



DISCOVER

CDE

Programmes

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NUS CDE

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An integral part of NUS which is ranked

1st
in Asia and
11th

worldwide by
QS World University
Rankings 2022



300+

Partner Universities in
40+ Countries for Student
Exchange Experiences

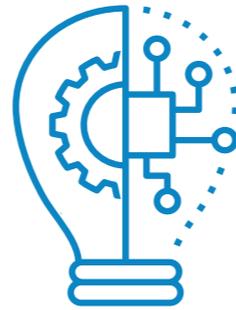


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NUS Overseas
Colleges

Ranked
9th

Worldwide in
Engineering and
Technology by QS
World University
Rankings by
Subject 2021



Ranked
6th

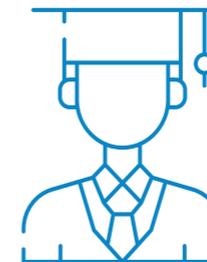
Worldwide in
Architecture and the Built
Environment by QS World
University Rankings by
Subject 2021



1st

in graduate employability
in Singapore according to
QS Graduate Employability
Rankings 2022

WELCOME TO THE NUS COLLEGE OF DESIGN & ENGINEERING



7,000

Undergraduate Students

14

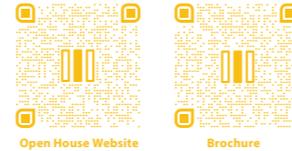


Undergraduate Degree Programmes Offered to Singapore-Cambridge GCE 'A' Levels, Polytechnic Diploma, NUS High School, International Baccalaureate and International Applicants

- Architecture (BA)
- Biomedical Engineering (BEng)
- Chemical Engineering (BEng)
- Civil Engineering (BEng)
- Computer Engineering (BEng)
- Electrical Engineering (BEng)
- Engineering Science (BEng)
- Environmental Engineering (BEng)
- Industrial Design (BA)
- Infrastructure & Project Management (BEng)
- Industrial & Systems Engineering (BEng)
- Landscape Architecture (BLA)
- Materials Science & Engineering (BEng)
- Mechanical Engineering (BEng)

ARCHITECTURE

cde.nus.edu.sg/arch/doa-e-open-day/baarch-open-day/



The B.A. (Arch) is a preeminent four-year Honours degree programme that serves as the core foundation for concurrent Master programmes offered by NUS Architecture. Situated within one of the fastest urbanising and developing areas of the world, our students are enmeshed directly in the opportunities, complexities and challenges of architecture while benefiting from the research and learning environments of an interdisciplinary education at the National University of Singapore, a top research university in Asia.

The programme champions design excellence through studio research, exploration, and making. The fundamental skills of drawing, model-making and representation are complemented by an inspiring and interdisciplinary curriculum comprising architectural history, theory, tectonics, as well as systems and technologies. An extensive range of issues-driven studio research topics promotes the development of skills necessary for students to take on complex issues of the built environment in Asia and beyond.

Future Career Options:

The design, research and thinking skills from the pre-professional programme B.A. (Arch) prepares students to be

- Spatial designers
- Researchers
- Design journalists
- Design educators

The professional M.Arch programme prepares students to practice as architects or as architectural educators. Graduates have also broadened their skills and knowledge to become

- Urban designers
- Landscape architects
- Heritage consultants
- Architectural technologists
- Project managers



NUS Architecture is the top architecture school in Asia and ranked 6th best in the world. (QS World University Rankings by Subject 2021).



Our SDE buildings are the first in Singapore to achieve the WELL™ Health-Safety Rating by the International WELL Building Institute, and first worldwide in the educational sector.



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BIOMEDICAL ENGINEERING

cde.nus.edu.sg/bme



Biomedical engineers help people to live safer and healthier lives by designing and developing medical devices, techniques, instrumentation and software used in healthcare, from advanced prosthetics to new drug delivery methods. Biomedical engineers combine knowledge and skills from several disciplines to analyse and solve complex problems in medicine and healthcare from the engineering, biological and medical perspectives.

You will study a wide range of subjects, such as chemistry, physiology, materials, mechanics, electronics and imaging, as well as learn how to apply these in biomedical instruments, orthopaedic implants, prosthetic devices and robotics in healthcare. Get hands-on design and research-based projects, and understand issues of professional ethics in legal and regulatory affairs. You may even choose to **specialise in Robotics.**

Future Career Options:

With fast-growing adoption of technology in medical practice and healthcare, you may be designing new medical devices, developing new diagnostic tools and medical equipment, or even establishing safety standards for medical devices and testing product safety. Find career opportunities in:

- Healthcare (secondary and tertiary care hospitals)
- Medical technology
- Biotechnology
- Pharmaceuticals



NUS Biomedical Engineering is **using Artificial Intelligence (AI) to tailor optimal drug combinations** and dosages for individuals, improving clinical outcomes and patient satisfaction.



EsoGlove, the world's lightest exoskeleton device for hand rehabilitation, arose from a student project by alumnus, Hong Kai Yap, who went on to co-found Rocesco Technologies, which offers wearable robotic solutions for rehabilitation and assistive functions.



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CHEMICAL ENGINEERING



cde.nus.edu.sg/chbe



Chemical engineers design processes and equipment for large-scale chemical conversion of raw materials into useful products in a safe, sustainable and economical way. Chemical engineers also manufacture chemicals, fuels, plastics, electronics, pharmaceuticals, food and beverages, even consumer goods, such as detergents, toiletries and textiles. Today they even use their knowledge of chemistry, physics, biology and math to invent new technologies for cleaning-up the environment and pioneer new developments in recycling, clean energy, medicine and biotechnology.



