In over 85 years, the Faculty of Science has produced numerous graduates who were not only successful in their chosen careers, but had made great contributions to society.

Given our long history and established track record of accomplishments, we have the experience and expertise to educate you holistically, help you discover your latent talents and transform you into a highly valued achiever and lifelong learner.

The transformation process will take place in phases, just like the metamorphosis of a butterfly.

**OUR ENVIRONMENT**

- Top-Notch Professors
- State-of-the-Art Research & Teaching Facilities
- Research Centres of Excellence
- Talent Magnet for Top Local & International Students
- Active Student Clubs & Societies
- Vibrant University Town

**YOUR FOUNDATION**

As a freshman, we will prepare you well for higher levels of studies by enhancing your **Written & Communication Skills**, and **Domain Knowledge** through these foundational courses:

- Discipline Foundational Courses
- Freshman Seminars
- Science Communication Courses
- General Education Courses
The Caterpillar
When the egg hatches, the caterpillar obtains nutrients from its surroundings to boost its active growth and development.

The Pupa
When the caterpillar is fully grown, it forms into a pupa, preparing for a remarkable transformation from within.

The Butterfly
The butterfly, with the formation of its colourful and robust wings, gets ready to take flight and embark on its adventurous journey in life.

YOUR DEVELOPMENT
As you progress, you will acquire the latest Technical Know-How, Research Methodologies, skills such as Critical & Analytical Thinking, Data Analysis, Report Writing, Presentation through any of these choice programmes:
- Discipline-Based Majors
- Double Majors, Minors, Double Degrees, Joint Degrees, Concurrent Bachelor & Master's Degrees
- Undergraduate Research Opportunities Programme in Science
- Special Programme in Science
- Global Science Programme
- NUS Pre-Medical Programme

YOUR TRANSFORMATION
Your Domain Knowledge and Social & Global Outlook will be transformed and further strengthened through any of these exciting learning opportunities:
- Specialisations in Majors
- Study Abroad Programmes
- Summer Programmes
- Undergraduate Professional Internship Programmes
- Final-Year Honours Project

YOUR FUTURE
Through our premium NUS Science Education, you will learn to harness your potential and Transform into an Innovative and Enterprising person, well equipped with Knowledge-Based and Transferable Skillsets.

After your transformation, you are ready to make invaluable contributions to society in your next lap of journey in life:
- Discipline-Based Careers
- General Professional Careers
- Continual Education

Your rich and rewarding educational experiences at our Faculty of Science may last only 4 years. However, your established relationships with the Faculty and fellow alumni will be lifelong.

We warmly welcome you to embrace our Transformative Science Education and be a member of our Science family and alumni.
About the Faculty of Science

>>
NUS Science
Our Specialty, Your Discovery

• More than 85 years of established track record in providing quality Science education

• Holistic broad-based education to cater to a wide spectrum of students’ interests, aptitudes and abilities, thereby developing and maximising the potential of each individual

• Flexible curriculum that affords many opportunities for multi-disciplinary studies, such as double degree, double major and minor programmes, within and outside the Faculty

• Top-notch professors who are passionate about and committed to teaching and research

• State-of-the-art research and teaching facilities

• Special programmes tailored for different groups of students to stretch and enrich their educational experiences

• A wide spectrum of study abroad programmes established with reputable overseas universities to broaden students’ educational, cultural and social experiences

• Clusters of eminent research groups to provide academic leadership and mentorship for budding young scientists
About the Faculty of Science

Established in 1929 as a single department, the Faculty of Science (FoS) has evolved into one of the largest faculties with six departments in the National University of Singapore (NUS) today. It has some 5,090 undergraduates, 1,480 graduate students, 280 research-active academic staff, and over 280 support and administrative staff.

