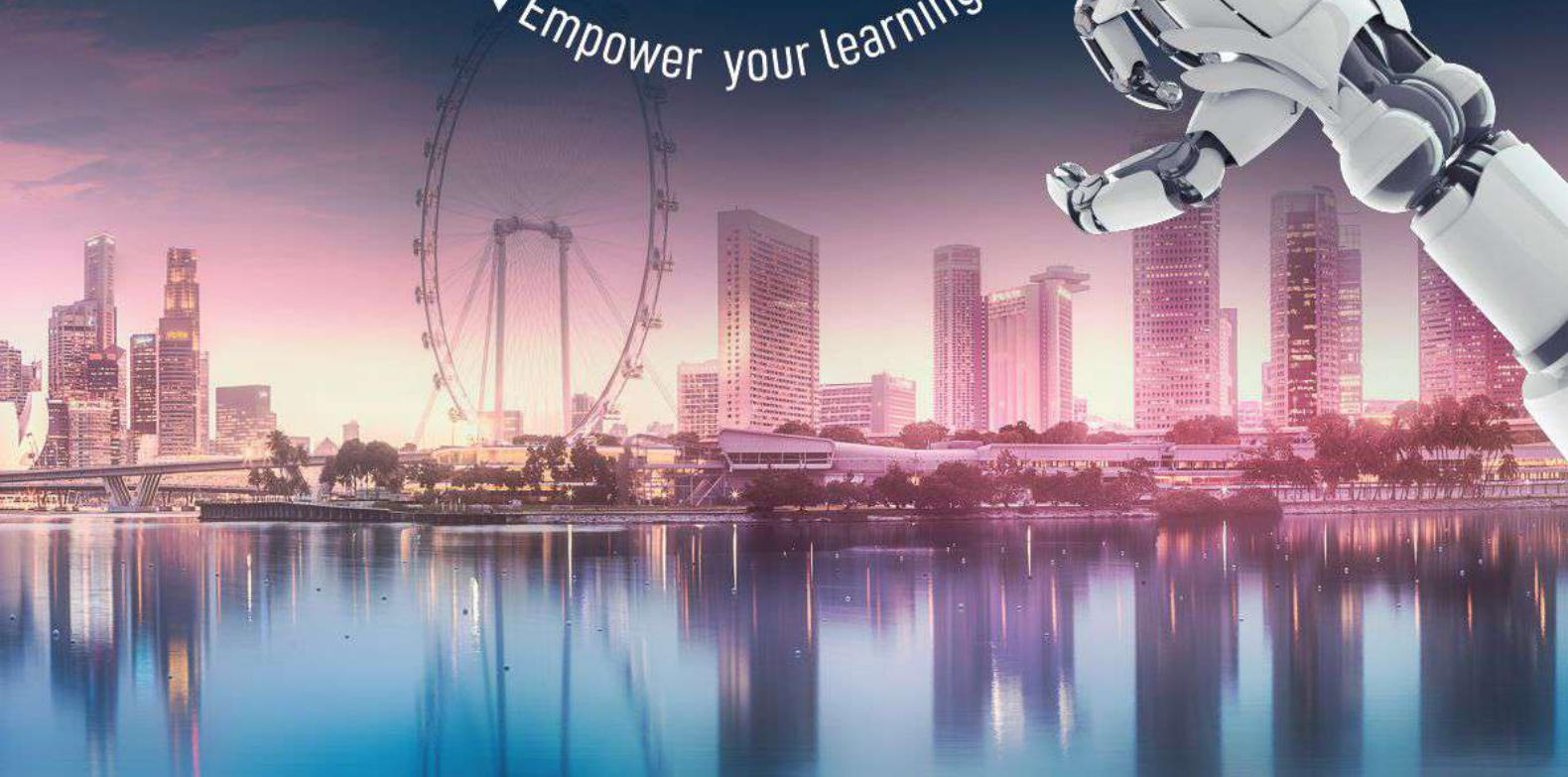




Empower your learning



CONTENTS

- 02** NUS Faculty of Science
- 03** New Academic Programmes
- 04** Research Opportunities for Students
- 06** Department of Biological Sciences
- 07** Department of Chemistry
- 08** Food Science and Technology Programme
- 09** Department of Mathematics
- 10** Department of Pharmacy
- 11** Department of Physics
- 12** Department of Statistics and Applied Probability
- 13** Data Science and Analytics Programme
- 14** Computational Biology Programme
- 15** Environmental Studies Programme
- 16** Special Programmes
- 18** Study Abroad Programmes
- 21** Admissions Information



NUS FACULTY OF SCIENCE

AN OVERVIEW

Distinguished Record

NUS is one of the prime movers in shaping Singapore's scientific landscape in education and research.

- More than 85 years of experience in providing quality science education
- One of the largest faculties in NUS with six departments: Biological Sciences, Chemistry, Mathematics, Pharmacy, Physics, and Statistics and Applied Probability
- One of the best universities in the world for science education
- Ranked by Quacquarelli Symonds as the top university in Asia for many science subjects

Global Outlook

Study abroad programmes open the door to a global learning experience, broadening students' intellectual and global outlook.

- More than 700 students gained overseas experience in Academic Year 2017/2018
- Collaborations with over 200 partner universities expose students to different cultures and academic environments

Holistic Learning

Students will experience an enriching educational journey, both in and outside the classroom.

- Home to about 5,000 undergraduates and 1,300 postgraduate students
- Opportunities to engage award-winning professors in cutting-edge research
- Vibrant campus and student life

Diverse Learning Choices

Students have the flexibility to plan learning pathways based on interests and career aspirations.

- 11 primary majors, seven second majors, 14 minors, several concurrent degree programmes as well as double major, double degree, joint degree, multidisciplinary and cross-faculty programmes
- Enhancement programmes to broaden students' academic horizons, like undergraduate research programmes, local and overseas internships, and inter- and multidisciplinary boutique programmes in Mathematics and Science

Bright Career Prospects

Our graduates are employed in various high-growth and high-impact industries.

- Career opportunities for graduates in key industries that drive Singapore's economic growth, such as biomedical sciences, consumer businesses, data analytics, education, financial services, healthcare, infocommunication technologies, safety and security, research and development, and urban solutions and sustainability
- Training in specialised domain knowledge and life skills such as critical thinking, problem-solving and interpersonal skills, which enhance employability and career mobility

NEW! ACADEMIC PROGRAMMES

The Faculty of Science continues to increase our suite of academic programmes to provide students with the breadth and depth of educational training to face an increasingly complex future and to be prepared for careers in today's globalised workplace.

B.Sc. (Hons) in Pharmaceutical Science

The B.Sc. (Hons) in Pharmaceutical Science programme is offered from Academic Year 2018/2019. It equips students with a deep understanding of the drug discovery and development process, complemented with strong foundational knowledge of the regulatory and commercial environment (see page 10).

Joint Degree Programme with University of Dundee

The four-year Joint Degree Programme combining NUS' B.Sc. (Hons) in Life Sciences and University of Dundee (UoD)'s B.Sc. (Hons) in Biological Sciences/Biomedical Sciences will equip students with drug discovery and design expertise. The first batch of students was admitted in Academic Year 2018/2019.

The first of its kind joint Honours programme enables NUS Life Sciences students to complete a full-year research project at UoD in drug discovery and design. Students will also gain hands-on training in drug optimisation and design, by leveraging UoD's partnerships with leading pharmaceutical and biotechnology companies in the fight against diseases (see page 6).

Concurrent Degree Programme with The University of Melbourne Doctor of Veterinary Medicine

From Academic Year 2018/2019, students can opt for a new Concurrent Degree Programme (CDP) combining NUS' B.Sc. in Life Sciences and the Doctor of Veterinary Medicine offered by the Faculty of Veterinary and Agricultural Sciences, The University of Melbourne. The CDP integrates the two degree programmes so that it is possible to accelerate and complete the programme in 5.5 years.

Students will acquire specialised theoretical, practical and clinical training in veterinary medicine, which deals with the prevention, diagnosis and treatment of disease in animals, as well as veterinary science, which deals with the health and well-being of animals (see page 6).

Specialisation in Quantum Technologies

A new Specialisation in Quantum Technologies, an undergraduate specialisation that is unique worldwide, will be offered to existing Physics Majors from Academic Year 2019/2020. The specialisation introduces students to the array of quantum technologies and equips them with knowledge and skills for careers in the fast-growing field of quantum technologies in academic institutions, industries and defence (see page 11).

RESEARCH OPPORTUNITIES FOR STUDENTS

Overview

The Faculty of Science is home to different clusters of research excellence, both in fundamental research to create knowledge, and applied research to spur innovation.

Apart from the final year project which you are required to, or may undertake during your Honours year, we have various research programmes which offer you opportunities to pursue independent research projects.

Through these programmes, you will develop valuable research skills, cultivate critical thinking and problem-solving skills, as well as sharpen communication and presentation skills. Some of these programmes are:

- **Undergraduate Research Opportunities Programme in Science (UROPS):** 2nd or 3rd year undergraduate students can experience scientific research and discovery by participating in research projects (see page 17).
- **Special Programme in Science (SPS):** Students can undertake an integrative research project in a team on areas of contemporary science to understand an interdisciplinary approach to science (see page 16).
- **Overseas Summer Research Programme:** Students go abroad to conduct research in the laboratories of partner universities during the NUS vacation period (see page 18).