You will learn about chemical processes involving thermodynamics, chemical reactions, mass and energy balances, fluid dynamics, separation processes and biological phenomena, as well as process design and control – all these will be put into practice in a capstone design project to ensure you consolidate your skills and knowledge.

Future Career Options:

You can find employment in a broad range of roles in almost any sector where products are manufactured on a commercial scale, such as:

- Biotechnology
- Chemicals
- Energy
- Environmental health and safety
- Petrochemicals
- Pharmaceuticals
- Semiconductors



NUS Chemical Engineering has been ranked **consistently among the world's top 10** in QS University Rankings by Subject.



Chemical engineering is distinct from chemistry with its **emphasis on practical applications** for the commercial production of products and its related processes.



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CIVIL ENGINEERING



cde.nus.edu.sg/cee



Civil engineers plan, design and create the world around us: underground superhighways that connect us, utilities that power us, iconic skyscrapers that define our skyline, smart infrastructures that sustain us, and a coastal landscape that protects us from climate change. Civil engineers are vital to maintaining and improving our modern standard of living in environmentally sustainable ways. We **build the future and shape the world.**

You will be grounded in fields such as sustainable materials and structural design, climate change, and geotechnics. You will also understand concepts in sustainable infrastructure systems and its construction management, smart transportation and urban policy. You may further delve into the digital technologies revolutionising civil engineering by **specialising in Digital Urban Infrastructure**, or hone your management skills with a **Minor in Infrastructure Management and Finance**. The programme will prepare you to be a Professional Engineer when you have gained sufficient work experience after graduation.



NUS Civil and Environmental Engineering
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Future Career Options:

Civil engineers are instrumental in shaping the development of urban Singapore. Our curriculum prepares you with the prerequisite skills to transfer your knowhow to other exciting fields. You will find many employment opportunities in:

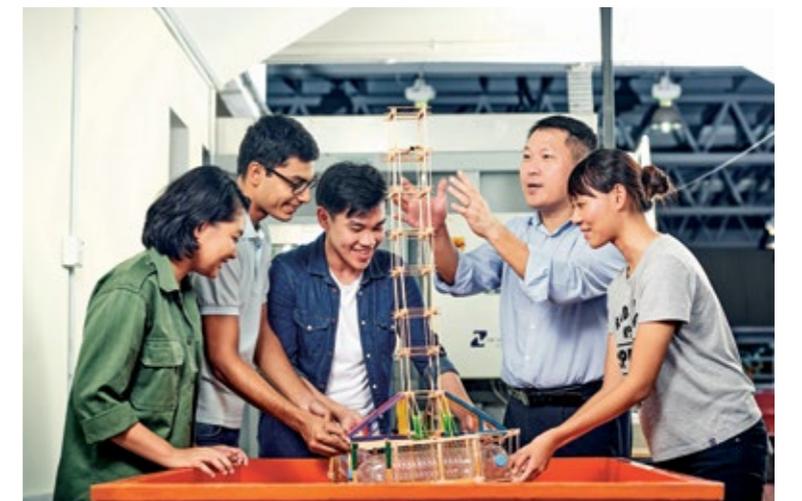
- Sustainable Infrastructure Financial Analyst
- Climate Change Risk and Hazard Analyst
- Urban Policy and Transport Planner
- Public Sector Engineer
- Engineering Design Consultants
- Project Manager in the Built Environment
- ConTech Entrepreneur



Explore how **Building Information Modelling (BIM)** can digitally create a virtual twin of buildings and facilities before they are even built, help design, plan and construct and manage complex infrastructure projects.



NUS Civil Engineering is ranked **2nd in the world and top in Asia** in the QS University Rankings by Subject 2021.



COMPUTER ENGINEERING



ceg.nus.edu.sg



Computer engineers link sophisticated hardware to software, bringing intelligence to devices from the ubiquitous mobile phone to autonomous vehicles on land, in the air and sea, even in space. Computer engineers focus on solving real-world problems by designing hardware and software interfaces to connect the physical and virtual, creating solutions that are bigger than the sum of their parts.



You will study the fundamentals of hardware and software design, and learn how to apply this knowledge, with a focus on problem-solving in one of several industrial areas, which you select according to your interest. You may also choose to **specialise in the Internet of Things (IoT) or Robotics; and Data Engineering as a minor.**

Future Career Options:

With your unique training in both hardware and software, you will be highly sought-after in the digitalised economy, with the flexibility of many different career options in information technology (IT) and related sectors, including:

- Artificial intelligence
- Augmented reality (AR)/ virtual reality (VR)
- Data analytics
- Internet of Things
- Robotics



Computer engineers are often responsible for **developing and prototyping of hardware and software simultaneously**, while computer scientists focus mostly on the software, and the ability to work in different programming languages and operating systems.



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ELECTRICAL ENGINEERING



cde.nus.edu.sg/ece



Electrical engineers design, build and maintain components, devices and systems that use electricity, from the smallest microchips in smart devices to power grids that span the nation. Electrical engineers even work on satellite technologies and wireless networks on planes we now take for granted.

You will study the physics and mathematics of electricity, electronics and electromagnetism, and learn how these apply to systems that process information and transmit energy. You have the flexibility to further concentrate on modules in areas such as Wireless Communication Systems, Computational Intelligence, Microelectronic Devices and Technologies, Control and Intelligent Systems, Integrated Circuits and Systems, or Power and Energy. **Specialisations in the Internet of Things (IoT) or Robotics** prepare you for new roles in the digitalised economy, or take up a **minor in Data Engineering** to learn how to manage and use the large data sets generated by industry.



