INFOCOMM TECHNOLOGY
ABOUT SIT

Singapore Institute of Technology (SIT) is Singapore’s University of Applied Learning. With a mission to nurture and develop individuals who impact society in meaningful ways, SIT aims to be a leader in innovative learning by integrating learning, industry, and community.

SIT offers applied degree programmes targeted at growth sectors of the economy with a unique pedagogy that integrates work and study. Applied research is weaved into students’ learning experiences, where they work on real industry problems and create solutions to meet industry needs.

As part of the university’s advocacy for the work-learn continuum, SIT strives to instil within its students a culture of lifelong learning and places an emphasis on skills needed by industry. SIT also aims to cultivate in its students four distinctive traits that form the SIT-DNA: Thinking Tinkerers; Able to Learn, Unlearn and Relearn; Catalysts for Transformation; and Grounded in the Community.
WHY PURSUE INFOCOMM TECHNOLOGY

DEVELOPING OUR SMART NATION
In the midst of an ongoing digital revolution with unparalleled advancements in digital technologies, Singapore strives to be a Smart Nation\(^1\) to develop a strong ecosystem that drives the creation of effective and innovative solutions to address existential challenges.

APPLIED LEARNING/RESEARCH
SIT’s unique applied learning curriculum provides students with strong theoretical and practical knowledge, which they gain through hands-on experiments and team projects. Our signature Integrated Work Study Programme (IWSP) further allows students to apply and integrate this knowledge beyond the classroom to solve complex real-world constraints in the industry and community.

CLOSE NEXUS WITH INDUSTRY
Through a curriculum carefully curated in consultation with industry partners who share their valuable expertise and insights on the latest technological developments, SIT offers mission-critical and highly specialised Infocomm Technology (ICT) programmes that will develop students to be best-in-class graduates, ready for the industry’s high demands and evolving needs.

IN-DEMAND CAREERS
With the emergence of Internet of Things (IoT), the rise of autonomous vehicles, as well as the exponential growth in data analytics, ICT presents many exciting opportunities and in-demand career pathways that will gear our nation up for the digital transformation in the global economy.

APPLIED RESEARCH AREAS
Our students are given the opportunity to work on applied research projects with our faculty and industry partners in areas such as software engineering, cybersecurity, Internet of Things (IoT), telematics and other advanced areas in Artificial Intelligence (AI), and many others.

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</tbody>
</table>

I have always been passionate about technology. During my polytechnic studies, I had participated in various competitions, such as WorldSkills Singapore, Imagine Cup, and many others. My passion grew further when I took a gap year after my polytechnic studies to work as an automation developer in the IT sector. I realised that I enjoyed developing innovative solutions and wanted to deepen my knowledge in this field. When I found out that SIT and University of Glasgow offer a joint degree programme in Computing Science, with specialisation in Internet of Things (IoT), I knew that this was the programme for me. Despite receiving offers from other autonomous universities, I was determined to go to SIT as I was more inclined towards its engaging learning environment that equips students with work-ready skills. My ultimate goal is to be a data scientist at a leading e-commerce corporation.

OH QI QI
Year 2
Computing Science
My interest in information security began with the movie ‘The Italian Job’, where I was captivated by how the hacker in the show, ‘Napster’, took over the entire city’s traffic system with just his laptop. In secondary school, I started playing a game called ‘Perfect World’, and realised that I could change the game statistics on the client-side. That stint did not last long and it was soon patched by the game developer. I pursued this interest by enrolling myself in a related diploma and furthered my education in SIT’s Information and Communications Technology (Information Security) degree programme. Here at SIT, I am encouraged to take part in many cybersecurity competitions that allowed me to pitch my mind against the brightest undergraduates from all around the world and learn from them. The hard work paid off when my team and I secured second place at the annual Kaspersky Secur’IT cup in 2019, where we competed against 27 teams from different countries in the finals. I also kickstarted the first cybersecurity special interest club in SIT, hoping to raise awareness about cybersecurity to the SIT student body.

YU PENGFEI
Year 4
Information and Communications Technology (Information Security)
HEAR WHAT THE INDUSTRY SAYS

Being ‘able to learn, unlearn, and relearn’ is part of the SIT-DNA, and it is an especially important skill to have in the current pandemic crisis and post COVID-19 era. The Infoomm Technology degree programmes in Software Engineering, Information Security and Computing Science are structured to be industry-relevant, and highly pivotal in getting enterprises and organisations to achieve good business outcomes.

MR CHANG YEW KONG
Chairperson
Industry Advisory Committee for the SIT Information and Communications Technology Programmes
Member, Governing Board
Centre for Quantum Technologies
National University of Singapore

In recent years, the take-up rate of SIT’s ICT degree programmes, in particular, the Information and Communications Technology (Information Security) programme, has increased due to the growing need for skilled graduates in the industry. Having abled cybersecurity expertise has indeed enhanced the value of SIT’s degree programmes, especially with the emphasis on having hands-on experience. We are glad to have kickstarted and endorsed this course when it was conceptualised years ago.