The new Data Analytics Consulting Centre has a programme where students can be involved in consulting projects with industry. Under this programme, students prepare themselves for a career in data science by learning how to handle complex datasets and solve real-world problems.

Research Institutes and Centres

You may also have opportunities to participate in the research work of some of the research institutes and centres in NUS. These include:

- Centre for Advanced 2D Materials
- Centre for Bioluminescence Sciences
- Centre for Ion Beam Applications
- Centre for Quantitative Finance
- Centre for Quantum Technologies
- Centre for Wavelets, Approximation and Information Processing
- Chemical, Molecular and Materials Analysis Centre
- Data Analytics Consulting Centre
- Institute for Mathematical Sciences
- Institute of Data Science
- Life Sciences Institute
- Mechanobiology Institute
- NUS Environmental Research Institute
- NUS Nanoscience and Nanotechnology Initiative
- Protein and Proteomics Centre
- Risk Management Institute
- Singapore Centre on Environmental Life Sciences Engineering
- Singapore Synchrotron Light Source
- Solar Energy Research Institute of Singapore
- Tropical Marine Science Institute

Research Areas within Faculty of Science

BIOLOGICAL SCIENCES

- **Molecular Cell and Developmental Biology:** Agro and Aqua Biology; Disease Models (Plant and Animal); Infection Science; Molecular and Cellular Dynamics; Protein Dynamics and Drug Design
- **Biophysical Sciences:** Bioimaging Sciences; Computational Biology; Mechanobiology; Protein Science and Proteomics; Structural Biology
- **Ecology, Evolution and Biodiversity:** Animal Behaviour; Community Ecology; Conservation Biology; Darwin and Wallace; Environmental Biology; Systematics, Phylogeny and Biogeography Systematics

CHEMISTRY

- **Advanced Materials:** Two-Dimensional (2D) Materials; Energy Materials; Graphene and Nanocarbons; Luminescent Biomarkers; Nanomaterials; Organic Optoelectronic Materials
- **Organic Chemistry:** Asymmetric Synthesis; Organic Catalysis; Transition Metal Catalysis
- **Chemical Biology and Medicinal Chemistry:** Development of Therapeutic Agents; Synthesis of Bioactive Molecules; Synthetic Biology
- **Computational Chemistry and Simulation:** Molecular Dynamics; Nanoscale Modelling
- **Environmental Chemistry:** Carbon Dioxide Fixation; Green Chemistry; Sensors; Water Eco-Efficiency

FOOD SCIENCE AND TECHNOLOGY PROGRAMME

Food Chemistry and Analysis; Food Microbiology and Safety; Food Processing and Engineering; Human Nutrition; Functional Food; Food Fermentation; Flavour and Sensory Science; Food Preference and Consumer Studies

LEE KONG CHIAN NATURAL HISTORY MUSEUM

- **Biodiversity Research:** Species Discovery with Next-Generation Sequencing; Environmental DNA; Taxonomy; Systematics; Conservation of Southeast Asia's Fauna

MATHEMATICS

- **Pure Mathematics:** Algebra and Number Theory; Combinatorics and Graph Theory; Dynamical Systems; Geometry and Topology; Mathematical Logic and Theoretical Computer Science; Partial Differential Equations and Geometric Analysis; Probability; Real, Functional and Harmonic Analysis; Representation Theory and Automorphic Forms
- **Applied and Computational Mathematics:** Computational Biology and Bioinformatics; Data Science; Imaging and Vision Science; Mathematical Finance and Mathematical Economics; Numerical Analysis and Scientific Computing; Optimisation

PHARMACY

- **Drug Discovery and Design:** Computational Modelling and Informatics; Natural Products and Traditional Chinese Medicine; Rational Drug Discovery
- **Health Services Research:** Clinical Pharmacy and Pharmacy Practice; Disease Control and Management; Pharmacoeconomics

- **Pharmaceutical Biology and Drug Disposition:** Disease Etiology, Biomarkers and Targets; Pharmacokinetics and Pharmacodynamics
- **Pharmaceutical Technology and Innovative Therapeutics:** Formulation and Processing; Innovative Nano-Therapeutics; Smart Drug Delivery and Novel Biosystems

PHYSICS

- **Advanced Materials:** 2D Materials; Nanostructures and Energy; Organic Semiconductors; Oxides; Spectroscopies; Nonlinear Optics; Surface Science
- **Biological and Soft Matter Physics:** Biopolymers; Mechanics of Biomolecules; Single-Molecule Manipulation and Imaging
- **Ion Beam Science and Technology:** Proton Beam Writing; Proton Microscopy; Radiobiology
- **Theoretical and Computational Physics:** Astrophysics and Cosmology; Condensed Matter Physics; Electromagnetics and Acoustics; Quantum Control; Nonlinear Dynamics and Complex Systems; String Theory
- **Quantum Information Technologies:** Cold Atoms and Molecules; Atom and Ion Trapping; Cryptography; Quantum Entanglement and Information Theory; Quantum Optics and Atom-Photon Interaction

STATISTICS AND APPLIED PROBABILITY

- **Applications:** Ageing Population; Biostatistics; Clinical Trials; Computational Biology; Environmental Statistics; Epidemiology; Eye Disease Modelling; Financial and Business Statistics; Genetics and Genomics; Infectious Disease Modelling; Medical Diagnostic Imaging; Networks; Neural Science; Nutritional Science; Pharmaceutical Data; Psychiatry Data
- **Statistical Methodology and Probability Theory:** Artificial Intelligence; Bayesian Inference; Big Data; Classification; Change Point; Computational Statistics; Deep Learning; Dimension Reduction; Distributional Approximation; Empirical Likelihood; Functional Data Analysis; High Dimensional Data Analysis; Longitudinal and Panel Data Analysis; Machine Learning; Manifold and Non-Euclidean Data; Monte-Carlo Methods; Prediction and Forecasting; Random Matrix; Smoothing Methods and Nonparametric Statistics; Spatial Data Analysis; Sequential Analysis; Stein's Methods; Survival Analysis; Variable Selection and Screening

DEPARTMENT OF BIOLOGICAL SCIENCES

Possible Careers

Biotechnologist
Clinical analyst
Clinical trial coordinator
Conservation biologist
DNA profiling scientist
Educator
Environmental sustainability specialist
Forensic scientist
Medical technologist
Parks manager
Process engineer
Public health officer
Quality control specialist

Examples of Industries/ Sectors

Agriculture
Biomedical sciences
Biotechnology
Conservation and sustainability
Education
Environmental technology
Food production
Government agencies
Healthcare
Horticulture-related agencies
Pharmaceuticals
Research and development
Scientific services

Undergraduate Programmes

B.SC. (HONS) AND B.SC. IN LIFE SCIENCES

This undergraduate course in biological and biomedical sciences provides foundational knowledge vital to all areas of life sciences in the first year of study. Selection of relevant advanced-level modules paves the way to one of three specialisations and the many diverse disciplines in life sciences.

Honours students can either pursue a general Honours degree or one of these specialisations:

- **Biomedical Science:** This focuses on human health and diseases, and its goal of clinical solutions.
- **Molecular and Cell Biology:** This emphasises the fundamental physical, chemical and biological mechanisms of living organisms.
- **Environmental Biology:** This affirms the importance and relevance of biodiversity and ecology, and their applications towards evolutionary understanding and environmental conservation.

NEW! CONCURRENT DEGREE PROGRAMME (CDP) NUS B.SC. IN LIFE SCIENCES WITH THE UNIVERSITY OF MELBOURNE DOCTOR OF VETERINARY MEDICINE

This allows students to embark on graduate studies in veterinary medicine concurrently while on a study abroad programme.

The CDP integrates the two degree programmes so that it is possible to accelerate and complete both in 5.5 years.

NEW! JOINT DEGREE PROGRAMME (JDP) NUS B.SC. (HONS) IN LIFE SCIENCES WITH UNIVERSITY OF DUNDEE B.SC. (HONS) IN BIOLOGICAL SCIENCES/BIOMEDICAL SCIENCES

This focuses on drug discovery and development and includes the unique arrangement for the final Honours year and research project to be conducted in the partner university.

For information on the department's Second Major and Minor courses, please refer to "Admissions Information".

Graduate Programmes

M.SC./PH.D. BY RESEARCH

Possible research areas include: Biophysical Sciences; Cell, Molecular and Developmental Biology; and Ecology and Evolutionary Biology.



Department of Biological Sciences
National University of Singapore
Blk S3, Level 5, 16 Science Drive 4
Singapore 117558

(65) 6516 2698
dbsbox2@nus.edu.sg (Life Sciences Undergraduate Programme)
dbsbox6@nus.edu.sg (Graduate Programme)
www.dbs.nus.edu.sg
www.lifesciences.nus.edu.sg

DEPARTMENT OF CHEMISTRY

Undergraduate Programmes

B.SC. (HONS) AND B.SC. IN CHEMISTRY

NUS' B.Sc. (Hons) in Chemistry programme is accredited by the Royal Society of Chemistry.