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Future Career Options:

Your knowledge and skills as an electrical engineer are needed in all industries that depend on electrical power, opening up a wide range of roles in diverse sectors, such as:

- Aerospace and Aviation
- Electronics and Semiconductors
- Information Technology (IT)
- Manufacturing
- Power and energy
- Telecommunications
- Transportation



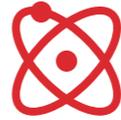
NUS Electrical Engineering is ranked among **the world's top 5** in the QS World University Rankings by Subject 2021.



Professor Low Kay Soon discussing with students on the next generation of satellite built by NUS for launch in 2023 (image below).



ENGINEERING SCIENCE

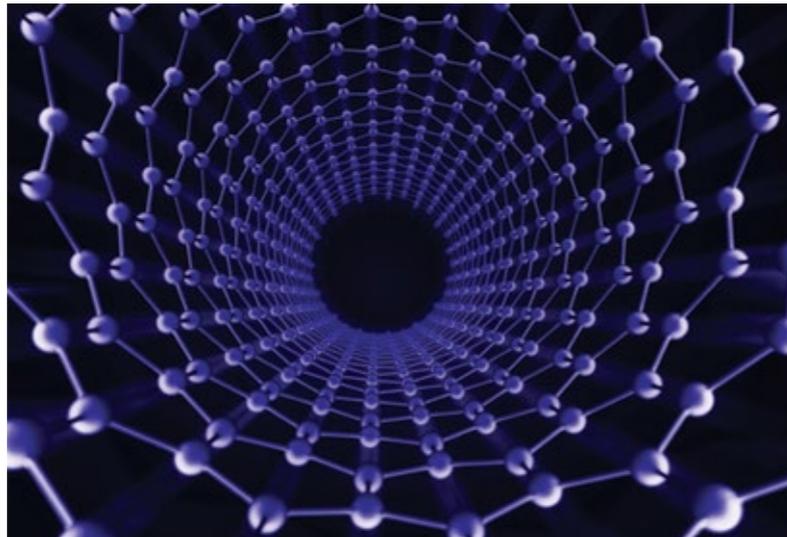


cde.nus.edu.sg/esp



Engineer-scientists apply their broad foundations in mathematics and the basic sciences in an integrated approach to solve multidisciplinary problems that overlap the boundaries of traditional engineering disciplines. Engineer-scientists use their broad-based interdisciplinary training and mindset to create innovative technologies that can address today's increasingly complex issues.

You will be grounded in mathematics and core subjects in physics, before selecting one of four specialisations, namely, **Computational Engineering Science, Energy Science and Technology, Engineering Science in Medicine** and **Nanoscience and Technology**. You will have the skills and knowledge to transition directly into research roles after graduation, where you will help develop advanced technological solutions.



Future Career Options:

With your strong fundamentals in mathematics and physics, you are well-placed to pursue an advanced research degree, or fit into research and development positions in a wide range of industries, such as:

- Healthcare
- Defence
- Electronics
- Energy
- Telecommunications

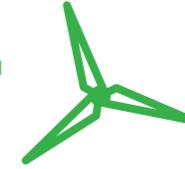


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Many NUS Engineering Science **undergraduates go on summer research internships at our top partner universities around the world** which are part of the International Engineering Science Consortium (IESC).

ENVIRONMENTAL ENGINEERING



cde.nus.edu.sg/cee



Environmental Engineering draws from the science of biology, chemistry, ecology and hydrology to devise sustainable solutions to improve our quality of life, while maintaining a clean and healthy environment.

NUS Environmental Engineering's main domains include:

- Climate Change Mitigation
- Water quality monitoring and control
- Circular economy and resource management
- Water reclamation and reuse
- Public health, safety and environment
- Renewable energy
- Sustainable development

You will study environmental science, technology and management, and how to manage, protect and restore soil, water and air environment,

applying these fundamentals to design sustainable solutions. This programme gives you the required training to be eligible for Chartered Engineer registration when you have gained sufficient work experience after graduation. To complement your learning experiences, you may consider taking other majors or minors such as Life Science, Economics, Public Health, Data Engineering, Civil Infrastructure, Sustainable Urban Development or Management, or specialisations such as Digitalisation of Urban Infrastructure.



"NUS Environmental Engineering curriculum will equip its students with the knowledge and skillsets to be able to work in the sustainability and renewable energy related industries and organisations, as well as help contribute towards Singapore's sustainability efforts. They will also be eligible to be conferred Chartered Engineers by the Institution of Engineers, Singapore which will further enhance their professional standing and credibility in the engineering community."

Mr Dalsong Chung, Director (Industry Development and Promotion Division)/ Managing Director (CleanEnviro Summit Singapore), Joint Operations and Technology Group, NEA.

Future Career Options:

Your knowledge and skills will be needed to find sustainable environmental solutions in many industries, and our graduates are in the roles of:

- Environmental Consultant
- Environmental Health and Safety Director
- Environmental Project Manager
- Public Sector Engineer/ Policy Maker
- Researcher
- ESG/ Risk Analyst
- Technopreneur



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INDUSTRIAL DESIGN



cde.nus.edu.sg/did



Open House Website

NUS Industrial Design can sound puzzling - It simply refers to the discipline which specialises in innovating for humanity. Its purpose is to create new products, services, spaces, apps, user experiences, and businesses that people love.

Industrial designers create with deep understanding of how human beings perceive, adopt, and use innovative solutions - and how tangible and immaterial resources can be put together to make these solutions happen.