MR ALOYSIUS CHEANG
Member, Board of Directors
The International Information System Security Certification Consortium (ISC)²

We have worked with SIT students for their IWSP and found them to be resourceful and independent. One of the students, who was put in charge of a multi-million dollar public sector project, impressed us with his project management skills, ensuring timely delivery and a carefully structured IoT Data model by the project team. With his knowledge from his course work, he had also created in-house wiki pages and information packs to accommodate the team’s new members, which reduced the average knowledge transfer effort by 30%. We are glad to have him onboard as our intern.

MS FELICIA ENG
Human Resource Manager
Envision Digital

Talent is at the heart of Singapore’s digital transformation. The future workforce requires a pool of infocomm talents equipped with in-demand skills in areas such as data, artificial intelligence, cybersecurity, as well as new mindsets such as agile and creative thinking. As digitalisation continues to transform Singapore’s economy, a skill in infocomm is a career in any industry.

MR HOWIE LAU
Assistant Chief Executive (Media & Innovation)
Infocomm Media Development Authority (IMDA)

The SIT curriculum is developed with a strong focus on equipping our future talent pool with a well-rounded engineering capability and expertise to become industry- and future-ready. In addition, our partnership with SIT will provide students with an opportunity to gain the much needed hands-on experience and invaluable exposure in the exciting engineering work environment.

MR LO KIEN FOH
President and Chief Executive Officer
Continental Automotive Singapore Pte Ltd

PulseSecure has been hosting SIT students under the IWSP since its pioneer batch. These young talents are versatile, able to embrace challenges, learn from setbacks, and are fast learners in attaining industry professional certifications. At SIT, they are provided with a good foundation where they learn the ‘tools of the trade’, which they can then use to contribute to the company, our digital economy and cybersecurity landscape upon graduating.

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Managing Partner
PulseSecure Pte Ltd

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MR KENNY TAN
Managing Partner
PulseSecure Pte Ltd
The Computer Engineering with specialisation in intelligent transportation is the first-of-its-kind degree programme that offers interdisciplinary training in computer science and engineering with special focus on applying knowledge learnt to the rapidly evolving field of Intelligent Transportation Systems (ITS).

Over the years, Singapore has experienced a digital revolution that has transformed our lives in many ways. As we continue to embrace Smart Nation as the key driver of our economy, we are witnessing transformations in intelligent transport systems that agglomerate and leverage technologies such as Internet of Things, autonomous vehicles, 5G networking and smart traffic systems, among others. The degree in Computer Engineering, which was developed with support from LTA, ST Electronics, NCS and Continental Automotive, will equip you with the knowledge and skill sets in understanding how complex engineering systems such as intelligent transportation could leverage on leading-edge Information and Communications Technologies (ICT). Importantly, the programme caters to the ever-growing needs of the local industry for engineers with software development skills to develop smart solutions that run on a myriad of devices and systems, ranging from wearables to autonomous vehicles.

Note: The Computer Engineering programme is formerly known as Telematics (Intelligent Transportation Systems Engineering).

1 This is a direct honours degree programme, subject to students meeting academic requirements.
COMPUTER ENGINEERING

CURRICULUM STRUCTURE

YEAR 1

1 TRIMESTER
- Engineering Mathematics 1
- Newtonian Mechanics and Waves
- Electronic Circuits
- Introduction to Programming
- Technical Communication 1

2 TRIMESTER
- Engineering Mathematics 2
- Electricity and Magnetism
- Digital Systems
- Object Oriented Programming
- Linear Signals and Systems

3 TRIMESTER
- Break

YEAR 2

1 TRIMESTER
- Sensors and Control
- Embedded System Design
- Instrumentation and Displays
- Database and Information Systems
- Career Professional Development

2 TRIMESTER
- Wireless Communications
- RF Engineering and Electromagnetic Compatibility
- Operating Systems and Automotive OS
- Internet Programming
- Technical Communication 2

3 TRIMESTER
- Integrated Work Study Programme

Note: The Computer Engineering programme is formerly known as Telematics (Intelligent Transportation Systems Engineering).
Note: The Computer Engineering programme is formerly known as Telematics (Intelligent Transportation Systems Engineering).
WHAT TO EXPECT

During the first year of the programme, students will divide their time between about five lectures and tutorials each week, in addition to many practical/laboratory sessions. In tutorials, they will discuss ideas in depth with experienced faculty members and guest lecturers from the industry. Students will be expected to spend a considerable amount of time developing their own understanding of the topics covered in lectures, answering questions designed to check their understanding, and preparing for tutorials. As the programme progresses, they will also work in small teams of up to five people on more specialised topics for projects.

In the second/third year, students will undertake an eight-month Integrated Work Study Programme with a company. In the final year, they will be expected to work on their design project, based on a current industry problem, with their team members.