In Years 1 and 2, you will focus on the fundamental principles and applications of chemistry, divided into Inorganic, Organic and Physical Chemistry.

Honours students can either pursue a general Honours degree or one of these specialisations:

- **Materials Chemistry:** This covers the synthesis, characterisations and applications of polymers, inorganic and organic solids and devices.
- **Medicinal Chemistry:** This covers the design and synthesis of compounds as potential drugs, the identification of their functional groups and interactions with targets, as well as the methods used to assay the compounds.
- **Environment and Energy:** This covers the techniques used for environmental sampling and analysis, the chemistry and physics of energy generation and conversion processes, and their impact on energy policies.

DOUBLE MAJOR IN CHEMISTRY AND FOOD SCIENCE

(Jointly offered with the Food Science and Technology Programme)

You will gain understanding on aspects of food beyond its physical and chemical properties, in this direct admission course.

For information on the department's Second Major and Minor courses, please refer to "Admissions Information".

Graduate Programmes

M.SC./PH.D. BY RESEARCH

Possible research areas include: Analytical Sciences; Catalysis; Computation, Modelling and Spectroscopy; Food Science and Technology; Inorganic and Organic Chemistry; Materials Science; Medicinal Chemistry; Chemical Biology; and Surface Science.

M.SC. IN CHEMISTRY FOR ENERGY AND ENVIRONMENT BY COURSEWORK

You will acquire knowledge of the latest energy and environmental technologies, and modern materials design, synthesis strategies, advanced characterisation and analytical techniques.

M.SC. IN CHEMISTRY BY COURSEWORK

This four-year programme provides a broad scientific foundation in chemistry for advanced positions in the chemical industries and advanced degree programmes such as the Ph.D. in Chemistry.

JOINT M.SC. IN INDUSTRIAL CHEMISTRY BY COURSEWORK

(Jointly offered with the Technical University of Munich)

You will gain specialised knowledge in selected areas of technology in the pharmaceutical and chemical industries.

Possible Careers

Chemical scientist
Educator
Forensic scientist
Materials scientist
Patent specialist
Quality control scientist
Researcher
Water treatment scientist

Examples of Industries/Sectors

Biochemicals
Chemicals
Education
Energy
Engineering
Government agencies
Manufacturing
Pharmaceuticals
Research and development
Specialty chemicals



Department of Chemistry
National University of Singapore
Blk S8, Level 3, 3 Science Drive 3
Singapore 117543

(65) 6516 8142
chmadmin@nus.edu.sg
www.chemistry.nus.edu.sg

FOOD SCIENCE AND TECHNOLOGY PROGRAMME

Possible Careers

Educator
Flavourist
Food scientist
Food specialist
Food technologist
Nutritionist
Regulatory affairs officer
Researcher

Examples of Industries/Sectors

Consumer insights
Consumer products
Education
Flavours and fragrances
Food ingredients
Food production and processing
Food testing laboratories
Government agencies
Healthcare
Pharmaceuticals
Quality control
Research and development

Undergraduate Programmes

B.SC. (HONS) AND B.SC. IN FOOD SCIENCE AND TECHNOLOGY

This boutique programme covers the full educational spectrum in food science and technology, with emphasis on four themes: Food Quality and Safety; New Food Product Innovation; Food Processing; and Nutrition.

It is the only International Union of Food Science and Technology (IUFoST) accredited degree in Singapore, certified by IUFoST for meeting international standards and guidelines.

All undergraduates are guaranteed entry into the Professional Placement Programme, which enables you to put learning into practice through workplace experience.

DOUBLE MAJOR IN CHEMISTRY AND FOOD SCIENCE

(Jointly offered with the primary Major in Chemistry)

You will gain understanding on important aspects of food beyond its physical and chemical properties, in this direct admission course.

For information on the programme's Second Major and Minor courses, please refer to "Admissions Information".

Graduate Programmes

M.SC. IN FOOD SCIENCE AND HUMAN NUTRITION BY COURSEWORK

This covers advanced topics including Food Bioscience (Microbiology and Safety, Fermentation); Evidence-based Functional Foods; Human Nutrition; Modern Analytical Science; and Modern Food Processing Technology.

M.SC./PH.D. IN FOOD SCIENCE AND TECHNOLOGY BY RESEARCH

Possible research areas include: Food Biotechnology; Food Chemistry and Analysis; Food Microbiology and Safety; Food Processing and Engineering; and Human Nutrition.



Food Science and Technology Programme

National University of Singapore
Blk S14, Level 5, Science Drive 2
Singapore 117542

(65) 6516 1656
food@nus.edu.sg
www.fst.nus.edu.sg

DEPARTMENT OF MATHEMATICS

Undergraduate Programmes

B.SC. (HONS) AND B.SC. IN MATHEMATICS

You will learn fundamental mathematical concepts in areas including Algebra; Differential Equations; Geometry and Topology; Logic; Number Theory and Combinatorics; and Real and Complex Analysis, with a focus on mathematical foundations and fundamental techniques.

B.SC. (HONS) AND B.SC. IN APPLIED MATHEMATICS

You will study mathematical methods and problem-solving techniques that are applied in science, engineering and computer science.

Honours students can either pursue a general Honours degree or one of these specialisations:

- **Operations Research and Financial Mathematics:** This covers the application of analytical methods and mathematical models to solve problems in areas like industrial engineering, operations management and finance.
- **Mathematical Modelling and Data Analytics:** This covers the use of mathematical models and numerical analysis to manage and analyse massive datasets.

B.SC. (HONS) AND B.SC. IN QUANTITATIVE FINANCE

This multidisciplinary course covers mathematical theory and applications, statistical tools, computing theory and techniques, financial theory and principles, and core financial products.

SPECIAL PROGRAMME IN MATHEMATICS

This specially designed programme for selected students with a strong passion and aptitude for mathematical sciences comprises modules in foundational mathematics. This prepares you for graduate programmes and careers in the mathematical sciences.

For information on the department's Second Major and Minor courses, please refer to "Admissions Information".

Graduate Programmes

M.SC. IN MATHEMATICS BY COURSEWORK

This programme for mathematics teachers and professionals enables them to upgrade their professional skills and qualifications through advanced training.

M.SC. IN QUANTITATIVE FINANCE BY COURSEWORK

This programme, jointly offered by the Department of Mathematics and the Department of Statistics and Applied Probability, with the Department of Economics in the Faculty of Arts and Social Sciences, equips you with advanced knowledge in quantitative finance, and its use in the financial industry.

M.SC./PH.D. BY RESEARCH

Possible research areas include: Pure Mathematics; Applied Mathematics; and Financial Mathematics.

Possible Careers

Actuary
Computer programmer
Cryptanalyst
Data analyst
Educator
Financial analyst
Financial engineer
Fund manager
Quantitative modelling analyst
Researcher
Risk management analyst
Software engineer

Examples of Industries/Sectors

Education
Financial services
Government agencies
Healthcare
Infocommunication technologies
Insurance
Operations management
Research and development
Safety and security
Transportation
Wealth management



Department of Mathematics
National University of Singapore
Blk S17, Level 4, 10 Lower Kent Ridge Road
Singapore 119076

(65) 6516 2738/(65) 6516 2762
AskMathUG@nus.edu.sg
ww1.math.nus.edu.sg

DEPARTMENT OF PHARMACY

Possible Careers

Patient-Care Practice

Pharmacist

Non Patient-Care Areas

Clinical research coordinator
Quality assurance scientist
Regulatory specialist
Research associate
(Some positions in Non Patient-Care areas may also require you to be a registered pharmacist with the Singapore Pharmacy Council)

Examples of Industries/Sectors

Patient-Care Practice

Community pharmacies
Healthcare services
Hospitals
Polyclinics

Non Patient-Care Areas

Clinical research
Government agencies
Health product development
Health product regulation
Health product research
Pharmaceutical manufacturing
Sales and marketing

Undergraduate Programmes

NEW! B.SC. (HONS) IN PHARMACEUTICAL SCIENCE

This four-year programme focuses on the pharmaceutical sciences, culminating in an understanding of drug discovery and development, as well as the regulatory and commercial environment in pharmaceutical industries.

B.SC. (HONS) AND B.SC. IN PHARMACY

Our flagship four-year professional programme grooms future healthcare professionals, and educates students in all aspects of medicine and its use in disease management.

This multidisciplinary programme provides foundational knowledge in basic pharmaceutical sciences dovetailing towards patient and disease management, health promotion and professional pharmacy skills development.

It is the only degree in Singapore recognised for onward registration with the Singapore Pharmacy Council for licensed pharmacists.

For information on the department's Minor courses, please refer to "Admissions Information".

You will acquire in-depth knowledge and practical skills for the formulation and process manufacturing of chemical and biological drugs into a range of dosage forms, and gain understanding of the regulatory and quality compliance of pharmaceuticals in the process of drug development and manufacturing.

M.SC./PH.D. BY RESEARCH

This programme is suitable for students with a good basic degree in science, engineering or health-related disciplines who wish to enhance competencies in conducting independent research in a specialised area relevant to pharmaceutical sciences, for a career in academia, research or management.