It is a highly-specialised course that brings the most **creative aspects of technology, non-conformist engineering, artistry, and entrepreneurship together.**

Students who do well here are multi- curious, dabble in both the arts and tech, and have a penchant for questioning the status quo. They dream of breaking new ground and starting up. They are artists, scientists, makers, communicators, entrepreneurs, inventors, researchers, technologists, and engineers, all mixed within each person in unique combinations.



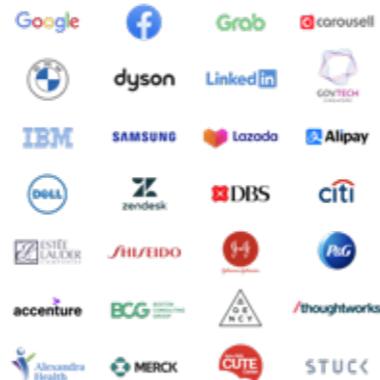
With almost no exams and essays, students are immersed a learning environment that is akin to a bootcamp and hackathon every semester. Students are coached in small mentoring groups by top design educators, renowned designers, industry leaders, and President's Design Award recipients. They will find that there is no disconnect between school and reality.

Industrial Designers are prized for their ability to think outside the box, and their trans-disciplinary ability to bridge between different fields. These are areas that are hard for automation and artificial intelligence to replicate.

Our graduates are often hired as innovation and design leaders at places like:

Future Career Options:

- Product Design
- Service Design
- Interaction Design
- User Experience
- Visual Communication
- Creative Technologists
- Physical & Digital Innovation
- Design Entrepreneurs



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INFRASTRUCTURE AND PROJECT MANAGEMENT

cde.nus.edu.sg/dbe



The **NUS Infrastructure and Project Management (IPM) programme is a unique interdisciplinary educational offering in Asia** that traverses the domains of engineering, design, management, technology, building science and law. Our programme nurtures built environment professionals with deep knowledge and skills in planned specialisations such as **Cost and Contract Management, Facilities Management, and Sustainable and Digital Technologies.** We also develop the future professionals to make cogent connections across broad but related disciplines. NUS IPM graduates are primed to make significant contributions towards the vision of **urban sustainability** and address real world challenges such as **climate change** which require convergence across different disciplines and the development of integrated knowledge. Our students are taught a broad range of subjects to encourage them to **learn widely and deeply** and realise their career aspirations within the built environment. **Essential subjects** include project management,

digital construction, construction technology, building science, project cost management, infrastructure and facilities management, contract and procurement management, and fundamental principles of law.

Exciting electives include project finance, safety and health management, project leadership, project management law, construction enterprise management, Building Information Modelling (BIM), materials technology, strategic facilities management, facilities management law and contracts, infrastructure operations and maintenance, AI applications, energy management, smart facilities, building energy analysis and simulation, and green development.

Future Career Options:

Our graduates are well-sought after by both public sector and private sector employers of the built environment.

- Project Manager
- Facilities Manager
- Infrastructure Asset Manager
- Contract Manager/ Quantity Surveyor
- Construction Claims Consultant
- Building Information Modelling (BIM) Manager
- Smart Sustainability Manager
- Energy Manager



NUS Built Environment is ranked **6th in the world** and **1st in Asia** in the QS University Rankings by Subject 2021.



The NUS IPM programme is the only Engineering programme in NUS with a strong emphasis on project management.



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The NUS IPM programme **integrates engineering, management, and law.** This interdisciplinary integration anchors the programme at the forefront of built environment education.



INDUSTRIAL AND SYSTEMS ENGINEERING



cde.nus.edu.sg/ISEM



Industrial and Systems engineers improve systems and processes so that they run more profitably, efficiently and safely. We use extensive mathematical tools for modelling and computational methods for analysis, evaluation and optimisation. Industrial and systems engineers today also rely on the tools of data science and artificial intelligence to understand complex systems and test solutions. Combined with a business mindset and management skills, industrial and systems engineers help organisations devise and implement new ways to do things better.

You will be taught a broad range of subjects including linear algebra, probability theory, statistics, operations research, computer simulation, as well as economics and an understanding of human-centred design. You may choose a **minor in Data Engineering** and learn how to manage and harness large data in decision-making.

Future Career Options:

Your training in holistic problem-solving for productivity and quality improvement makes you valuable in industries as diverse as:

- **Business and Finance**
- **Digital Technology**
- **Government and Services**
- **Manufacturing**
- **Supply Chain and Logistics**



Year after year, ISE graduates report healthy employment and high starting salaries. In the 2021 Graduate Employment Survey by MOE, ISE graduates reported a median gross salary of \$4,500 with 96.7% finding employment within six months of completing their final exams.

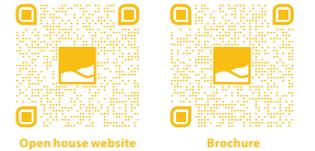


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LANDSCAPE ARCHITECTURE



cde.nus.edu.sg/arch/doa-e-open-day/bla-open-day



Open house website

Brochure

The Bachelor of Landscape Architecture (BLA) programme prepares students to respond to multifaceted issues in Asia. Our core emphasis is design excellence that is grounded in critical thinking, analytical inquiry, and creative expression. We imbue our students with a deep understanding of the dual nature of design as both a process and a product. As a process, we inculcate our students with sociocultural sensitivities, ecological knowledge and a grasp of conventional and emergent technologies and techniques. As a product, we encourage our students to produce inspiring, meaningful, and impactful landscapes that have the potential to change lives.