CAREER OPPORTUNITIES

Graduates can look forward to working in, but not limited to, the following occupational fields:

- Computer Engineer
- Project Manager/Officer/Engineer
- Engineer (Design/Application/Network/Telematics/Technology Integration)
- Engineer (Intelligent Transportation Systems)
- Technology Consultant
- Software Engineer

Note: The Computer Engineering programme is formerly known as Telematics (Intelligent Transportation Systems Engineering).
INDUSTRY ADVISORY COMMITTEE

The members of the Industry Advisory Committee for this programme are:

**MR ANG KIM SIAH**
Senior Vice President  
Mobility Business Unit  
ST Electronics (Info-Comm Systems) Pte Ltd

**DR CHIN KIAN KEONG**
Chief Engineer  
Land Transport Authority

**MR LO KIEN FOH**
President and Chief Executive Officer  
Continental Automotive Singapore Pte Ltd

**MR TONY HENG YEW TECK**
Managing Director  
SMRT Taxis

Note: The Computer Engineering programme is formerly known as Telematics (Intelligent Transportation Systems Engineering).
The Computer Science in Interactive Media and Game Development programme equips students with a solid foundation in mathematics, programming, and design theory. Students will be well-versed in programming, game logic, interaction design, artificial intelligence, databases, design tools, and game design theory for digital and non-digital games, level design, system design, and UI/UX design. This programme will address the growing need for software engineers in the local industry with deep design skills and good understanding of user experiences in the current digital age.

Students will embark on a series of studio-based software engineering projects that span across every trimester of their study, allowing them to continuously apply their module-based knowledge to larger-scale projects, as well as hone essential soft skills in working within multidisciplinary teams. Graduates of this programme will be well-equipped to enter both the games and software industry to take on versatile roles that require both engineering and design expertise.
CURRICULUM STRUCTURE

YEAR 1

TRIMESTER 1
- Computer Environment
- Composition
- Linear Algebra and Geometry
- High-Level Programming 1
- Software Engineering Project 1

TRIMESTER 2
- Calculus and Analytic Geometry 1
- High-Level Programming 2
- Game Implementation Techniques
- Interpersonal and Work Communication
- Software Engineering Project 2

TRIMESTER 3
- Break

YEAR 2

TRIMESTER 1
- Calculus and Analytic Geometry 2
- Operating Systems
- Introduction to Game Design
- Modern C++ Design Patterns
- Software Engineering Project 3

TRIMESTER 2
- Discrete Mathematics
- Motion Dynamics and Lab
- System Design Methods
- Data Structures
- Software Engineering Project 4

TRIMESTER 3
- Artificial Intelligence for Games
- Linear Algebra
- Introduction to Psychology
- Level Design
- Overseas Immersion Programme
COMPUTER SCIENCE IN INTERACTIVE MEDIA AND GAME DEVELOPMENT

CURRICULUM STRUCTURE

YEAR 3
TRIMESTER 1
- Algorithm Analysis
- Probability and Statistics
- Technical Design Methods
- Career and Professional Development
- Software Engineering Project 5

TRIMESTER 2
- User Interface and User Experience Design
- Machine Learning
- Mobile and Cloud Computing
- Introduction to Virtual Reality
- Software Engineering Project 6

TRIMESTER 3
- Break

YEAR 4
TRIMESTER 1
- Research, Reasoning and Writing
- Capstone Project
- Integrated Work Study Programme

TRIMESTER 2
- Integrated Work Study Programme
- Professional Communication
- Capstone Project (cont.)
WHAT TO EXPECT

Students will attend lectures and small group tutorials, as well as hands-on laboratory sessions. They will also engage in a robust discussion of ideas with faculty members and guest lecturers, who bring with them extensive academic and industry experience. Students will have opportunities to work in small teams on studio-based software engineering projects that span across every trimester, enabling them to reinforce their understanding of the modules taught and appreciate the relevancy of the concepts learnt.

To expand their international horizon, students in their second year will go through the Overseas Immersion Programme at the DigiPen Institute of Technology’s Redmond campus in the USA. They will spend a full 12-week trimester, taking modules that are delivered by the host faculty at Redmond in a truly international setting.

In the final year, students will undergo an eight-month Integrated Work Study Programme with a company. This will provide students an opportunity to integrate their theoretical and practical knowledge with real world conditions. Concurrently, students are also expected to work on their capstone project, based on an existential industry challenge.

CAREER OPPORTUNITIES

Graduates can look forward to working in, but not limited to, the following occupational fields:

- Software Engineer
- Software Developer
- Interactive Mobile Application Programmer
- VR/AR Software Developer
- Tools Programmer
- Level Designer
- Gameplay Designer/Programmer
The Computer Science in Real-Time Interactive Simulation programme provides students with rigorous training in foundational STEM modules that underpin computer science and simulations, and also focuses on deep programming skills, such as, high level programming, low level programming, advanced C/C++, computer graphics, data structures, algorithms analysis, and three progressive modules in computer graphics.