PHARM.D. (DOCTOR OF PHARMACY) BY COURSEWORK AND CLINICAL CLERKSHIP

This two-year full-time programme, comprising both didactic and clerkship components, is designed to equip pharmacists with additional clinical knowledge, as well as clinical skills and attitudes to deliver high quality and safe medication therapies to patients in collaboration with other health professionals.

It builds on the undergraduate programme foundations and focuses on pharmacotherapy topics in greater depth, broadening your clinical pharmacy knowledge and patient care skills.

This programme contributes to the development of Specialist Clinical Pharmacists in Singapore.

Graduate Programmes

M.SC. (PHARMACEUTICAL SCIENCES AND TECHNOLOGY) BY COURSEWORK

This part-time programme is designed for those who are already working in, or aspiring to enter the pharmaceutical industry.



Department of Pharmacy
National University of Singapore
Blk S4A, Level 3, 18 Science Drive 4
Singapore 117543

(65) 6516 2648
phabx2@nus.edu.sg
www.pharmacy.nus.edu.sg

DEPARTMENT OF PHYSICS

Undergraduate Programmes

B.SC. (HONS) AND B.SC. IN PHYSICS

You will learn theoretical and experimental skills for solving complex problems, by studying Classical and Quantum Mechanics; Electromagnetism; Thermodynamics; Atomic and Nuclear Physics; Nanophysics; and Relativity.

Honours students can either pursue a general Honours degree or one of these specialisations:

- **Astrophysics:** This focuses on celestial physics and cosmology, and is suitable for students aspiring to be physics teachers.
- **Nanophysics:** This focuses on the scientific principles behind the technological and industrial developments of nanoscale materials with advanced functionalities.
- **NEW! Quantum Technologies:** This focuses on the foundations of quantum mechanics and its application to sensing, communication, computation and cryptography.

For information on the department's Second Major and Minor courses, please refer to "Admissions Information".

Graduate Programmes

M.SC. BY COURSEWORK

This programme leads to an M.Sc. degree in either physics or applied physics, enabling educators and professionals to further upgrade their professional skills and qualifications.

Applied physics focuses on advanced training in areas such as semiconductor manufacturing, photonics and biophysics. It is suitable for physics graduates and professionals who wish to upgrade their professional skills and qualifications, or to switch to the high technology industry.

M.SC./PH.D. BY RESEARCH

Possible research areas include: Acoustics and Computer Simulations; Astrophysics; Atomic Physics; Condensed Matter Physics; High Energy Physics; Infrared Spectroscopy; Ionics; Ion Beam Applications; Laser Optics; Materials Science; Optics; Quantum Technologies; Solid-State X-Ray Fluorescence; Superconductors; and Surface Physics.

Possible Careers

Analyst
Computer architecture designer
Educator
Engineer
Geophysicist
Industrial design planner
Instrumentation specialist
Medical and radiation physicist
Medical technologist
Meteorologist
Researcher

Examples of Industries/Sectors

Defence
Education
Engineering
Government agencies
Healthcare
Infocommunication technologies
Microelectronics
Physical sciences
Research and development
Scientific services
Semiconductors



Department of Physics
National University of Singapore
Blk S12, Level 2, 2 Science Drive 3
Singapore 117551

(65) 6516 2604
physngwl@nus.edu.sg
www.physics.nus.edu.sg

DEPARTMENT OF STATISTICS AND APPLIED PROBABILITY

Possible Careers

Actuary
Biostatistician
Business analyst
Consumer intelligence analyst
Consumer risk analyst
Data scientist
Educator
Financial analyst
Pharmaceutical engineer
Pricing analyst
Quality assurance officer
Researcher
Statistician

Examples of Industries/Sectors

Biomedical sciences
Chemicals
Consumer businesses
Education
Electronics
Financial services
Government agencies
Healthcare
Infocommunication technologies
Insurance
Manufacturing
Pharmaceuticals
Research and development
Telecommunications
Transportation

Undergraduate Programmes

B.SC. (HONS) AND B.SC. IN STATISTICS

You will learn about the scientific application of mathematical principles to the collection, analysis and presentation of data, to gain insights from data which enable sound conclusions.

Honours students can either pursue a general Honours degree or one of these specialisations:

- **Data Science:** This covers computing concepts and skills, enabling you to manage the collection, storage and analysis of large amounts of data in virtually every field.
- **Finance and Business Statistics:** This covers the application of statistics to the areas of investment and financial analysis, insurance, marketing research and management.

For information on the department's Second Major and Minor courses, please refer to "Admissions Information".

Graduate Programmes

M.SC. IN STATISTICS BY COURSEWORK

This is designed for students from statistics, mathematics or related fields.

You will acquire practical skills to solve real-world industry problems and knowledge of statistical principles and methods required in the application of statistics.

M.SC. IN STATISTICS BY RESEARCH

You will acquire advanced knowledge of theoretical and applied statistics.

Possible research areas include: Biostatistics; Computational Statistics; Financial Statistics; High Dimensional Data Analysis; and Probability Theory and Applications.

PH.D. IN STATISTICS BY RESEARCH

You will acquire skills to produce high-quality statistical research, for careers in research and development, and academia.

Possible research areas include: Bayesian Inference; Biostatistics; Functional Data Analysis; High Dimensional Data Analysis; and Probability Theory and Applications.



Department of Statistics and Applied Probability

National University of Singapore
Blk S16, Level 7, 6 Science Drive 2
Singapore 117546

(65) 6516 4416/(65) 6516 1667
melissa.thong@nus.edu.sg
www.stat.nus.edu.sg

DATA SCIENCE AND ANALYTICS PROGRAMME

Undergraduate Programme

The **B.Sc. (Hons) in Data Science and Analytics** is a four-year direct Honours programme jointly offered by the Department of Statistics and Applied Probability, and the Department of Mathematics, in conjunction with the Department of Computer Science in the School of Computing.

It equips you with the ability to develop novel analytical tools to address data-driven problems in businesses and new scientific applications.

In this interdisciplinary programme, you will read modules in mathematics, statistics and computer science, and be exposed to the interplay among these three key areas in the practice of data science.

In Years 3 and 4, you will delve in-depth into analytics methods such as artificial intelligence; computation and optimisation; computer algorithms; database and data processing; data mining and machine learning; and high dimensional statistics; as well as applications of analytics to various domains.

Programme highlights

- **Capstone module:** The industry-driven module enables you to work on research and projects that are related to real-life data and workplace challenges.

- **NUS Co-Operative Education**

Programme: You may gain extensive workplace experience by spending 18 months (five consecutive semesters and terms) with reputable employers.

This programme will enhance your employability upon graduation for careers in diverse industries and businesses that require insights from Big Data, enabling them to be smarter, more productive and more competitive.

SECOND MAJOR IN DATA ANALYTICS

This programme enables you to apply computing and statistical methods to analyse and model complex data in your respective domains.

Possible Careers

Actuary
Artificial intelligence specialist
Big Data analyst
Biostatistician
Business analytics specialist
Consumer insights analyst
Data analytics specialist
Data scientist
Educator
Machine learning scientist
Statistician

Examples of Industries/Sectors

Biomedical sciences
Consumer businesses
Education
Financial services
Government agencies
Healthcare
Infocommunication technologies
Insurance
Manufacturing
Pharmaceuticals
Research and development
Safety and security
Telecommunications
Transportation



**Department of Statistics
and Applied Probability**

National University of Singapore
Blk S16, Level 7, 6 Science Drive 2
Singapore 117546

(65) 6516 4416/(65) 6516 1667
melissa.thong@nus.edu.sg
www.stat.nus.edu.sg

COMPUTATIONAL BIOLOGY PROGRAMME

Possible Careers

Bioinformatician
Clinical bioinformatics data scientist
Computational microbiologist
Computational modeller
Computational scientist
Gaming specialist
Project scientist
Researcher
Software developer
Technology analyst

Examples of Industries/ Sectors

Biotechnology
Government agencies
Healthcare
Infocommunication technologies
Pharmaceuticals
Research and development
Scientific services

Undergraduate Programme

The **B.Sc. (Hons) in Computational Biology** is a four-year multidisciplinary programme focusing on computer-based analysis of biological problems, the fastest growing area of the life sciences.

The programme is suitable for students with a keen interest in mathematics, computing and life sciences.

It also provides excellent research opportunities and mentorship. Students are often mentored by two professors from different faculties.

In Years 1 and 2, you will learn about the foundations of university-level life sciences, mathematics and statistics, and computer science; how to develop, apply and interpret algorithms to biology; and how to reason analytically about biological problems.

In Years 3 and 4, you can focus on your interests, culminating with a two-semester final year research project.

Key specialisation topics

- Big Data analysis of next-generation DNA and RNA sequencing
- Modelling of biological systems
 - Computational genomics
 - Computational neuroscience
 - Computer-aided drug design
- Theoretical foundations and analysis of genes/proteins
- Biological and pharmaceutical databases

You will acquire broadly applicable skills in modern biological sciences, mathematical and statistical analysis, as well as computer science.