The BLA programme provides the core foundation, training, as well as skills and knowledge for our students to become the next generation of effective and innovative landscape architects. This process includes the historical and theoretical groundings of landscape architecture, an understanding of

ecological and natural processes and the use of advanced digital tools and techniques. These and more are meant to further our students' understanding, appreciation, and eventual designing of the landscape. The knowledge and skills acquired will equip our graduates for professional practice as landscape architects or allow them to pursue careers in related design, environmental, planning or management roles.



Fun Fact

While the MLA programme has been around since 2009, the BLA programme is very new and was created only in 2020 to meet the growing need to nurture talents in Singapore and the region.

Come join us in our young but ever expanding LA family!



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Future Career Options:

Upon completion of the four-year programme, students are eligible to apply for the Master of Landscape Architecture (MLA) programme or begin their journey towards any one of the following career paths.

- **Landscape Architect**
- **Roles in Garden, Park or Horticultural Operations**
- **Designer in Landscape Related Industry (e.g. playground designer)**
- **Researcher in Landscape Studies**
- **Public Sector Roles in Natural and Built Environment Disciplines**
- **Non-landscape related design roles (e.g. graphic or communication designers)**

MATERIALS SCIENCE AND ENGINEERING

cde.nus.edu.sg/mse



Materials scientists and engineers improve what things are made of and how they are made. They go beyond selecting the best material for an application, focusing on developing custom materials with specific properties tailored for specific uses. Materials scientists and engineers also create entirely new substances that have never existed, opening the door to brand new applications and revolutionary technologies.

You will build a foundation in solid-state physics and chemistry, and combine that with practical aspects of materials design and manufacture. You will study the structure and properties of different types of materials at the atomic and molecular level, and understand how to manipulate these to create exciting new materials for everything from energy storage to artificial organs. You may choose to **specialise in Polymeric and Biomedical Materials, or Nanostructured Materials/Nanotechnology.**

Future Career Options:

Materials span across all engineering disciplines and applications, and thanks to developments in nanotechnology, healthcare technology and sustainable energy, you can find employment in a wide range of industries that design and manufacture advanced products, such as:

- **Aerospace**
- **Biomedical**
- **Consumer goods**
- **Defence**
- **Electronics**
- **Energy**
- **Pharmaceuticals**



Professor Konstantin "Koysta" Novoselov – **winner of the Nobel Prize in Physics (2010)** for his breakthrough in graphene – is the first Nobel Laureate to join a Singapore university.



Assistant Professor Benjamin Tee has **created electronic "skin" that mimics the human sensory system**, bringing hope of restoring the sense of touch to patients with prosthetic limbs.



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MECHANICAL ENGINEERING

cde.nus.edu.sg/me



Mechanical Engineering is one of the broadest and most versatile of the engineering disciplines, and involves the design, manufacture or operation of any product or system that moves and uses or produces energy. It is at the centre of almost all technical advancements, from healthcare to transportation, mobile phones to biomedical devices, aircrafts to power plants.

You build upon your knowledge of science and mathematics to learn about solid and fluid mechanics, thermodynamics, heat transfer, control, instrumentation, materials, product design and manufacturing processes. Solve real-world problems in areas such as renewable energy, future transportation and healthcare through design projects with our industry partners. You can also opt for a **specialisation in Aeronautical Engineering, Energy and Sustainability, Offshore Oil and Gas, or Robotics.**



Future Career Options:

Your versatile skills and knowledge are highly sought after in both traditional industries and emerging fields, such as:

- **Aerospace**
- **Biomedical**
- **Defence**
- **Energy**
- **Manufacturing**
- **Marine**
- **Transportation**



3D printing technology is revolutionising healthcare in humans and animals by producing custom fitted prosthetics and implants quickly and economically.



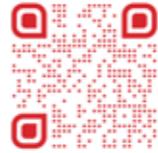
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E-SCHOLARS (ENGINEERING SCHOLARS PROGRAMME)

Bringing out the best in you

E-Scholars is our premier scholarship programme that offers a unique and holistic educational experience, catering for a new generation of technology leaders. Our students will be nurtured into leaders who can communicate effectively and understand the impact of technology from a global perspective. They will also meet like-minded friends along the way, explore overseas learning opportunities, and culminate their experiences with a Master's degree.

cde.nus.edu.sg/escholars



SCHOLARSHIP BENEFITS

- Full tuition fee coverage for Bachelor's and Master's programmes
- Two years' free accommodation at a University Town residential college
- S\$6,000 living allowance a year
- S\$5,000 subsidy for one semester overseas student exchange
- S\$2,000 one-time computer allowance
- Scholarship is bond-free



TECHNICAL RIGOUR

3+1 STRUCTURE OR 4 + 0 STRUCTURE



You have an accelerated pathway to complete any Bachelor of Engineering degree in 3 years, and, in your fourth year, pursue a Master's degree (3+1). Alternatively, you can complete your undergraduate studies within 4 years (4+0), with the possibility of completing a Double Degree Programme."

CHOOSE YOUR MASTER'S COURSE



You can select from a range of Master's programmes (M.Sc.) in NUS CDE. Gain deeper insights into your chosen engineering discipline. While you need to seek admission to your Master's course of choice, your tuition fees are covered by your scholarship and you continue to enjoy an annual living allowance.