Students will embark on a series of studio-based software engineering projects that span across every trimester of their study, allowing them to continuously apply their module-based knowledge to larger-scale projects, as well as hone essential soft skills in working within multidisciplinary teams. Graduates of these programmes will be industry-ready with deep technical expertise in the fields of digital media, software engineering, enterprise technology, real-time simulations, and video game development.
## Computer Science in Real-Time Interactive Simulation

### Curriculum Structure

#### Year 1

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<th>Trimester</th>
<th>Courses</th>
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<tbody>
<tr>
<td>1</td>
<td>Computer Environment, Composition, Linear Algebra and Geometry, High-Level Programming 1, Software Engineering Project 1</td>
</tr>
<tr>
<td>2</td>
<td>Calculus and Analytic Geometry 1, High-Level Programming 2, Game Implementation Techniques, Interpersonal and Work Communication, Software Engineering Project 2</td>
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<tr>
<td>3</td>
<td>Break</td>
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#### Year 2

<table>
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<tr>
<th>Trimester</th>
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<td>1</td>
<td>Calculus and Analytic Geometry 2, Operating Systems, Introduction to Game Graphics, Modern C++ Design Patterns, Software Engineering Project 3</td>
</tr>
<tr>
<td>2</td>
<td>Discrete Mathematics, Motion Dynamics and Lab, Introduction to Real-Time Rendering, Data Structures, Software Engineering Project 4</td>
</tr>
<tr>
<td>3</td>
<td>Artificial Intelligence for Games, Linear Algebra, Computer Network, Programming Massively Parallel Processors, Overseas Immersion Programme</td>
</tr>
</tbody>
</table>
COMPUTER SCIENCE IN REAL-TIME INTERACTIVE SIMULATION

CURRICULUM STRUCTURE

YEAR 3

TRIMESTER 1
- Algorithm Analysis
- Probability and Statistics
- Spatial Data Structures
- Career and Professional Development
- Software Engineering Project 5

TRIMESTER 2
- Low-Level Programming
- Machine Learning
- Mobile and Cloud Computing
- Introduction to Virtual Reality
- Software Engineering Project 6

TRIMESTER 3
- Break

YEAR 4

TRIMESTER 1
- Research, Reasoning and Writing
- Capstone Project
- Integrated Work Study Programme

TRIMESTER 2
- Integrated Work Study Programme
- Professional Communication
- Capstone Project (cont.)
WHAT TO EXPECT

Students will attend lectures and small group tutorials, as well as hands-on laboratory sessions. They will also engage in a robust discussion of ideas with faculty members and guest lecturers, who bring with them extensive academic and industry experience. Students will get opportunities to work in small teams on studio-based software engineering projects that span across every trimester, enabling them to reinforce their understanding of the modules taught and appreciate the relevancy of the concepts learnt.

To expand their international horizon, students in their second year will go through the Overseas Immersion Programme at the DigiPen Institute of Technology’s Redmond campus in the USA. They will spend a full 12-week trimester taking modules that are delivered by the host faculty at Redmond in a truly international setting.

In the final year, students will undergo an eight-month Integrated Work Study Programme with a company. This will provide students with an opportunity to integrate their theoretical and practical knowledge with real world conditions. Concurrently, students are also expected to work on their capstone project, based on an existential industry challenge.

CAREER OPPORTUNITIES

Graduates can look forward to working in, but not limited to, the following occupational fields:

- Computer Scientist
- Software Engineer
- Artificial Intelligence Developer
- VR/AR Software Developer
- Machine Learning Engineer
- Interactive Mobile Application Programmer
- Game Engine Developer
- Gameplay Programmer
The Computing Science programme is jointly offered by SIT and the University of Glasgow. Designed to support the government's initiative to transform Singapore into a Smart Nation, this is the first computing programme offered by an autonomous university in Singapore that specialises in Internet of Things (IoT).

The three-year programme encompasses a broad-based computer science curriculum, which combines essential knowledge from IoT, software engineering, data analytics, cybersecurity, and machine learning. Students will learn about fundamental principles in computing science, including boolean logic, discrete mathematics, programming, software engineering, databases, operating systems, and computer networks. With the foundation in computing science topics, students will be exposed to specialised modules in IoT, including topics on sensors, IoT network protocols, cloud and distributed computing, data analytics, cybersecurity fundamentals, and machine learning. Students will learn to work independently, as well as in groups to gather requirements, design software architectures for IoT applications, and implement and test software modules to meet software engineering project objectives.