Faculty of Science Dean's Office
(Undergraduate Programmes)

National University of Singapore
Blk S16, Level 2, 6 Science Drive 2
Singapore 117546

(65) 6516 8471
compbio@nus.edu.sg
www.science.nus.edu.sg/compbio

ENVIRONMENTAL STUDIES PROGRAMME

Undergraduate Programme

The **Bachelor of Environmental Studies** is a four-year direct Honours programme jointly hosted by the Faculty of Science and the Faculty of Arts and Social Sciences, with participation from the Faculty of Engineering, the Faculty of Law, School of Design and Environment, NUS Business School, Yong Loo Lin School of Medicine, the Saw Swee Hock School of Public Health, and the Lee Kuan Yew School of Public Policy.

It adopts an interdisciplinary approach in addressing complex, modern environmental issues such as climate change, land use, water usage, alternative energy and the building of liveable high-density cities.

The programme includes a two-year broad-based curriculum where you read core modules in biology, chemistry, economics, geography, law, management, mathematics, policy, public health and statistics.

Students can specialise in either Environmental Biology or Environmental Geography:

Environmental Biology: This includes modules in Behavioural Biology; Biodiversity; Evolution; Field Studies; Freshwater and Terrestrial Ecology; Marine Biology; and Physiology.

Environmental Geography: This includes modules in Climate; Economics; Environmental Management; Geography;

Geographical Information Systems; Geosciences; Modelling; and Sustainability.

Three capstone modules

- **ENV3101 and ENV3102: Environmental Challenges: Asian Case Studies:** These two interconnected modules include an extended field trip to one of the countries in the Asia region in ENV3102, where you can experience firsthand the issues you studied in ENV3101.
- **ENV4101: Environmental Management in Singapore:** This is a town-hall style series where you can discuss a range of professional topics with environmental experts. These roundtable discussions provide an opportunity to learn about the ins and outs of these fields.

Programme highlights

Specially designed integrated modules emphasise small-group discussions, case studies, fireside chats and guest lectures with environmental luminaries, policy-makers and government officials.

You can participate in undergraduate research, as well as internships with environmental agencies, natural resource management agencies and environmental research centres/institutes, which provide you practical exposure at the workplace.

You can also go on study abroad programmes, which provide you a global learning experience.

Real-world and real-time field studies to understand selected environmental challenges facing Asia.

Possible Careers

Conservation biologist
Ecologist
Educator
Environmental consultant
Environmental health officer
Environment impact assessor
Environmental quality specialist
Environmental sustainability specialist
Environmental technologist
Forest conservationist
Park manager
Public policy analyst
Researcher
Wildlife biologist

Examples of Industries/ Sectors

Ecotourism
Education
Environmental consultancy
Environmental management
Environmental planning
Government agencies
Natural resource management
Research and development
Sustainable development



Department of Biological Sciences
(Undergraduate Programme)

National University of Singapore
Blk S3, Level 5, 16 Science Drive 4
Singapore 117558

(65) 6601 2300
envhelp@nus.edu.sg
www.envstudies.nus.edu.sg

SPECIAL PROGRAMMES

In addition to the diversity of courses and the rigorous training provided by our basic degree programmes, the Faculty of Science also offers a host of special programmes to broaden students' intellectual and personal horizons.

NUS Pre-Medical Programme (PMP)

The programme prepares a select group of students for the unique opportunity of joining the Doctor of Medicine programme at Duke-NUS Medical School or graduate programmes in Biomedical Science, upon successful completion of their undergraduate degrees and the requirements of the PMP.

Years 1 and 2 undergraduate students from the Faculty of Science may apply to read GMS1000: The Duke-NUS Pre-Medical Module in Semester 2 or in the Special Term. Applicants will undergo a pre-selection process where you are assessed based on your academic potential, achievements and aptitude for a medicine course.

Shortlisted students will take GMS1000, a semester-long module taught by Duke-NUS Medical School postdoctoral fellows. Throughout the course, your performance will be assessed and a few will be selected as NUS Pre-Med Scholars.

Scholars will participate in medical shadowing and research internships as well as regular seminars and talks.

For more information on the PMP, please visit www.science.nus.edu.sg/education/undergraduate/ug-programmes/pre-med. You can also email your enquiries to askscience@nus.edu.sg.

Special Programme in Science (SPS)

The programme prepares students with an aptitude for science to address modern multidisciplinary scientific challenges.

It fosters creative and critical thinking through scientific investigations and in-depth studies, as well as mentorship by senior SPS students, graduate students, instructors and professors.

The Integrated Science Curriculum comprises four specially-designed thematic modules that integrate biology, chemistry, mathematics and physics, and two research-oriented modules.

Admission is selective. Prospective students are interviewed to determine your passion in science and intellectual maturity.

For more information on SPS, please visit <http://sps.nus.edu.sg>. You can also email your enquiries to admin@sps.nus.edu.sg.

Internships

You will have multiple opportunities during your candidature to take up internships at renowned local and international organisations, through the Undergraduate Professional Internship Programme (UPIP) and Honours year Applied Project modules.

These programmes provide experiential learning on-the-job. You will get to:

- **Gain practical workplace experience:** Acquire transferable skills, such as resourcefulness, problem-solving, response-abilities and teamwork, which are important attributes at the workplace.
- **Plan your academic and career development:** Better understand your interests, enabling you to develop your career plans and select elective coursework that integrates your studies and career goals.

SPECIAL PROGRAMMES

- **Translate scientific principles:** Become adept in applying classroom learning to solve problems in a real-world professional environment.

Upon successful completion of the internship, you will also be awarded modular credits that count towards your graduation requirement.

For more information on UPIP, please visit www.science.nus.edu.sg/students/upip. You can also email your enquiries to sciupip@nus.edu.sg.

Undergraduate Research Opportunities Programme in Science (UROPS)

The programme provides you a unique opportunity to work with our faculty members and experience the challenges and benefits of undertaking an independent research project.

You will get to work at the frontiers of scientific research through close interaction with established scientists in their fields.

You will enhance your knowledge in the latest developments in science and technology, and acquire communication and presentation skills.

You can choose to take up a UROPS project during regular semesters or special terms (May to July).

For more information on UROPS, please visit www.science.nus.edu.sg/undergraduate-studies/ugenh/urops-main. You can also email your enquiries to scienhance@nus.edu.sg.

University Scholars Programme (USP)

This multi- and interdisciplinary academic programme shapes independent, adaptable thinkers and doers through its transformative learning environment, innovative curriculum and diverse global opportunities.

The programme admits students from seven faculties/schools - Arts and Social Sciences; Business; Computing; Design and Environment; Engineering; Science; and Law.

You will be challenged to build upon, or go beyond your majors, by thinking critically and approaching topics from different disciplinary perspectives. This enables you to make connections across disciplines and challenge conventional ways of thinking.

You will attend seminar-style classes, and do 30% of your academic work in USP and 70% in your home faculty/school where you read your majors.

You will flourish in different ways through an enriching residential experience in an organic, self-driven environment that encourages exchange, peer learning and collaboration. This is achieved by living at the USP residential college – Cinnamon College – at University Town, for two or more years.

You will organise or take part in USP International Programmes, which challenge you on issues outside your fields of interest and enhance your global perspective.

USP admissions open every year with NUS' general admissions and shortlisted applicants will be interviewed. A second USP admission exercise is also considered for Faculty of Science freshmen in the 2nd semester of study.

USP is not a scholarship disbursement programme. You may, however, apply for NUS scholarships or be recipients of other scholarships. There are also financial aid initiatives and scholarships in USP to help you defray the cost of studying and living on campus.

Upon successful completion of USP requirements and an Honours programme, you will graduate with an Honours degree from your faculty/school and receive a certificate of recognition as a University Scholar.

For more information on USP and application timelines, please visit www.usp.nus.edu.sg. You can also email your enquiries to usphelp@nus.edu.sg.



STUDY ABROAD PROGRAMMES

Study abroad programmes with over 200 overseas partner universities open the door to a global learning experience. You will gain exposure to different cultures and academic environments. Ranging from a few weeks to two years, these programmes allow you to study abroad as part of your undergraduate studies in NUS while paying only home university fees. Courses taken as part of study abroad programmes could earn you modular credits towards fulfilling graduation requirements.

Student Exchange Programme

Students spend one semester or a year at an overseas partner university.

Going on exchange allows you to take modules not taught in NUS.

We have over 200 reputable partner universities. These include: University College Cork; Radboud University; University of Toronto; Colgate University; Cornell University; The University of North Carolina at Chapel Hill; La Trobe University; Chang Gung University; Nagoya University and many more.

Summer Programme

Spanning three to eight weeks, these programmes are ideal should you prefer to gain an overseas learning experience outside regular semesters.

Places offered by our partner universities are reserved for NUS Science students only.

Summer programmes allow you to take NUS modules in an overseas setting.

Some overseas universities offering summer programmes include: University of Toronto; The University of North Carolina at Chapel Hill; University of California, Los Angeles; Radboud University; and Hokkaido University.

Overseas Summer Research Programme

Students spend eight to 12 weeks in the laboratories of our partner universities or in overseas research institutes. Students from all disciplines can enrol in these programmes.

