



# YEAR 2

## TRIMESTER 1

### Specialisation Modules

1. Introduction to Software Engineering
2. Mobile Security
3. Applied Cryptography
4. Ethical Hacking
5. Career and Professional Development I

## TRIMESTER 2

### Specialisation Modules

1. Network Security
2. Web Security
3. Digital Forensics
4. Security Governance, Risk Management and Compliance
5. Career and Professional Development II

## TRIMESTER 3

### Special Trimester

1. Global/Regional Exposure to Advances in Technology (GREAT)
  2. Industry Certification Module
  3. Integrative Team Project
- Breaks

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# YEAR 3

## TRIMESTER 1

### Specialisation Modules

1. Operations Security and Incident Management
2. Malware Analysis and Defence
3. Secure Software Development
4. Security Analytics
5. Self-Learning Module

## TRIMESTER 2

Break (Optional)

## TRIMESTER 3

### Integrated Work Study Programme (IWSP)

1. Productivity Management (Flipped Classes)
2. Capstone Project
3. Work

# YEAR 4

## TRIMESTER 1

### Integrated Work Study Programme (IWSP)

1. Design Thinking (Flipped Classes)
2. Capstone Project
3. Work

## TRIMESTER 2

### Integrated Work Study Programme (IWSP)

1. Change Management (Flipped Classes)
2. Capstone Project
3. Work

## TRIMESTER 3

GRADUATE

Contents are subject to review and update.

As ICT is a very dynamic field, the curriculum may be updated based on feedback from the industry.

To ensure the rigour of the programme, the curriculum has taken reference from internationally recognised curriculum guidelines as follows:

1. "Curriculum guidelines for undergraduate Degree Programs in Information Technology", Association for Computing Machinery (ACM), IEEE Computer Society, Nov 2008
2. "Computer Science Curriculum 2008: An Interim Revision of CS 2001", Association for Computing Machinery (ACM), IEEE Computer Society, Dec 2008
3. Model Curriculum for Information Security Management, 2nd edition, 2012: <http://www.isaca.org/Knowledge-Center/Academia/Pages/Model-Curriculum-for-Information-Security-Management.aspx>
4. ISC2 – CISSP Domains: <https://www.isc2.org/cissp-domains/default.aspx>

## PROGRAMME HIGHLIGHTS

### Highly Specialised:

Other than developing foundational knowledge required by any ICT professional, this programme aims to satisfy all learning outcomes specified by major information security societies such as ISACA and (ISC)2.

### Industry-focussed:

Partnerships with key industry players will be forged to bring industry problems and case studies into the classroom. Industry partners will support the curriculum by sharing their state-of-the-art technologies, expertise and resources. Students will also have the opportunity to gain internationally recognised industry certifications as part of the programme.

### Practice-oriented:

More emphasis will be placed on hands-on training and course work, rather than focussing solely on theoretical fundamentals and written examinations. Students will also participate in the Integrated Work Study Programme (IWSP) during their final year of study when they will be on a year-long work placement that is integrated with flipped classroom teaching and an industry-focussed capstone project.

By intertwining the development of strong foundation knowledge with the required professional skill sets, this degree programme aims to provide an education that allows its students to become the best-in-class specialists who will be highly sought-after in the industry.

Capstone Project			
Specialised Core Knowledge		Translational and Professional Skills	Integrated Work Study Programme (IWSP)
Team Integrated Project	Core Skills Development ICT Foundation		

## INTEGRATED WORK STUDY PROGRAMME (IWSP)

Students will embark on a year-long IWSP during their final year when they will work and take on meaningful capstone projects with a host organisation. The IWSP facilitates the seamless and structured transition of SIT graduates into industry.

To integrate the study component into students' experiences, they will return to SIT two mornings a week to consult their professors and attend flipped classes. Industry-relevant modules such as 'Design Thinking' and 'Productivity Management' will be covered in these flipped classes where they will be able to bring their work experiences into the classroom for discussion. Ideas and solutions generated from these classroom discussions can then be brought back to their host organisation to promote innovation and productivity in the company.

By melding knowledge and experience, students will become invaluable assets to their host company and future employers.

## GLOBAL/REGIONAL EXPOSURE TO ADVANCES IN TECHNOLOGY (GREAT)

ICT is an ever-evolving area where cutting-edge developments occur frequently. ICT professionals need to stay abreast of global trends and continuously advance their knowledge to solve industry problems. As such, the programme aims to expose students to the advancements in Information Security through a series of activities, including an overseas study trip to one or more leading international Information Security companies and institutions. This study trip will also enable students to broaden their horizons and gain valuable global/regional insights to help counter cyber threats.



## ADMISSION REQUIREMENTS

Diploma holders from any of the five local polytechnics and A-level graduates are welcome to apply. Subject to approval, applicants may be granted exemptions of up to 10 modules based on modules taken during their diploma. Exemptions may also be considered for relevant professional or industrial certifications.

## CAREER OPPORTUNITIES

This programme will provide its graduates with the academic knowledge and professional skill sets to take up jobs in Information Security, including (and not limited to) Malware Analyst, Cyber Security Specialist, Information Security Systems Engineer, Pentester, Technical Information Security Officer, Application Security Analyst, IT Security Consultant and IT Infrastructure Architect. Other than these specialist jobs, students are highly employable in the Information Security field, as well as generic ICT jobs that are available to any computer science graduate.

## INDUSTRY ADVISORY COMMITTEE

The Industry Advisory Committee members for this programme are:

**Mr CHANG Yew Kong (Chairperson)**

President, Software Systems Group  
ST Electronics

**Mr Aloysius CHEANG**

Managing Director  
Cloud Security Alliance APAC

**Mr GAN Boon San**

Former General Manager  
APAC Public Sector Microsoft

**Mr Andrew KHAW**

Senior Director (Productivity Growth through ICT)  
Infocomm Development Authority of Singapore

**Mr Kiren KUMAR**

Director (Infocomms and Media)  
Singapore Economic Development Board

**Mr LOW Huan Ping**

Executive Vice President, Technology  
Singapore Press Holdings Ltd

**Mr Peter MOORE**

General Manager, Sales, Strategy and Operations  
Amazon Web Services Global Public Sector – APAC

**Dr TAN Geok Leng**

Senior Fellow  
Agency for Science, Technology and Research

For the most up-to-date information, please visit [SingaporeTech.edu.sg](https://www.SingaporeTech.edu.sg).



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