Graduates from this programme will be equipped with a strong computing science foundation, be practice-oriented, industry-ready and team players. They will be able to apply their software and hardware training to develop innovative IoT solutions in different IT-related roles.
COMPUTING SCIENCE

CURRICULUM STRUCTURE

YEAR 1

TRIMESTER 1
- Introduction to Computing
- Mathematics 1
- Programming Methodology
- Computer Organisation and Architecture
- Business Information Technology

TRIMESTER 2
- Data Structures and Algorithms
- Object Oriented Programming
- Mathematics 2
- Operating Systems
- Computer Networks

TRIMESTER 3
- Break

YEAR 2

TRIMESTER 1
- Professional Software Development
- Team Project
- Embedded Systems and Sensor Programming
- Cyber Security Fundamentals
- Human Computer Interaction
- Effective Communication

TRIMESTER 2
- Professional Software Development
- Team Project
- Internet of Things: Protocols and Networks
- Mobile Application Development
- Database Systems
- Career and Professional Development

TRIMESTER 3
- Cloud and Distributed Computing
- Data Analytics
- Safety Critical Systems
- Design Project
- Overseas Immersion Programme


COMPUTING SCIENCE

CURRICULUM STRUCTURE

YEAR 3

TRIMESTER 1
- Integrated Work Study Programme

TRIMESTER 2
- Integrated Work Study Programme

TRIMESTER 3
- Capstone Project
- Information Visualisation
- Internet of Things in Smart Nations
- Machine Learning
- Information Retrieval
WHAT TO EXPECT

During the first year of the programme, students will have about 10 to 12 hours of lectures and tutorials/laboratory sessions each week. In tutorials and laboratory sessions, students will discuss ideas in depth with experienced faculty from SIT and University of Glasgow, as well as professional officers and guest lecturers from the industry. Students will be expected to spend a considerable amount of time developing their own understanding of the topics covered in lectures, answering questions designed to check their understanding, and preparing for tutorials and laboratory sessions. As the programme progresses, students will also work in small teams of up to six people on software development team projects relating to Internet of Things (IoT).

In the second year, students will undergo a three-week Overseas Immersion Programme in University of Glasgow in Scotland. In the final year, students will undertake an eight-month Integrated Work Study Programme with a company. In the final trimester, students will be expected to complete their capstone project, based on a current industry problem.

Note: The Computing Science programme offered by SIT and University of Glasgow shares the same Industry Advisory Committee members as the Information and Communications Technology programmes. Please refer to Page 33 of this booklet.
Programme Information

Degree Programme
- BEng Information and Communications Technology majoring in Information Security\(^1\)

Campus Location
- SIT@NYP Building

Eligibility
- Polytechnic Diploma Holders
- A Level/IB Diploma/NUS High School Diploma Holders
- Other Year 12 Equivalent Qualification Holders

Visit SingaporeTech.edu.sg for the list of relevant qualifications.

Programme Highlights

- **Gain Work Experience**
  through the 12-months Integrated Work Study Programme (IWSP)

- **Industry-Focused**
  Opportunity to interact with the industry every year

- **Practice-Oriented**

- **Highly Specialised Programme**
  reviewed based on the Association of Information Security Professionals (AiSP)
  Information Security Body of Knowledge

Being the first Information and Communications Technology (ICT) programme to be offered by a local autonomous university, the Information Security programme will impart essential skills and technical knowledge to groom students to become highly-specialised information security professionals upon graduation. The programme encompasses the entire information security process — from securing of software, to the defence, monitoring and recovery of information systems, as well as 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 will be equipped with practical skills in technology and engineering. This will enable them to develop innovative solutions to help organisations enhance the protection of their sensitive resources against information security threats.

As ICT is a dynamic field with rapid advancements, the degree programme aims to produce graduates who are not only relevant and current, but also independent and self-directed, and who are able to ‘learn, unlearn and relearn’ as they progress in their careers.

\(^1\) This is a direct honours degree programme, subject to students meeting academic requirements.
INFORMATION AND COMMUNICATIONS TECHNOLOGY (INFORMATION SECURITY)

CAPSTONE PROJECT

SPECIALISED CORE KNOWLEDGE

| Integrative Team Project | Core Skills Development in ICT Foundation | Translational and Professional Skills | Integrated Work Study Programme |

CURRICULUM STRUCTURE

YEAR 1

1. TRIMESTER

ICT Foundations
- Introduction to ICT
- Programming Fundamentals
- Computer Organisation and Architecture
- Web Systems and Technologies
- Mathematics and Statistics for ICT

2. TRIMESTER

ICT Foundations
- ICT in Organisations
- Operating Systems
- Data Structures and Algorithms
- Object-Oriented Programming
- Computer Networks

3. TRIMESTER

Break
CURRICULUM STRUCTURE

YEAR 2

1 TRIMESTER

Specialisation Modules
- Introduction to Software Engineering
- Digital Forensics
- Network Security
- Ethical Hacking
- Career and Professional Development 1

2 TRIMESTER

Specialisation Modules
- Applied Cryptography
- Web Security
- Mobile Security
- Security Governance, Risk Management and Compliance
- Career and Professional Development 2

3 TRIMESTER

Specialisation Modules
- Global/Regional Exposure to Advances in Technology (GREAT)
- Industry Certification Module
- Integrative Team Project
- Break

YEAR 3

1 TRIMESTER

Specialisation Modules
- Operations Security and Incident Management
- Malware Analysis and Defence
- Secure Software Development
- Security Analytics
- Self-Learning Module

2 TRIMESTER

Break (Optional)

3 TRIMESTER

Integrated Work Study Programme
- Design Thinking (Flipped Classes)
- Capstone Project
- Work
INFORMATION AND COMMUNICATIONS TECHNOLOGY (INFORMATION SECURITY)