PERSONAL & PROFESSIONAL DEVELOPMENT

UNIVERSITY TOWN COLLEGE PROGRAMME



Embrace diversity and multidisciplinary perspectives in our unique **residential programmes at University Town (UTown)**. Your scholarship comes with an offer at our partner – Residential College 4 (RC4) – or apply separately to other UTown colleges. Wherever you stay, enjoy an unforgettable journey of growth and self-discovery, living and learning in a close-knit community of your peers and professors from all over NUS.

CLOSE MENTORSHIP



Your academic pursuits are supported by a select pool of NUS Engineering professors. You also have exclusive opportunities to be mentored by our alumni and industry leaders.

DEDICATED MODULES



Want to make an impact and earn academic credits towards your degree? Get a chance to do what matters to you in a project you define, within or outside NUS. Furthermore, you have access to dedicated seminars and workshops, supporting your holistic development as a person and future leader.

GLOBAL INSIGHTS

NUS OVERSEAS COLLEGES



The coveted internship cum study stint at our prestigious NUS Overseas Colleges (NOC), experiencing the dynamism of a start-up company in some of the most exciting technology hubs around the world, is available to you.

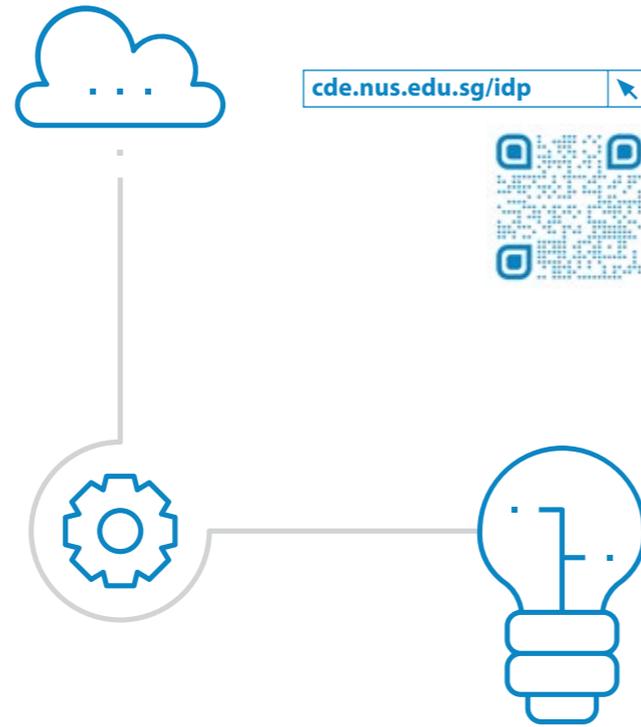
STUDENT EXCHANGE PROGRAMME



You also have the opportunity for a 1-semester exchange at our international partner universities, including many top institutions worldwide. Discover independent living and learning in a different environment, enriched by the culture and people you meet abroad.

INNOVATION AND DESIGN PROGRAMME (iDP)

iDP is a second major or minor, which you can complete within your Bachelor's degree



↑ Formula SAE race car



URBAN MOBILITY

Design future mobility solutions and novel vehicles to move people and goods more efficiently and safely in an increasingly crowded world.



SMARTER LIVING

Design smart devices and services to fulfill our aspirations for better lives, work and play.



↑ VR-based training for basic cardiac life support



IMMERSIVE REALITY

Develop novel applications of virtual reality or augmented reality to serve unmet needs in healthcare, education and entertainment.



↑ Autonomous robot for floor evenness inspection

iDP PROJECTS

The Innovation and Design Programme (iDP) trains engineering and non-engineering students with an entrepreneurial mindset, to apply their knowledge and skills to solving problems or designing new products, services, and experiences. Our iDP students will learn tools and processes for ideation and design from working together on hands-on projects with real-world impact, incorporating healthcare, urban mobility, sustainable cities, smart living, intelligent systems, and immersive reality. Structured as a Second Major or Minor in Innovation & Design, the iDP can be taken along with any primary major. Career options include:

- Technology start-ups
- Product design
- Consultancies
- Services



BETTER HEALTHCARE

Work with healthcare and medical professionals to develop better solutions and technologies for hospitals and the community.



↑ Internet-of-things enabled wearables for vital signs monitoring



← Credit-based plastic recycling



SUSTAINABLE CITIES

Develop sustainability solutions to improve liveability in urban environments and to manage limited resources of water, energy and land.



INTELLIGENT SYSTEMS

Design complex engineering systems for special missions on land, water, air and outer space, such as nanosatellites, autonomous underwater and surface vehicles, and unmanned aerial vehicles.



