

# COMPUTER ENGINEERING

## DCPE – S53

## Creating Intelligent Systems for Modern Cities

Enter the thrilling world of computers, where intelligent systems shape our future. In a rapidly changing world, the Diploma in Computer Engineering (DCPE) offers a comprehensive and flexible curriculum so that you can keep your career and study options wide open.

As we propel towards a future where autonomous vehicles, drones, and intelligent city management systems play a vital role, it's crucial to stay ahead in areas like Artificial Intelligence of Things (AIoT), data analytics, 5G, networking, and cybersecurity. DCPE allows you to harness these cutting-edge capabilities, empowering you to shape the future and create innovative solutions for a "Smart Nation" like Singapore.

### SCHOLARSHIPS

- Centre for Strategic Infocomm Technologies (CSIT) Diploma Scholarship
- DSO National Laboratories (DSO) Diploma Scholarship
- Defence Science and Technology Agency (DSTA) Digital/Engineering Scholarship
- Singtel SHINE Cadet Programme
- Singapore Polytechnic Engineering Scholarship



### WHAT YOU CAN EXPECT

- Immerse in a **comprehensive curriculum** and master future-forward skills in Embedded Systems, Software, 5G Technology, Artificial Intelligence, Internet of Things, Cloud Computing, Networking and Cyber Security.
- Pursue your passion through electives that can lead to a **certificate or minor**.
- Gain exposure through a 6-week Overseas Immersion Programme to Japan.
- Join the **SP-NUS Accelerated Pathway Programme** or **SP-SUTD Accelerated Pathway Programme** to get a head start in university life.

### FURTHER STUDIES

There are more than 14 degree programmes from local universities in Computer Science/Engineering, Information Systems, Data Science, Artificial Intelligence, and Electrical & Electronic Engineering that you can apply for. You will also be eligible for advanced placements in computer-related degree programmes of universities in Australia, New Zealand and United Kingdom.

### CAREER OPTIONS

- Assistant Computer Engineer
- Associate Security Engineer
- Cloud Engineer
- Embedded System Engineer
- IT Support Engineer
- Network Engineer/Administrator
- Software/Mobile Applications Developer

### ENTRY REQUIREMENTS

Range of Net 2023 JAE ELR2B2: 3 – 12

Aggregate Type: ELR2B2-C

SUBJECT	GRADE
English Language	1 – 7
Mathematics (Elementary/Additional)	1 – 6
Any one of the following subjects:	1 – 6
• Biology	
• Biotechnology	
• Chemistry	
• Computing/Computer Studies	
• Design & Technology	
• Electronics/Fundamentals of Electronics	
• Physics	
• Science (Chemistry, Biology)	
• Science (Physics, Biology)	
• Science (Physics, Chemistry)	

Applicants should not be suffering from severe vision deficiency, acute hearing impairment or uncontrolled epilepsy. Interested applicants with any of these conditions are advised to contact Singapore Polytechnic for more information.



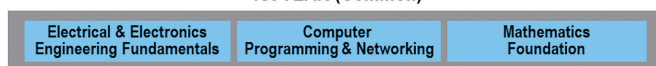
I completed my internship locally at Centre for Strategic Infocomm Technologies (CSIT). As an intern in the Software Engineering department, I worked on a fullstack development project and explored various technology stacks. It was a fulfilling and memorable experience as I could learn new, modern technology stacks that enabled me to build on the foundations of my existing knowledge in software development. I also had the opportunity to interact with my mentors and staff at CSIT, who were knowledgeable and helpful, giving me an insight into the working environment at CSIT. This experience has helped to shape my current aspirations and solidified my interests in software engineering.