Some partner universities and research institutes include: University of Cambridge; The University of North Carolina at Chapel Hill; University of Alberta; University of Toronto; University Autónoma de Madrid; King Abdullah University of Science and Technology; Shanghai Jiao Tong University; Zhejiang University; Chang Gung University; and Academia Sinica.

NUS Overseas Colleges (NOC) Programme

Selected students will choose to spend three or six months with a high technology startup in Beijing or Shanghai, or six to seven months in Beijing, Shenzhen, Israel, Munich, Lausanne, NOC Singapore or NOC Southeast Asia. For a one-year experience, selected students may opt to go to New York, Silicon Valley, Stockholm or Toronto.

You will gain firsthand insights into the operations of high technology startups and experience the challenges faced by the founders of these companies.

You can enrol in entrepreneurship courses at highly reputable universities like Stanford University; Fudan University; Tsinghua University; Technical University of Munich; and the KTH Royal Institute of Technology.

Double Degree Programme with the French Grandes Écoles

The Grandes Écoles are a cluster of world-renowned institutions of higher scientific learning with a history of over 200 years, known for educating France's technical and management elites.

NUS has set up Double Degree Programmes with six premier French Grandes École:

- CentraleSupélec
- École des Mines de Paris
- École des Ponts ParisTech (École Nationale des Ponts et Chaussées)
- École Polytechnique
- ENSTA ParisTech (École Nationale Supérieure de Techniques Avancées)
- TELECOM ParisTech (École Nationale Supérieure des Télécommunications)



STUDY ABROAD PROGRAMMES

Students are selected in the first year from among top engineering, science and computing applicants.

Grandes Écoles place strong emphasis on mathematics and physics curricula in the first year.

You will undergo French language preparation, spend your third and fourth year in a French institution, and return to NUS for your M.Sc. programme.

Upon graduation, you will receive a B.Sc. (Hons) degree, an M.Sc. degree from NUS and a Diplôme d'Ingenieur (the equivalent of Masters in France) from a French Grande École.

Joint Degree Programme with The Australian National University (ANU)

This four-year programme combines the Bachelor of Philosophy (Hons) degree of ANU with NUS' B.Sc. (Hons) degree.

It is only offered to NUS Science students in the University Scholars Programme who are majoring in Chemistry, Mathematics and Physics, and is suitable if you have an interest and aptitude for graduate research work.

Up to six students are accepted into the programme annually.

You will spend three semesters at NUS, followed by three semesters at ANU, before returning to NUS to complete the Honours year.

You will acquire a strong foundation in critical analysis and in-depth perspectives into the principles of each subject, while actively undertaking independent undergraduate research work.

Applications open in September/October each year. Successful students are provisionally admitted to the programme based on academic performance and other relevant qualifications. Official admission into the programme will only take place at the end of the third semester of study.

Joint Degree Programme in Life Sciences with The University of North Carolina at Chapel Hill (UNC-CH)

This four-year programme, offered in collaboration between the Faculty of Science and the College of Arts and Sciences, UNC-CH, leads to a B.Sc. (Hons) in Life Sciences from NUS and a B.Sc. in Biology from UNC-CH.

It offers students from both institutions a unique learning experience encompassing advanced life sciences modules, undergraduate research and exposure to UNC-CH's exceptional liberal arts education.

NUS students will generally spend Semesters 1 to 4 in NUS, Semesters 5 to 6 in UNC-CH and Semesters 7 to 8 in NUS.

Upon graduation, you will receive a degree jointly validated by NUS and UNC-CH.

Joint Minor Programme with University of Toronto (U of T)

This programme offers two joint minor programmes in either Environmental Biology or Environmental Chemistry with U of T.

You will study advanced courses for one semester at U of T, where you will benefit from their expertise in environmental sciences.

Joint Degree Programme with University of Dundee

The programme is jointly offered by NUS' B.Sc. (Hons) in Life Sciences and University of Dundee (UoD)'s B.Sc. (Hons) in Biological Sciences/Biomedical Sciences, and equips students with drug discovery and design expertise.

The first of its kind joint Honours programme enables NUS Life Sciences students to complete a full-year research project at UoD in drug discovery and design.

Upon graduation, you will receive a degree jointly validated by NUS and UoD.



STUDY ABROAD PROGRAMMES

Concurrent Degree Programme with The University of Melbourne Doctor of Veterinary Medicine

The programme combines NUS' B.Sc. in Life Sciences and the Doctor of Veterinary Medicine offered by the Faculty of Veterinary and Agricultural Sciences, The University of Melbourne. It integrates the two degree programmes so that it is possible to accelerate and complete the programme in 5.5 years, instead of the usual seven years.

Students will acquire specialised theoretical, practical and clinical training in veterinary medicine and veterinary science.

For more information on our study abroad programmes, please visit www.science.nus.edu.sg/education/undergraduate/ug-programmes/sap-outgoing. You can also email your enquiries to scisap@nus.edu.sg.

ADMISSIONS INFORMATION



ADMISSIONS INFORMATION

Admission Requirements for Students with GCE 'A' Level (H1/H2) Qualifications or Equivalent

For admission to the Faculty of Science, applicants must have good GCE 'A' Level (H2) passes (or equivalent) in at least two of these Science subjects: Biology, Chemistry, Computing, Physics and Mathematics/Further Mathematics.

Students admitted to the Faculty of Science will choose their major in July if they meet the prerequisites for that major. Students intending to pursue major courses like Data Science and Analytics, Food Science and Technology, Environmental Studies, or Pharmaceutical Science or Pharmacy, can apply for any of them via the online application form.

Primary Majors Leading to an Honours Degree	Prerequisites for Students Offering H2 Curriculum or Equivalent
<ul style="list-style-type: none"> • Chemistry • Chemistry Specialisation in Materials Chemistry • Chemistry Specialisation in Medicinal Chemistry • Chemistry Specialisation in Environment and Energy 	<p>Good H2 pass (or equivalent) in Chemistry and at least a good 'O' Level pass (or equivalent) in Mathematics</p>
<ul style="list-style-type: none"> • Computational Biology** 	<p>Good H2 passes (or equivalent) in Mathematics/Further Mathematics, and either Biology or Chemistry</p> <p><i>Students without H2 passes (or equivalent) in either Biology or Chemistry should have at least an 'O' Level (or equivalent) pass in it [subject to departmental approval].</i></p>
<ul style="list-style-type: none"> • Data Science and Analytics# 	<p>Very good H2 pass (or equivalent) in Mathematics/Further Mathematics, and a good H2 pass (or equivalent) in Biology or Chemistry or Physics or Computing</p>
<ul style="list-style-type: none"> • Food Science and Technology 	<p>Good H2 pass (or equivalent) in Chemistry and a good H2 pass (or equivalent) in Biology or Physics or Computing or Mathematics/Further Mathematics</p> <p><i>Students without H2 pass in Biology are required to read the bridging module in Biology (i.e. LSM1301) in Semester 1 to fulfil the prerequisites for the relevant Level 1000 Life Sciences module in the syllabus.</i></p>

Primary Majors Leading to an Honours Degree	Prerequisites for Students Offering H2 Curriculum or Equivalent
<ul style="list-style-type: none"> • Life Sciences • Life Sciences Specialisation in Biomedical Science • Specialisation in Environmental Biology • Specialisation in Molecular and Cell Biology 	<p>Two good H2 passes (or equivalent) in Biology or Chemistry or Mathematics/Further Mathematics or Physics</p> <p><i>Students without H2 pass in Biology or Chemistry may read the relevant bridging modules (i.e. LSM1301 or CM1417 respectively) as entry requirements.</i></p>
<ul style="list-style-type: none"> • Mathematics • Applied Mathematics • Applied Mathematics Specialisation in Mathematical Modelling and Data Analytics • Specialisation in Operations Research and Financial Mathematics • Quantitative Finance* 	<p>Good H2 pass (or equivalent) in Mathematics/Further Mathematics</p>
<ul style="list-style-type: none"> • Pharmaceutical Science# 	<p>Very good H2 pass (or equivalent) in Chemistry and a very good H2 pass (or equivalent) in Biology or Physics or Mathematics/ Further Mathematics</p>
<ul style="list-style-type: none"> • Pharmacy# <i>(Professional programme where application is by direct admission only)</i> 	<p>Very good H2 passes (or equivalent) in Chemistry and either Biology, Mathematics/Further Mathematics or Physics</p>
<ul style="list-style-type: none"> • Physics • Physics Specialisation in Astrophysics • Specialisation in Nanophysics • Specialisation in Quantum Technologies 	<p>Good H2 passes (or equivalent) in Physics and Mathematics/ Further Mathematics</p>
<ul style="list-style-type: none"> • Statistics • Statistics Specialisation in Data Science • Specialisation in Finance and Business Statistics 	<p>Good H2 pass (or equivalent) in Mathematics/Further Mathematics</p>
Interdisciplinary Degree Programme	Prerequisites for Students Offering H2 Curriculum or Equivalent
<ul style="list-style-type: none"> • Bachelor of Environmental Studies Specialisation in Environmental Biology# 	<p>Good H1 pass (or equivalent) in Mathematics and good H2 pass (or equivalent) in Biology or Chemistry</p>

NOTE

a) * Admission to the Faculty of Science does not automatically qualify a student to choose these majors as there will be additional departmental selection due to limited places.

b) # These are strict four-year programmes. Students in other majors can graduate with a Bachelor of Science (B.Sc.) degree after three years.

c) Specialisations are awarded only with a B.Sc. (Hons) degree.