↑ Bumblebee autonomous underwater vehicle

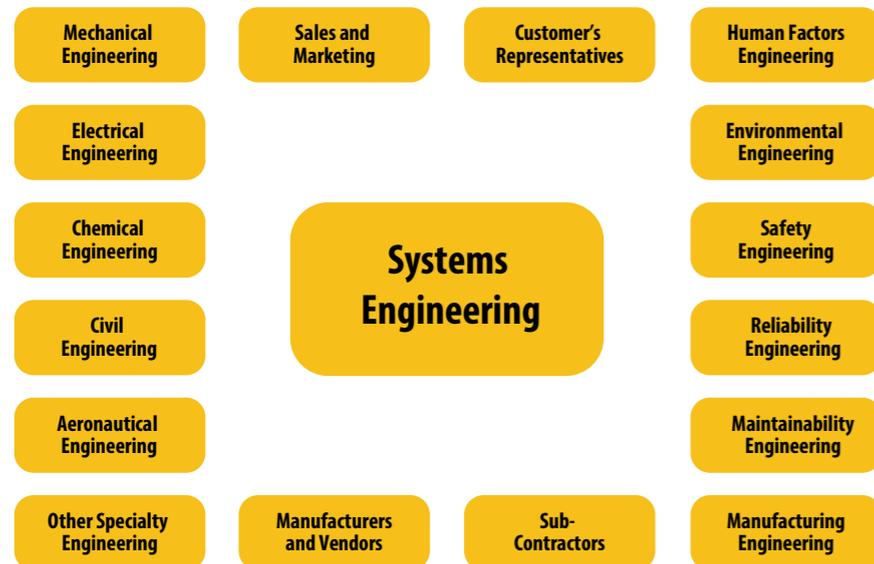
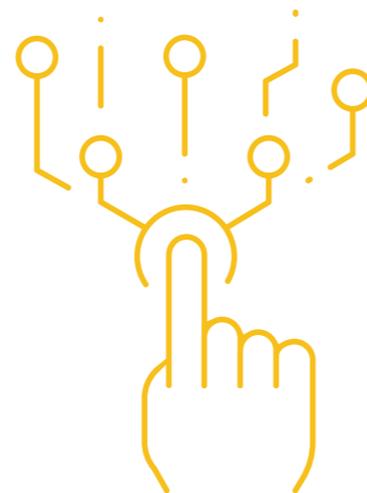
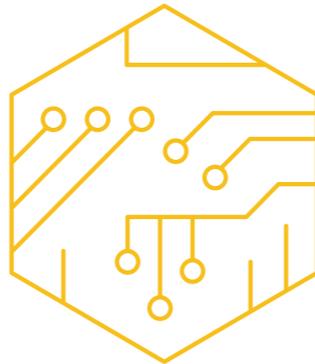
SYSTEMS ENGINEERING

Systems Engineering is also available as a second major or minor

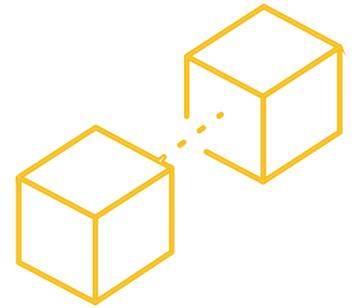
An interdisciplinary approach to designing, integrating and managing complex projects

Systems engineers integrate the various engineering, business and management disciplines to create successful new systems. They analyse and manage complexity and risk. In this second major, you will learn how to define problems, identify systems goals, create alternative design concepts, carry out trade-offs analysis to select and implement the best design and verify that the design is properly built and integrated to meet system goals.

cde.nus.edu.sg/sem/undergraduate/second-major-in-systems-engineering



Source: International Council on Systems Engineering



KEY FEATURES:

- Use systems thinking principles to design and build useful projects and systems.
- Use models to represent real world processes or structures and to assist decision makers.
- Apply the system development lifecycle in the creation of new products and systems.
- Participate in group projects that involve tackling real world and industry problems. Past projects include designing/ building systems for those with intellectual disabilities and dementia, and milk bottles that are baby friendly and convenient for use by parents.



Source: International Council on Systems Engineering

SUSTAINABLE URBAN DEVELOPMENT

cde.nus.edu.sg/cee/undergraduate/second-major-in-sustainable-urban-development/



SUD is offered as an interdisciplinary second major, which you can complete within your Bachelor's degree with a double-counting of up to 16 MCs

Addressing urban development challenges and its human impacts in cities

How do you address pressing issues of urban development and its human impacts in cities in the context of changing climate from the sustainability viewpoint? Join us as you discover the multifaceted dimensions of urban sustainability – cultural, socio-economic,

environmental, political and social (as well as their complex interactions). Learn the ways to address sustainability issues at local and global levels using a solutions-based approach.



STUDENT LEARNING OBJECTIVES:

- Apply a cross-disciplinary framework to the analysis of natural and built environments in urban areas.
- Integrate economic, environmental, energy and social theory, concepts, and principles to address urban sustainability challenges.
- Utilise effective and practical strategies, at multiple scales, for urban sustainability planning, policy, and regulation in the context of changing climate and sustainable development in cities.
- Gain critical-thinking, perspective-sharing and effective networking skills.
- Engage in collaboration, advocacy, and leadership to implement transformational changes in cities for a sustainable future.



CAREER OPTIONS:

- Sustainability Director
- Sustainability and Resilience Manager
- Environmental, Social and Governance (ESG) Specialist
- Carbon Footprint Manager
- Sustainable City Planner
- Renewable Energy Manager
- Climate Adaptation Specialist
- Green Process Design Consultant



ADMISSION REQUIREMENTS

Course	'Singapore-Cambridge GCE 'A' Level	International Baccalaureate (IB) Diploma	NUS High School Diploma	Test or Interview
Architecture	Pass in H1 Chemistry or Mathematics or Physics; or pass in 'O' level Additional Mathematics	Pass in SL Chemistry or MAA or Physics; or HL MAI	Good Major CAP in Mathematics or Physics or Chemistry	Yes
Computer Engineering	'Pass in H2 Mathematics or Further Mathematics; and either H2 Physics, Chemistry or Computing	Pass in HL MAA; and HL Physics or Chemistry or Computer Science	Good Major CAP in Mathematics and either Physics or Chemistry	No
Biomedical Engineering Chemical Engineering Civil Engineering Electrical Engineering Engineering Science Environmental Engineering Industrial & Systems Engineering Infrastructure & Project Management Materials Science & Engineering Mechanical Engineering	Pass in H2 Mathematics or Further Mathematics	Pass in HL MAA	Good Major CAP in Mathematics	No
Industrial Design	Pass in H1 Mathematics or Physics or Economics or Art; or pass in 'O' level Additional Mathematics	Pass in SL MAA or Physics or Economics or Visual Arts; or HL MAI	Good Major CAP in Mathematics or Physics or Arts	Yes
Landscape Architecture	Pass in H1 Chemistry or Mathematics or Physics; or pass in 'O' level Additional Mathematics	Pass in SL Chemistry or MAA or Physics; or HL MAI	Good Major CAP in Mathematics or Physics or Chemistry	Yes
Double Degree in: Engineering & Business Administration Engineering & Economics	Minimum prevailing admission criteria of both courses			No
Double majors & minors in Engineering	Minimum prevailing admission criteria of the Engineering course			No
Special Programmes: Engineering Scholars Engineering & Medicine Track	Will be considered if admitted to the Engineering course			Yes