CURRICULUM STRUCTURE

YEAR 4
TRIMESTER 1
- Integrated Work Study Programme
- Productivity Management (Flipped Classes)
- Capstone Project
- Work

TRIMESTER 2
- Integrated Work Study Programme
- Change Management (Flipped Classes)
- Capstone Project
- Work

Content is subject to review and updates.
As ICT is a very dynamic field, the curriculum is kept updated, based on feedback from the industry.
To ensure the rigour of the programme, the curriculum has taken reference from the following internationally-recognised curriculum guidelines:
1. “Curriculum Guidelines for Baccalaureate Degree Programs in Information Technology”, Association for Computing Machinery (ACM), IEEE Computer Society, Dec 2017
2. “Computer Science Curricula 2013: Curriculum Guidelines for Undergraduate Degree Programs in Computer Science”, Association for Computing Machinery (ACM), IEEE Computer Society, Dec 2013
4. ISC2 — CISSP Domains: https://www.isc2.org/Certifications/CISSP#
GLOBAL/REGIONAL EXPOSURE TO ADVANCES IN TECHNOLOGY (GREAT)

The Global/Regional Exposure to Advances in Technology (GREAT) programme aims to expose students to the advancements in information security through a series of activities, including an optional overseas study trip to various international information security companies and institutions. This will enable students to broaden their horizons and gain valuable global/regional insights to help counter cyber threats and stay abreast of global trends.

WHAT TO EXPECT

Within the programme, each module will have at least one lecture, one practical/laboratory and/or one tutorial session weekly. In tutorials and practical/laboratory sessions, students will discuss ideas in depth with experienced faculty members and guest lecturers from the industry. They will be expected to spend a considerable amount of time developing their own understanding of the topics covered in lectures, answering questions designed to check their understanding, and preparing for tutorials. As the programme progresses, students will also work in small teams of up to six people on more specialised topics for projects.

In the second year, students will work in a team to undertake a three-month Integrative Team Project with a company. Students may also get an opportunity to take part in the Global/Regional Exposure Advances in Technology (GREAT) programme in overseas companies and organisations. In the final year, students will undergo a 12-month Integrated Work Study Programme with a company for four and a half days per week. They will concurrently work on their capstone project, individually based on a current industry problem with their company, and return to campus for flipped classes once a week.

CAREER OPPORTUNITIES

Graduates can look forward to working in, but not limited to, the following occupational fields:

- Information Security Analyst/Professional
- Cybersecurity Specialist
- Information Security Consultant
- Pen-tester

INFORMATION AND COMMUNICATIONS TECHNOLOGY (INFORMATION SECURITY)

INFOCOMM TECHNOLOGY 27
The Information and Communications Technology (ICT) programme, majoring in Software Engineering, is a highly-specialised programme comprising in-depth coverage on the development of software, design, operation, analysis, optimisation, security, maintenance, and management of software in a holistic and systematic manner.

With the aim to produce best-in-class software engineers who can contribute seamlessly and effectively to the ICT sector upon graduation, highly-qualified academics, as well as global and local ICT industry leaders, will provide students with an industry-focused and practice-oriented education. Throughout their studies, students will be given ample opportunities to develop software across a range of devices and systems.

Students will build upon the practical software development skills and learn essential software engineering knowledge, which enables them to develop software systems of any scale, that are attuned to the environments in which they operate. High-demand subjects, such as secured software development, mobile computing, cloud-solution architecting, and big data analytics will also be covered. Translational and professional development have also been incorporated into the curriculum to support students’ career advancement in the software engineering field.
INFORMATION AND COMMUNICATIONS TECHNOLOGY (SOFTWARE ENGINEERING)

CURRICULUM STRUCTURE

YEAR 1

TRIMESTER 1

ICT Foundations
- Introduction to ICT
- Programming Fundamentals
- Computer Organisation and Architecture
- Web Systems and Technologies
- Mathematics and Statistics for ICT

TRIMESTER 2

ICT Foundations
- ICT in Organisations
- Operating Systems
- Data Structures and Algorithms
- Object-Oriented Programming
- Computer Networks

TRIMESTER 3

- Break
INFORMATION AND COMMUNICATIONS TECHNOLOGY (SOFTWARE ENGINEERING)

CURRICULUM STRUCTURE

YEAR 1

TRIMESTER 1
Specialisation Modules
- Introduction to Software Engineering
- Human Computer Interaction
- Information Management
- Embedded Systems Programming
- Career and Professional Development 1

TRIMESTER 2

Specialisation Modules
- Mobile Application Development
- Software Design
- Distributed Systems Programming
- Software Modelling and Analysis
- Career and Professional Development 2

TRIMESTER 3

Special Trimester
- Global/Regional Exposure to Advances in Technology (GREAT)
- Industry Certification Module
- Integrative Team Project
- Break