#### Tan Wee Joe

DCPE Gold Medallist  
The Institution of Engineers Gold Medal Award Recipient  
Internship at Centre for Strategic Infocomm Technologies

### Diploma in Computer Engineering

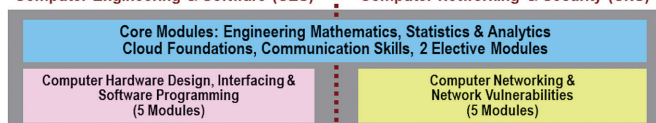
1st YEAR (Common)



2nd YEAR

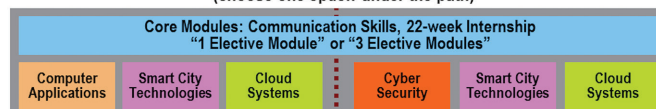
(choose one path: CES or CNS)

Computer Engineering & Software (CES)    Computer Networking & Security (CNS)



3rd YEAR

(choose one option under the path)





# WHAT YOU'LL STUDY

The Diploma in Computer Engineering is a three-year full-time programme.



## FIRST YEAR

- Basic Mathematics
- Common Core Modules
- Computer-Aided Design & Drafting
- Digital Electronics 1
- Digital Electronics 2
- Engineering Mathematics I
- Education and Career Guidance 1
- Introduction to Engineering & Design
- Introduction to Engineering Programming
- Network Fundamentals
- Principles of Electrical and Electronic Engineering I
- Principles of Electrical & Electronic Engineering II

## SECOND YEAR

- Cloud Foundations
- Common Core Modules
- Elective 1
- Elective 2
- Engineering Mathematics II
- Statistics & Analytics for Engineers

From Year 2, students are allowed to specialise in the area of their particular interest. They can choose from the following paths:

### + Computer Engineering & Software (CES) Path

- Computer Architecture
- DevOps for AIoT
- Full Stack Development (NEW!)
- Microcontroller Applications
- Mobile Applications Development

### + Computer Networking & Security (CNS) Path

- Computer Networking
- LAN Switching and Wireless
- Network Hacking
- Server Management
- Wide Area Networks

## THIRD YEAR

- Common Core Modules
- Elective 3
- Elective 4 (Option)
- Elective 5 (Option)
- Year-3 Option Modules 1 to 4 (CES or CNS)
- 22-Week Internship Programme/Internship Equivalent

From Year 3, students can choose one option from the following, based on their Year 2 technical path:

### + Computer Applications (For CES Path Only)

- Embedded Computer Systems
- Machine Learning & Artificial Intelligence
- Object Oriented Programming & Data Structures
- 5G & AIoT Applications

### + Smart City Technologies (For CES and CNS Paths)

- Data Analytics
- Internet of Things Security
- Smart City Systems Design
- 5G & AIoT Applications

### + Cloud Systems (For CES and CNS Paths)

- Cloud Architecting
- Cloud Native Application Development (NEW!)
- DevOps for Networking
- Operating Systems

### + Cyber Security (For CNS Path Only)

- AI for Cybersecurity (NEW!)
- Cyber Security Operations
- Firewall Technologies
- Network Analysis & Forensics

## ELECTIVES

The SP elective framework offers students options to pursue their passion and / or meet different career needs, and is an integral part of the holistic education we seek to provide to our students. The learning experiences of this elective framework help students in their development as self-directed, versatile, life-long learners, which are essential in today's volatile and changing societal as well as occupational landscape.

Students who are interested to explore additional new skills and abilities will have the opportunity to take up to five electives. Certificates and minors will be awarded when students complete a suite of related elective modules. Please visit <https://www.sp.edu.sg/sp/education/elective-modules> for details of this elective scheme and the full list of electives.

## COMMON CORE CURRICULUM

The Common Core Curriculum is designed to prepare students for a disruptive world that is ever-changing. Comprising critical human and emerging digital skills, the common core modules offer students an integral and inter-disciplinary learning experience to address the wicked problems of the world (framed by the United Nations' Sustainable Development Goals).

Through the Common Core modules, students will think critically about real-world problems, empathise with local and global communities and be challenged to effect change. For more information on the Common Core Curriculum, please visit <https://www.sp.edu.sg/sp/education/common-core-curriculum>.

All full-time diploma students are required to take a compulsory Education and Career Guidance module in SP. Students will take Education and Career Guidance – Personal Development (30 hours) in their first year.

All students are required to take one compulsory Wellness for Life (WFL) module for one semester in their first year in SP. In their second and third year, students may sign up for WFL module as an optional module.