Courses Beyond Primary Major

The Faculty of Science offers a flexible curriculum, which allows students who wish to enrich and broaden their educational experiences, to choose other courses and programmes beyond their primary major course. Students may do a double degree (two degrees with two full majors), choose a double major (one primary and one second major) and/or minor programmes within and outside the Faculty.

Within the Faculty of Science

Second Majors (Optional)	Prerequisites for Students Offering H2 Curriculum or Equivalent
• Chemistry	Good H2 pass (or equivalent) in Chemistry
• Data Analytics	Very good H2 pass (or equivalent) in Mathematics/Further Mathematics
• Life Sciences	Two good H2 passes (or equivalent) in Biology or Chemistry or Mathematics/Further Mathematics or Physics
• Mathematics • Statistics	Good H2 pass (or equivalent) in Mathematics/Further Mathematics
• Physics	Good H2 pass (or equivalent) in Physics

Minors (Optional)	Prerequisites for Students Offering H2 Curriculum or Equivalent
• Analytical Chemistry	Good H2 pass (or equivalent) in Chemistry
• Biophysics	Good H2 passes (or equivalent) in Physics, Chemistry and/or Biology
• Forensic Science*	Good H2 passes (or equivalent) in Chemistry and Biology
• Life Sciences	Good H2 pass (or equivalent) in Biology
• Mathematics • Financial Mathematics • Statistics	Good H2 pass (or equivalent) in Mathematics/Further Mathematics
• Nanoscience	Good H2 pass (or equivalent) in Chemistry or Physics
• Pharmaceutical Sciences*	Good H2 pass (or equivalent) in Chemistry or Biology

Minors (Optional)	Prerequisites for Students Offering H2 Curriculum or Equivalent
• Physics	Good H2 pass (or equivalent) in Physics

Joint Minors (Optional)	Prerequisites for Students Offering H2 Curriculum or Equivalent
• Aquatic Ecology*	Open to students from all disciplines, except those who are reading the Bachelor of Environmental Studies degree from Academic Year 2016/2017 and onwards. An interview is required.
• Engineering Materials*	Good H2 pass (or equivalent) in Chemistry or Physics
• Environmental Biology*	Good H2 passes (or equivalent) in Biology and Mathematics/ Further Mathematics
• Environmental Chemistry*	Good H2 passes (or equivalent) in Physics and Mathematics/ Further Mathematics
• Medical Physics*	Open to students from Faculty of Science and Faculty of Engineering with good H2 passes (or equivalent) in Physics and Biology

NOTE

* Application is subject to departmental approval.

Students can apply directly to the following double major programme within the Faculty of Science (FoS) via the online admission application form.

FoS Major	2nd Major (From FoS)	Admission Requirements*
Chemistry	Food Science	Good H2 pass (or equivalent) in Chemistry and a good H2 pass (or equivalent) in Biology or Physics or Computing or Mathematics/Further Mathematics

NOTE

* Applicants satisfying the admission requirements will be subject to selection criteria before being admitted into the programme.

Outside the Faculty of Science

Students can apply directly to the following double major programmes via the online admission application form.

FoS Major	2nd Major (From Other Faculties/ Schools)	Admission Requirements*
Applied Mathematics	Economics (FASS)	Good H2 pass (or equivalent) in Mathematics/Further Mathematics
Mathematics	Economics (FASS)	Good H2 pass (or equivalent) in Mathematics/Further Mathematics
Statistics	Economics (FASS)	Good H2 pass (or equivalent) in Mathematics/Further Mathematics
Life Sciences	Psychology (FASS)	Two good H2 passes (or equivalent) in Biology or Chemistry or Mathematics/Further Mathematics or Physics
Applied Mathematics	Computer Science (SoC)	Good H2 pass (or equivalent) in Mathematics/Further Mathematics
Mathematics	Computer Science (SoC)	Good H2 pass (or equivalent) in Mathematics/Further Mathematics
Statistics	Computer Science (SoC)	Good H2 pass (or equivalent) in Mathematics/Further Mathematics
Applied Mathematics	Information Security (SoC)	Good H2 pass (or equivalent) in Mathematics/Further Mathematics
Mathematics	Information Security (SoC)	Good H2 pass (or equivalent) in Mathematics/Further Mathematics
Statistics	Information Security (SoC)	Good H2 pass (or equivalent) in Mathematics/Further Mathematics
Applied Mathematics	Business Analytics (SoC)	Good H2 pass (or equivalent) in Mathematics/Further Mathematics
Mathematics	Business Analytics (SoC)	Good H2 pass (or equivalent) in Mathematics/Further Mathematics
Statistics	Business Analytics (SoC)	Good H2 pass (or equivalent) in Mathematics/Further Mathematics
Applied Mathematics	Management (Biz)	Good H2 pass (or equivalent) in Mathematics/Further Mathematics
Mathematics	Management (Biz)	Good H2 pass (or equivalent) in Mathematics/Further Mathematics
Statistics	Management (Biz)	Good H2 pass (or equivalent) in Mathematics/Further Mathematics
Life Sciences	Management (Biz)	Two good H2 passes (or equivalent) in Biology or Chemistry or Mathematics/Further Mathematics or Physics

Major with Minor Programmes

Students can apply directly to the following major with minor programmes via the online admission application form.

FoS Major	Minor (From Other Faculties/Schools)	Admission Requirements*
Applied Mathematics	Information Security (SoC)	Good H2 pass (or equivalent) in Mathematics/Further Mathematics
Computational Biology	Information Security (SoC)	Good H2 passes (or equivalent) in Mathematics/Further Mathematics and either Biology or Chemistry
Quantitative Finance	Information Security (SoC)	Good H2 pass (or equivalent) in Mathematics/Further Mathematics
Statistics	Information Security (SoC)	Good H2 pass (or equivalent) in Mathematics/Further Mathematics
Life Sciences	Public Health (SSHSPH)	Two good H2 passes (or equivalent) in Biology or Chemistry or Mathematics/Further Mathematics or Physics
Mathematics	Entrepreneurship (Biz)	Good H2 pass (or equivalent) in Mathematics/Further Mathematics
Applied Mathematics	Entrepreneurship (Biz)	Good H2 pass (or equivalent) in Mathematics/Further Mathematics
Statistics	Entrepreneurship (Biz)	Good H2 pass (or equivalent) in Mathematics/Further Mathematics
Data Science and Analytics	Entrepreneurship (Biz)	Very good H2 pass (or equivalent) in Mathematics/Further Mathematics and a good H2 pass (or equivalent) in Biology or Chemistry or Physics or Computing
Life Sciences	Entrepreneurship (Biz)	Two good H2 passes (or equivalent) in Biology or Chemistry or Mathematics/Further Mathematics or Physics
Food Science and Technology	Entrepreneurship (Biz)	Good H2 pass (or equivalent) in Chemistry and a good H2 pass (or equivalent) in Biology or Physics or Computing or Mathematics/Further Mathematics

NOTE

*Applicants satisfying the admission requirements will be subject to selection criteria before being admitted into the programme.

LEGEND

Biz: NUS Business School; FASS: Faculty of Arts and Social Sciences; FoS: Faculty of Science; SoC: School of Computing; SSHSPH: Saw Swee Hock School of Public Health

After admission to the Faculty of Science, students can also self-design their own major/second major or double degree combinations as shown below.

Examples of Possible Double Major Combinations

- Chemistry and Geography
- Chemistry and Management
- Chemistry and Political Science
- Life Sciences and English Language
- Life Sciences and Sociology
- Mathematics and Chinese Studies
- Quantitative Finance and Economics

Examples of Possible Double Degree Combinations

- Chemistry and Business Administration
- Life Sciences and Business Administration
- Life Sciences and Computer Science
- Life Sciences and Economics
- Mathematics/Applied Mathematics and Business Administration
- Mathematics/Applied Mathematics and Computer Science
- Mathematics/Applied Mathematics and Economics
- Physics and Materials Science and Engineering
- Physics and Mechanical Engineering
- Quantitative Finance and Business Administration
- Quantitative Finance and Economics
- Statistics and Business Administration

For more information on self-designed programmes, please visit NUS' Registrar's Office website at <http://www.nus.edu.sg/registrar/education-at-nus/undergraduate-education/special-undergraduate-programmes/double-major-programmes.html>. You can also email your enquiries to askscience@nus.edu.sg.

Admission Requirements for Polytechnic Diploma Holders

Local polytechnic applicants (regardless of nationality) will be considered for admission if their diplomas are accredited to our Science, Pharmacy, Pharmaceutical Science or Environmental Studies courses.