YEAR 2

TRIMESTER 1

Specialisation Modules
- Software Verification and Validation
- Performance Testing and Optimisation
- Secure Software Development
- Software Management
- Self-Learning Module

TRIMESTER 2

Break (Optional)

TRIMESTER 3

- Integrated Work Study Programme
  - Design Thinking (Flipped Classes)
  - Capstone Project
  - Work

YEAR 3

TRIMESTER 1

Specialisation Modules
- Software Verification and Validation
- Performance Testing and Optimisation
- Secure Software Development
- Software Management
- Self-Learning Module

TRIMESTER 2

Break (Optional)

TRIMESTER 3

- Integrated Work Study Programme
  - Design Thinking (Flipped Classes)
  - Capstone Project
  - Work
INFORMATION AND COMMUNICATIONS TECHNOLOGY (SOFTWARE ENGINEERING)

CURRICULUM STRUCTURE

YEAR 4

TRIMESTER 1

- Integrated Work Study Programme
  - Productivity Management (Flipped Classes)
  - Capstone Project
  - Work

TRIMESTER 2

- Integrated Work Study Programme
  - Change Management (Flipped Classes)
  - Capstone Project
  - Work

Content is subject to review and updates.

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

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

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GLOBAL/REGIONAL EXPOSURE TO ADVANCES IN TECHNOLOGY (GREAT)

The Global/Regional Exposure to Advances in Technology (GREAT) programme aims to expose students to the advancements in software engineering through a series of activities, including an optional overseas study trip to various international software companies and institutions. This will enable students to broaden their horizons and gain valuable global/regional insights into software engineering practices in the industry.
WHAT TO EXPECT

Within the programme, each module will have at least one lecture, one practical/laboratory, and/or one tutorial session weekly. In tutorials and practical/laboratory sessions, students will discuss ideas in depth with experienced faculty members and guest lecturers from the industry. They will be expected to spend a considerable amount of time developing their own understanding of the topics covered in lectures, answering questions designed to check their understanding, and preparing for tutorials. As the programme progresses, students will also work in small teams of up to six people on more specialised topics for projects.

In the second year, students will work with their team members to undertake a three-month Integrative Team Project with a company. Students may also get an opportunity to take part in the Global/Regional Exposure Advances in Technology (GREAT) programme in overseas companies and organisations. In the final year, students will undergo a 12-month Integrated Work Study Programme with a company for four and a half days per week. Students will concurrently work on their capstone project individually, based on a current industry problem with their company, and return to campus for flipped classes once a week.

CAREER OPPORTUNITIES

Graduates can look forward to working in, but not limited to, the following occupational fields:

- Software Engineer
- Software Systems Architect
- Information Technology Project Manager
- Mobile, Web and Cloud Developer
The members of the Industry Advisory Committee for the Computing Science, Information and Communications Technology (Information Security) and (Software Engineering) programmes are:

**MR CHANG YEW KONG (CHAIRPERSON)**
Member, Governing Board  
Centre for Quantum Technologies  
National University of Singapore

**MR ALOYSIUS CHEANG**
Member, Board of Directors  
The International Information System Security Certification Consortium (ISC)³

**MR LEONG SEE SUM**
Director  
Infocomm Infrastructure  
Defence Science and Technology Agency

**MR STEPHEN LIM**
Chief Executive Officer  
SQL View Pte Ltd

**MR PETER MOORE**
Managing Director  
APAC Global Public Sector  
Amazon Web Services

**DR YOSHIHIRO OHBA**
Chief Specialist (System Technology Research & Development Center)  
Kioxia Corporation

**DR ONG CHEN HUI**
Cluster Director (Technology Development)  
Infocomm Media Development Authority (IMDA)

**MR SELWYN SEAN SCHARNHORST**
Director  
Ecosystem Development  
Cyber Security Agency of Singapore

**DR KEIJI YAMADA**
Senior Vice President  
Research & Development  
NEC Asia Pacific Pte Ltd
SIT adopts an aptitude-based approach in assessing applicants for admission, by considering the following criteria:

**MEETING THE MINIMUM ACADEMIC REQUIREMENTS**

- Diploma from any local polytechnic
- GCE A Level
- International Baccalaureate Diploma (IB)
- NUS High School Diploma
- Diploma from other institutions
- Other Year 12 Equivalent Qualifications

**INTERVIEW PERFORMANCE**

All shortlisted applicants will be assessed through interviews. For specific degree programmes, applicants may have to submit portfolios or essays, and/or be assessed through written or technical tests.

