Computer Engineering

Tackling real-world problems with hardware and software

Technology is an integral part of our lives, and **NUS Computer Engineering** prepares graduates to embark on a lifelong journey in designing computing systems for a smarter world.

Computer engineers introduce greater intelligence in increasingly smaller but more powerful devices; from the ubiquitous smartphone to the myriad networked electronic systems in a modern car and industrial control systems that power economies.

Computer Engineering is a multidisciplinary programme, transcending the traditional boundaries of computer science and electrical engineering. Computer engineers have a balanced education in electrical engineering, software design and hardware/software integration. Students are involved in many aspects of computing, from component-level circuit design to large-scale integration involving intelligent systems; energy management, monitoring and supervision; and information processing systems and communications.

Career Prospects

The NUS Computer Engineering programme gives our graduates the flexibility of building a career in the IT industry or in other allied sectors. Past graduate employment surveys have consistently shown that computer engineers have some of the highest employment rates and best starting pay among all graduates.

Some of the exciting companies that our graduates work in are **Accenture, Barclays Capital, DSO National Laboratories, Facebook, Google, Lucasfilm, Microsoft**.

The march of technology and how it impacts human society is very strongly entwined in how software and hardware work together seamlessly.

And for that, a strong and rigorous understanding of both realms is fundamental. The NUS Computer Engineering programme is unique with its rigour in combining computer science and electrical engineering, which prepares graduates to contribute towards realising and innovating in a device and computational rich and connected world.

Harish Pillay
Global Head, Community Architecture & Leadership, Red Hat APAC Pte Ltd

Concentration Areas

Communications & Networking

Learn about wireless and wired networks (e.g. optical networks), and networked devices and protocols, such as the Internet of Things.

Interactive Digital Media

Learn about multimedia, graphics and animation, computer games and human-computer interaction.

Intelligent Systems

Covers machine learning, robotics and artificial intelligence, including video, image, text and language understanding.

Large-Scale Computing

Focuses on cloud computing and high performance computing such as big data analytics and databases.

Embedded Computing

Focuses on embedded systems that are tiny computers in everyday objects such as smart watches, autonomous vehicles and drones.

System-On-A-Chip Design

Learn about multimedia, graphics and design of low-power integrated circuits with multiple functions, which forms the main chip in advanced devices such as smartphones.

Computer Engineering Specialisations and Minor

Internet of Things (IoT)

IoT provides the backbone for implementing Smart Nation developments in Singapore and worldwide, pervading the environment, cities and factories of the future. By acquiring skills in computing hardware and software, data analytics, networking and communications and cybersecurity, you will be well-positioned to contribute to these transformations, which has tremendous growth in job opportunities.

Robotics

Artificial Intelligence has taken robots to unprecedented heights to augment humans in handling highly complex activities. Robots are now seeing rapid deployment in industrial automation, transportation, medicine and elderly care, as well as in entertainment and service sectors. Students who undertake this specialisation will have the opportunity to work on real-world robotics applications in areas such as manufacturing, transportation and healthcare.

Advanced Electronics

Electronic devices and ICs pervade our everyday lives from smart gadgets, flexible screens, IoT sensors, to AI and clean energy. This specialisation introduces students to industry practices related to semiconductor fabrication, chip manufacturing, IC design and prototyping. It is especially relevant to students who aspire for a career in our nation's semiconductor industry, which forms a vital node in global electronics networks and is underpinned by industry leaders.

Industry 4.0

The 4th industrial revolution bridges the digital and physical environments. Internet of Things, Big Data and cloud, along with advanced robotics and AI, enable Industry 4.0 with automation and optimisation.Machine vision is an indispensable component of every automated environment. Collaborative robots can share a workspace with humans, making automation easier. Predictive Maintenance uses Machine Learning to learn from historical data and using live data to analyse failure patterns.

Space Technology

Satellite development has progressed rapidly from large and expensive spacecraft to relatively small and much more affordable spacecraft. The specialisation provides a comprehensive learning of this "New Space" technology. Students will learn the various aspects of a small satellite, participate in a final year capstone project in satellite-related areas, and understand the strategies for ensuring the satellite is able to withstand the harsh space environment.

Minor in Data Engineering

Data engineers build tools, infrastructure, frameworks and services which allow them to tease insights from the myriad of data streams being generated. The main aim of this Minor is to train graduates with the ability to handle and manage the large volume of data generated by industry and glean actionable insights from that data.

Admission Requirements

Qualifications	Requirements
Singapore-Cambridge GCE A-Level	H2 Mathematics or Further Mathematics, and H2 Physics* or H2 Chemistry or H2 Computing
International Baccalaureate (IB) Diploma	Pass in High Level (HL) Mathematics: Analysis and Approaches, and HL Physics# or HL Chemistry or HL Computer Science

*Students without H1 or H2 Physics need to have O Level Physics or equivalent and will be required to take Physics bridging module(s).

#Students without HL Physics need to have SL Physics or O Level Physics or equivalent and will be required to take Physics bridging module(s).

Applicants presenting accredited diplomas from a polytechnic in Singapore may also apply. For polytechnic and NUS High School graduates, as well as other qualifications, scan the QR code for more details.

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