The FoS has an established track record of providing quality Science education catering to different interests and pursuits. Students are offered a flexible curriculum and a diverse range of courses, with many opportunities for multi-disciplinary studies such as double degrees, joint and concurrent degrees, double majors, minors and cross-faculty programmes. As the Faculty embraces talent and fosters the spirit of enterprise, these programmes are designed to suit the demands of diverse industries and train students to be versatile, enterprising and relevant to the evolving global economy.

Recruiting and nurturing talent is the top priority for a world-class Faculty like FoS. The Faculty is well-endowed with world renowned and award-winning professors who are passionate about education and research. Our scientists continue to be awarded significant grants from the government and private organisations to conduct high-value research in areas that help shape the future of Singapore. Equipped with state-of-the-art laboratories and research capabilities, our professors actively participate in both innovative teaching and leading-edge research.

FoS is ranked amongst the best in Asia. As a global university, we work in close partnership with top universities around the world, e.g. Harvard, Cambridge, Princeton, California Institute of Technology, Massachusetts Institute of Technology, Imperial College London, University of California at San Diego and Berkeley, Technical University of Munich, the Australian National University, etc.

VISION
To be among the world’s best in Science education and research

MISSION
To provide quality education, foster the spirit of enterprise and conduct leading-edge research to advance knowledge in Science and Technology for the benefit of Singapore and the global community

To view Student life video, please click here
**Departments and Courses at Faculty of Science**

The Faculty of Science (FoS) offers undergraduate and postgraduate programmes through its six departments, comprising:

- **Biological Sciences**
- **Mathematics**
- **Physics**
- **Chemistry**
- **Pharmacy**
- **Statistics and Applied Probability**

### Undergraduate Degree Programmes

Undergraduates are admitted to FoS on a direct 4-year track for a Bachelor of Science (Honours) [BSc (Hons)] degree. More than 75% of the students are expected to graduate with an honours degree.

<table>
<thead>
<tr>
<th>BSc and BSc (Hons) Degrees in</th>
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<tbody>
<tr>
<td>Chemistry</td>
<td></td>
</tr>
<tr>
<td>Chemistry with Specialisation in Materials Chemistry¹</td>
<td></td>
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<tr>
<td>Chemistry with Specialisation in Medicinal Chemistry¹</td>
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<tr>
<td>Chemistry with Specialisation in Environment and Energy¹</td>
<td></td>
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<tr>
<td>Computational Biology²</td>
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<tr>
<td>Food Science &amp; Technology</td>
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<tr>
<td>Life Sciences</td>
<td></td>
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<tr>
<td>Life Sciences with Specialisation in Biomedical Science¹</td>
<td></td>
</tr>
<tr>
<td>Life Sciences with Specialisation in Environmental Biology¹</td>
<td></td>
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<tr>
<td>Life Sciences with Specialisation in Molecular and Cell Biology¹</td>
<td></td>
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<tr>
<td>Mathematics</td>
<td></td>
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<tr>
<td>Applied Mathematics</td>
<td></td>
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<tr>
<td>Applied Mathematics with Specialisation in Mathematical Modelling and Data Analytics¹</td>
<td></td>
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<tr>
<td>Applied Mathematics with Specialisation in Operations Research and Financial Mathematics¹</td>
<td></td>
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<tr>
<td>Quantitative Finance</td>
<td></td>
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<tr>
<td>Physics</td>
<td></td>
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<tr>
<td>Physics with Specialisation in Astrophysics¹</td>
<td></td>
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<tr>
<td>Physics with Specialisation in Nanophysics¹</td>
<td></td>
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<tr>
<td>Statistics</td>
<td></td>
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<tr>
<td>Statistics with Specialisation in Biostatistics¹</td>
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<tr>
<td>Statistics with Specialisation in Finance and Business Statistics¹</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>BSc (Pharm) and BSc (Pharm)(Hons) Degrees</th>
<th></th>
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</thead>
<tbody>
<tr>
<td>Pharmacy²</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Bachelor of Environmental Studies² (BES) and BES (Hons) Degrees</th>
<th></th>
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</thead>
<tbody>
<tr>
<td>Environmental Studies with Specialisation in Environmental Biology (Jointly offered by FoS and Faculty of Arts and Social Sciences and with participation of 7 other faculties/schools)</td>
<td></td>
</tr>
</tbody>
</table>

¹Specialisations are awarded only with BSc (Hons) degree.
²Computational Biology, Pharmacy and Bachelor of Environmental Studies are strict 4-year programmes while students in other majors can exit after 3 years with a Bachelor’s 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 double major (one primary and one second major) and/or minor programmes within and outside the Faculty.