*To help us understand the academic pathway you have taken, please fill in the details of both your entry qualification (i.e. Polytechnic Diploma/A Level/IB or equivalent Year 12 results) and your GCE O Level or equivalent Year 10 results/ITE (Nitec and Higher Nitec) when you apply for admission to SIT. SIT accepts applicants who did not sit for their GCE O Level examination and have come through other forms of secondary or post-secondary education, such as the Polytechnic Foundation Programme (PFP).*
## ADMISSION REQUIREMENTS

<table>
<thead>
<tr>
<th>QUALIFICATION</th>
<th>Computer Engineering</th>
<th>Computer Science in Interactive Media and Game Development</th>
<th>Computer Science in Real-Time Interactive Simulation</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>DIPLOMA FROM ANY LOCAL POLYTECHNIC</strong></td>
<td>Completed a local polytechnic diploma.</td>
<td>Applicants with relevant engineering background (i.e. Diploma in Electrical and Electronics Engineering, Computer Engineering and Information Technology), may apply for exemption for modules, up to a maximum of two trimesters. For applicants with non-relevant diplomas, exemption from modules will be considered on a case-by-case basis.</td>
<td>Subject to approval, diploma applicants may be granted module exemptions, based on the modules taken and minimum grades achieved in their diploma.</td>
</tr>
<tr>
<td><strong>GCE A LEVEL</strong></td>
<td>Obtained passes in at least two H2 Level subjects and offered General Paper (GP) or Knowledge &amp; Inquiry (KI) in the same sitting, while satisfying the Mother Tongue Language (MTL) requirements.</td>
<td>❑ A pass in one of the following H2 subjects (Mathematics or Physics or Computing); or a pass in H1 Mathematics</td>
<td>—</td>
</tr>
<tr>
<td><strong>INTERNATIONAL BACCALAUREATE DIPLOMA (IB)</strong></td>
<td>Obtained a minimum grade five for at least two HL and one SL subjects and the IB Diploma, while satisfying the Mother Tongue Language (MTL) requirements.</td>
<td>❑ A pass in one of the following HL subjects (Mathematics or Physics or Computing); or a pass in SL Mathematics</td>
<td>—</td>
</tr>
<tr>
<td><strong>NUS HIGH SCHOOL DIPLOMA</strong></td>
<td>Obtained the NUS High School Diploma, while satisfying the Mother Tongue Language (MTL) requirements.</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td><strong>DIPLOMA FROM OTHER INSTITUTIONS</strong></td>
<td>BCA diploma holders in the following programmes may apply: ❑ Construction Engineering ❑ Construction Information Technology ❑ Electrical Engineering and Clean Energy ❑ Mechanical Engineering (Green Building Technology)</td>
<td>—</td>
<td>Applicants will be assessed on a case-by-case basis.</td>
</tr>
<tr>
<td><strong>OTHER YEAR 12 EQUIVALENT QUALIFICATIONS</strong></td>
<td>Completed at least 12 years of formal education deemed as acceptable, equivalent qualifications to be considered for admission.</td>
<td>—</td>
<td>—</td>
</tr>
</tbody>
</table>

For up-to-date information, please refer to [SingaporeTech.edu.sg](http://SingaporeTech.edu.sg).
## ADMISSION REQUIREMENTS

<table>
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<tr>
<th>QUALIFICATION</th>
<th>Computing Science</th>
<th>Information and Communications Technology (Information Security)</th>
<th>Information and Communications Technology (Software Engineering)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>DIPLOMA FROM ANY LOCAL POLYTECHNIC</strong></td>
<td>Completed a local polytechnic diploma.</td>
<td>Module exemptions may be granted for the first year modules on a module-by-module basis, subject to evaluation of applicant’s diploma and grade in related modules. Exemptions may also be considered for relevant professional or industrial certifications.</td>
<td>Applicants with relevant diplomas may apply for module exemptions of up to 10 modules. Exemptions may also be considered for relevant professional or industrial certifications.</td>
</tr>
<tr>
<td><strong>GCE A LEVEL</strong></td>
<td>Obtained passes in at least two H2 Level subjects and offered General Paper (GP) or Knowledge &amp; Inquiry (KI) in the same sitting, while satisfying the Mother Tongue Language (MTL) requirements.</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>INTERNATIONAL BACCALAUREATE DIPLOMA (IB)</strong></td>
<td>Obtained a minimum grade five for at least two HL and one SL subjects and the IB Diploma, while satisfying the Mother Tongue Language (MTL) requirements.</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>NUS HIGH SCHOOL DIPLOMA</strong></td>
<td>Obtained the NUS High School Diploma, while satisfying the Mother Tongue Language (MTL) requirements.</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>DIPLOMA FROM OTHER INSTITUTIONS</strong></td>
<td>BCA diploma holders in Construction Information Technology may apply.</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>OTHER YEAR 12 EQUIVALENT QUALIFICATIONS</strong></td>
<td>Completed at least 12 years of formal education deemed as acceptable, equivalent qualifications to be considered for admission.</td>
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</tbody>
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Republic Polytechnic
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SIT@SP BUILDING
Singapore Polytechnic
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SIT@TP BUILDING
Temasek Polytechnic
Blk 29B Tampines Avenue 1, Singapore 528694

OPERATING HOURS

The operating hours for all hotlines are from Mondays to Fridays, 11:00 am to 3:00 pm.
Closed on Saturdays, Sundays and Public Holidays.

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All information is accurate at time of print.
SIT reserves the right to amend the information without prior notice. For the most up-to-date information, please visit SingaporeTech.edu.sg.