Polytechnic graduates with an accredited diploma can apply. Please visit:

<https://www.nus.edu.sg/oam/apply-to-nus/polytechnic-diploma-from-singapore/admissions-requirements>.

International applicants with international qualifications can also apply. Please visit:

<https://www.nus.edu.sg/oam/apply-to-nus/international-qualifications/admissions-requirements>.

Footnote for IB applicants

MAA = Mathematics: Analysis and Approaches

MAI = Mathematics: Applications and Interpretation

Applicants with IB Diploma obtained in Nov 2020 or earlier, please visit:

[https://www.nus.edu.sg/oam/apply-to-nus/international-baccalaureate-\(ib\)-diploma/subject-pre-requisites](https://www.nus.edu.sg/oam/apply-to-nus/international-baccalaureate-(ib)-diploma/subject-pre-requisites)

FREQUENTLY ASKED QUESTIONS

1. What will an education at CDE entail?

An education at CDE will be an exciting, interdisciplinary experience for students where their learning journey takes centre stage. We are equipping students with an adaptable toolbox of skills across disciplines, moving them beyond a knowledge-based education to a mindset-based approach to problem-solving.

The CDE Common Curriculum provides a broad intellectual foundation on which you can continuously upgrade, evolve and re-pivot in a fast-changing world. Our majors build on top of the common curriculum to allow you to explore your chosen field, and our unrestricted elective space gives you the freedom to customise your educational experience.

2. Are there any new courses or combinations offered? Do prospective students still apply to CDE directly?

To get the latest on CDE's wealth of courses and combinations, please refer to <https://cde.nus.edu.sg/undergraduate/apply-to-cde> for more details.

3. What is the difference between common admissions and direct admission courses?

The common admissions "Engineering" course has a single set of entry requirements. If you are admitted to this common admissions course, you have access to any one of the 10 majors in the common admissions pool; which one you choose is up to you. In contrast, each of our direct entry courses have their own admissions requirements. If you gain admission to one of our direct entry courses this will predetermine which degree programme you will follow, be it Architecture, Computer Engineering, Industrial Design, or Landscape Architecture.

4. If I select Engineering common admissions, will a major be assigned to me?

If you select Engineering as one of your choices, you will then be asked to declare a preferred major. Alternatively, you can also choose "Major to be Decided" and decide on your major at the point of matriculation.

5. If I select Engineering common admissions, is my choice of major guaranteed?

Yes, if you are admitted to the Engineering common admissions course you can choose any one of those 10 majors and will have a place in the major of your choice.

6. What subjects should I take to get into CDE?

This depends on two things, your pre-university qualification and which of our degree programmes you are interested in. For our Engineering common admissions course, A-level students should take H2 Mathematics, and IB students should take HL Mathematics: Analysis and Approaches. Polytechnic

students should have an accredited diploma. Our direct admissions courses have different admissions requirements. The details can be found here <https://www.nus.edu.sg/oam/apply-to-nus>

7. Is a qualification in Physics a requirement for Engineering courses?

No. The only pre-requisite for the Engineering courses is H2 Mathematics for Singapore-Cambridge GCE 'A' level applicants. A H2 Physics qualification would be an advantage, but not a requirement. Some of our higher-level engineering modules in certain engineering majors do require H2 Physics as a prerequisite. Students without Physics would therefore need to do bridging modules on their own whilst in NUS.

8. What does "build your own degree" mean?

The new curriculum structure includes 10 modules of Unrestricted Electives (UE), which you can use to decide how broad, deep or integrated you want your education to be. If you wish to go deeper within your chosen discipline, you can opt to read a specialisation (or two) within your UE space. If you prefer instead to broaden your knowledge and skills in a complementary or contrasting area, consider taking a minor or second major.

9. Am I allowed to read second majors and minors outside CDE?

Yes, certainly. NUS is a comprehensive university, and you will have access to all second majors and minors offered by our various Faculties and Schools.

10. Do I have to decide on a second major or minor at the point of application, or can I decide later?

A short list of curated double major and major-minor combinations is available at the point of application. However, this list contains only a small fraction of the 1000+ possible combinations that are available. Upon matriculation, you are welcome to declare or apply for a second major or minor, up until your fifth semester of study.

11. I am a polytechnic diploma holder and I wish to join NUS with advanced placement credits / receive exemptions. How will CDE's new curriculum affect me and will I benefit from it?

All students have 40 Modular Credits (MCs) of Unrestricted Electives (UEs). Polytechnic intake students are exempted from 20 MCs of UEs, so you will still have 20 MCs left to obtain a minor or specialisation without extending your candidature. You may also be eligible to receive additional exemptions for Common Curriculum or major requirements, depending on your polytechnic diploma.



College of Design
and Engineering

Forging New Frontiers

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