<table>
<thead>
<tr>
<th>Within Faculty of Science*</th>
<th>Outside Faculty of Science</th>
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</thead>
<tbody>
<tr>
<td><strong>Second Majors</strong></td>
<td><strong>Examples of Possible Double Degree combinations:</strong></td>
</tr>
<tr>
<td>• Chemistry</td>
<td>- Chemistry and Business Administration</td>
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<tr>
<td>• Life Sciences</td>
<td>- Computer Science and Mathematics/Applied Mathematics</td>
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<tr>
<td>• Mathematics</td>
<td>- Law and Life Sciences</td>
</tr>
<tr>
<td>• Physics</td>
<td>- Life Sciences and Business Administration</td>
</tr>
<tr>
<td>• Statistics</td>
<td>- Life Sciences and Computer Science</td>
</tr>
<tr>
<td><strong>Minors</strong></td>
<td>- Life Sciences and Economics</td>
</tr>
<tr>
<td>• Analytical Chemistry</td>
<td>- Mathematics and Business Administration</td>
</tr>
<tr>
<td>• Aquatic Ecology</td>
<td>- Mathematics and Economics</td>
</tr>
<tr>
<td>• Biophysics</td>
<td>- Physics and Materials Science &amp; Engineering</td>
</tr>
<tr>
<td>• Engineering Materials</td>
<td>- Physics and Mechanical Engineering</td>
</tr>
<tr>
<td>• Environmental Biology</td>
<td>- Quantitative Finance and Business Administration</td>
</tr>
<tr>
<td>• Environmental Chemistry</td>
<td>- Quantitative Finance and Economics</td>
</tr>
<tr>
<td>• Financial Mathematics</td>
<td>- Statistics and Business Administration</td>
</tr>
<tr>
<td>• Forensic Science</td>
<td></td>
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<tr>
<td>• Life Sciences</td>
<td></td>
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<tr>
<td>• Mathematics</td>
<td></td>
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<tr>
<td>• Medical Physics (New)</td>
<td></td>
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<tr>
<td>• Nanoscience</td>
<td></td>
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<tr>
<td>• Optical &amp; Semiconductor Technology</td>
<td></td>
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<tr>
<td>• Pharmaceutical Science</td>
<td></td>
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<tr>
<td>• Physics</td>
<td></td>
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<tr>
<td>• Statistics</td>
<td></td>
</tr>
</tbody>
</table>

For Special Programmes, see page 59.

For Study Abroad Programmes, see page 75.

* For admission criteria to 2nd majors and minors, please see page 104 under “Admission Information”
Research opportunities for students

The NUS Faculty of Science is ranked among the best Science faculties in the world today. We are home to many 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 students are required to undertake during their honours year of study, the Faculty has put in place various programmes to provide them with research opportunities to pursue independent research projects and develop critical thinking skills.

- The Undergraduate Research Opportunities Programme in Science (UROPS) provides an opportunity for undergraduate students in their second and third year of study to experience scientific research and discovery through their intense participation in research projects (see page 69)
- The Special Programme in Science (SPS) provides an opportunity for students to perform an integrative research project in a team to experience scientific ideas across the different fields (see page 60)
- The Overseas Summer Research Programme allows students to go abroad to conduct research in the laboratories of partner universities during the NUS vacation period (see page 82)

The Value of Science Research

Through participating in research projects, students can pursue specific interests and challenge themselves in new ways.