Nanyang Polytechnic	NUS Major Courses
Biologics and Process Technology	Science (Chemistry)
Biomedical Engineering	Science (Physics)
Chemical and Green Technology	Environmental Studies Science (Chemistry)
Chemical and Pharmaceutical Technology	Science (Chemistry)
Digital and Precision Engineering	Science (Physics)
Electronics, Computer and Communication Engineering/ Electronics, Computer and Control Engineering	Science (Physics)
Engineering with Business <i>(For 2017 graduates onwards)</i>	Science (Physics)

Nanyang Polytechnic

NUS Major Courses

Food Science and Nutrition <i>(Previously named as Food Science)</i>	Science (Chemistry) Science (Food Science and Technology) Science (Life Sciences)
Manufacturing Engineering	Science (Physics)
Mechatronics Engineering	Science (Physics)
Medicinal Chemistry	Science (Chemistry) Science (Life Sciences) Science (Pharmaceutical Science) Science (Pharmacy)
Molecular Biotechnology	Science (Chemistry) Science (Life Sciences) Science (Pharmaceutical Science) Science (Pharmacy)
Molecular Biotechnology <i>(Pharmaceutical and Clinical Trial track)</i>	Science (Life Sciences) Science (Pharmaceutical Science) Science (Pharmacy)
Molecular Biotechnology <i>(R&D/Bioenterprise/Manufacturing track)</i>	Science (Life Sciences) Science (Pharmaceutical Science) Science (Pharmacy)
Nanotechnology and Materials Science	Science (Chemistry) Science (Physics)
Nursing (three-year programme)	Science (Life Sciences)
Pharmaceutical Sciences	Science (Chemistry) Science (Life Sciences) Science (Pharmaceutical Science) Science (Pharmacy)

Ngee Ann Polytechnic

NUS Major Courses

Aerospace Technology/Aerospace Technology <i>(With minor in Business Management)</i>	Science (Physics)
Biomedical Engineering/Biomedical Engineering <i>(With minor in Business Management)</i>	Science (Computational Biology) Science (Life Sciences) Science (Physics)

Biomedical Laboratory Technology/Biotechnology	Science (Chemistry) Science (Life Sciences) Science (Pharmaceutical Science) Science (Pharmacy)
Biomedical Science <i>(For 2015 graduates onwards)</i> • Specialisation: Clinical Laboratory Technology • Specialisation: Biomedical Research • Specialisation: Medicinal Chemistry (renamed)	Science (Chemistry) Science (Life Sciences) Science (Pharmaceutical Science) Science (Pharmacy)
Biomedical Science <i>(For 2014 graduates or earlier)</i> / Biomedical Science <i>(Medical Laboratory Technology option)</i>	Environmental Studies Science (Chemistry) Science (Life Sciences) Science (Pharmaceutical Science) Science (Pharmacy)
Chemical Engineering	Science (Chemistry)
Chemical and Biomolecular Engineering	Science (Chemistry)
Electrical Engineering/Electrical Engineering <i>(With minor in Business Management)</i>	Science (Physics)
Engineering Science	Science (Physics)
Environmental and Water Technology	Environmental Studies
Landscape Design and Horticulture <i>(Previously named as Horticulture and Landscape Management)</i>	Science (Life Sciences)
Molecular Biotechnology	Environmental Studies Science (Chemistry) Science (Life Sciences) Science (Pharmaceutical Science) Science (Pharmacy)
Optometry	Science (Life Sciences)
Pharmacy Science	Science (Chemistry) <i>[For 2013 graduates and earlier, and for 2017 graduates onwards]</i> Science (Life Sciences) Science (Pharmaceutical Science) Science (Pharmacy)
Veterinary Bioscience	Environmental Studies Science (Life Sciences)

Republic Polytechnic

NUS Major Courses

Aerospace Engineering	Science (Physics)
Biomedical Electronics	Science (Computational Biology)
Biomedical Science	Environmental Studies Science (Chemistry) <i>[For 2013 graduates and earlier]</i> Science (Life Sciences) Science (Pharmaceutical Science) Science (Pharmacy)
Biotechnology	Environmental Studies Science (Chemistry) <i>[For 2013 graduates and earlier]</i> Science (Life Sciences) Science (Pharmaceutical Science) Science (Pharmacy)
Environmental Sciences	Environmental Studies Science (Chemistry) Science (Life Sciences)
Marine Science and Aquaculture <i>(For 2017 graduates onwards)</i>	Environmental Studies Science (Life Sciences)
Materials Science	Science (Chemistry) Science (Physics)
Pharmaceutical Sciences	Environmental Studies Science (Chemistry) <i>[For 2013 graduates and earlier]</i> Science (Life Sciences) Science (Pharmaceutical Science) Science (Pharmacy)

Singapore Polytechnic

NUS Major Courses

Aeronautical Engineering	Science (Physics)
Applied Chemistry <i>(For 2018 graduates onwards)</i> Option: Industrial Chemistry Option: Pharmaceutical Science Option: Medicinal Chemistry Research <i>[Merger between Diploma in Applied Chemistry with Pharmaceutical Science and Diploma in Applied Chemistry with Materials Science]</i>	Science (Chemistry) Science (Pharmaceutical Science) Science (Pharmacy)

Singapore Polytechnic

NUS Major Courses

<p>Applied Chemistry (For 2018 graduates onwards) Option: Materials Science [Merger between Diploma in Applied Chemistry with Pharmaceutical Science and Diploma in Applied Chemistry with Materials Science]</p>	Science (Chemistry)
<p>Biomedical Science</p>	Science (Chemistry) Science (Life Sciences) Science (Pharmaceutical Science) Science (Pharmacy)
<p>Biotechnology (Medical Technology option)</p>	Science (Life Sciences) Science (Pharmaceutical Science) Science (Pharmacy)
<p>Biotechnology</p>	Environmental Studies Science (Chemistry) Science (Computational Biology) [For 2017 graduates onwards] Science (Life Sciences) Science (Pharmaceutical Science) Science (Pharmacy)
<p>Chemical Engineering</p>	Science (Chemistry) Science (Food Science and Technology) [For 2017 graduates onwards]
<p>Environmental Management and Water Technology</p>	Environmental Studies
<p>Food Science and Technology (Previously named as Chemical Process Technology [Food Technology])</p>	Science (Chemistry) Science (Food Science and Technology) Science (Pharmaceutical Science) Science (Pharmacy)
<p>Materials Engineering</p>	Science (Chemistry)
<p>Materials Science (Previously named as Chemical Process Technology [Polymer Option])</p>	Science (Chemistry)

Singapore Polytechnic

NUS Major Courses

Mechanical Engineering <i>(For 2017 graduates onwards)</i>	Science (Physics)
Medical Technology	Science (Life Sciences) Science (Pharmaceutical Science) Science (Pharmacy)
Nutrition, Health and Wellness	Science (Food Science and Technology) Science (Life Sciences)
Perfumery and Cosmetic Science <i>(Previously named as Chemical Process Technology [Industrial Chemistry])</i>	Science (Chemistry) Science (Pharmaceutical Science) Science (Pharmacy)
Process Engineering	Science (Chemistry)

Temasek Polytechnic

NUS Major Courses

Applied Food Science and Nutrition	Science (Chemistry) <i>[For 2017 graduates onwards]</i> Science (Food Science and Technology) Science (Pharmaceutical Science) Science (Pharmacy)
Biomedical Engineering <i>(For 2015 graduates onwards [Previously named as Biomedical Informatics and Engineering])</i>	Science (Computational Biology) Science (Life Sciences) Science (Physics)
Biomedical Informatics and Engineering	Science (Computational Biology) Science (Life Sciences)
Biomedical Science	Science (Chemistry) Science (Life Sciences) Science (Pharmaceutical Science) Science (Pharmacy)
Biotechnology	Science (Chemistry) Science (Computational Biology) <i>[For 2017 graduates onwards]</i> Science (Life Sciences) Science (Pharmaceutical Science) Science (Pharmacy)

Chemical Engineering	Science (Chemistry)
Mechatronics <i>(For 2017 graduates onwards)</i>	Science (Physics)
Pharmaceutical Science	Science (Chemistry) Science (Food Science and Technology) Science (Life Sciences) Science (Pharmaceutical Science) Science (Pharmacy)
Veterinary Technology	Science (Food Science and Technology) <i>[For 2017 graduates onwards]</i> Science (Life Sciences)

ADVANCED PLACEMENT CREDITS (APCs)

APCs are given to diploma holders of approved programmes from the five polytechnics in Singapore. Such students admitted to a four-year degree programme may be granted APCs in relevant modules for up to a maximum of 40 modular credits (MCs), as follows:

Auto-granted MCs

(i) 20 MCs from Unrestricted Elective Modules

Performance-based MCs

(ii) Up to 20 MCs from programme requirements may be granted based on performance in advanced placement tests and/or interviews set by the department offering the module.

Computation of Admission Score for Academic Year 2019/2020

(1) Polytechnic results 80% (2) Singapore-Cambridge GCE 'O' Level results 20%

Please visit NUS' Office of Admissions website for more details:

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



Faculty of Science

DEAN'S OFFICE

Faculty of Science
Block S16
Level 2, 6 Science Drive 2
Singapore 117546