- Students are trained in the scientific process (i.e. background study, formulation of hypothesis, experimentation, deductive reasoning, and communication of outcomes) and develop critical thinking skills and problem-solving abilities
- Students collaborate with other researchers as part of an interdisciplinary research team by participating in active discussions and creating ideas while developing communication and presentation skills

Research Institutes and Centres

Researchers at the Faculty actively collaborate with many research institutes and centres within and outside the University to undertake research and development in areas of excellence. Students will also have an opportunity to participate in the research work with some of the research institutes and centres in NUS which include:

- Centre for Advanced 2D Materials
- Centre for Bioimaging Sciences
- Centre for Ion Beam Applications
- Centre for Quantitative Finance
- Centre for Quantum Technologies
- Centre for Superconducting and Magnetic Materials
- Centre for Wavelets, Approximation and Information Processing
- Chemical, Molecular and Material Analysis Centre
- Institute for Mathematical Sciences
- Life Sciences Institute
- Mechanobiology Institute
- NUS Environmental Research Institute
- NUS Nanoscience and Nanotechnology Institute
- 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 FoS

Biological Sciences

• **Molecular Cell & Developmental Biology:** Cell Signalling, Organelles & Cell Biology; Developmental Biology & Fish Biology; Host-Pathogen Interactions & Immunology; Plant Molecular & Developmental Biology; Stem Cell & Cancer Biology

• **Biophysical Sciences:** Bioimaging Sciences; Computational Biology; Mechanobiology; Protein Science & Proteomics; Structural Biology

• **Environmental & Evolution Biology:** Biodiversity; Ecology; Evolution

Chemistry

• **Advanced Materials:** Energy Materials; Graphene & Nanocarbons; Luminescent Biomarkers; Nanomaterials; Organic Optoelectronic Materials

• **Organic Chemistry:** Asymmetric Synthesis; Organic Catalysis; Transition Metal Catalysis

• **Chemical Biology & Medicinal Chemistry:** Development of Therapeutic Agents; Synthesis of Bioactive Molecules; Synthetic Biology

• **Computational Chemistry, Simulation:** Molecular Dynamics; Nanoscale Modelling

• **Environmental Chemistry:** CO₂ Fixation; Green Chemistry; Sensors; Water Eco-Efficiency

• **Food Science & Technology:** Food Microbiology & Safety; Food Processing & Engineering; Human Nutrition

Lee Kong Chian Natural History Museum

• **Biodiversity Research:** Conservation of Southeast Asia’s Fauna; Natural History, Systematics; Taxonomy

Mathematics

• **Pure Mathematics:** Algebra & Number Theory; Combinatorics & Graph Theory; Dynamical Systems; Geometry & Topology; Mathematical Logic & Theoretical Computer Science; Partial Differential Equations & Geometric Analysis; Probability; Real, Functional & Harmonic Analysis; Representation Theory & Automorphic Forms

• **Applied & Computational Mathematics:** Computational Biology & Bioinformatics; Imaging & Vision Science; Mathematical Finance & Mathematical Economics; Numerical Analysis & Scientific Computing; Optimisation

Pharmacy

• **Drug Discovery & Design:** Computational Modelling & Informatics; Natural Products & TCM; Rational Drug Discovery

• **Health Services Research:** Clinical Pharmacy & Pharmacy Practice; Disease Control & Management; Pharmacoconomics

• **Pharmaceutical Biology & Drug Disposition:** Disease Etiology, Biomarkers & Targets; Pharmacokinetics, Pharmacodynamics

• **Pharmaceutical Technology & Innovative Therapeutics:** Formulation & Processing; Innovative Nano-Therapeutics; Smart Drug Delivery & Novel Bio-systems

Physics

• **Advanced Materials:** 2D Materials; Nanostructures & Energy; Organic Semiconductors; Oxides; Spectroscopies; Surface Science

• **Biological & Soft Matter Physics:** Biopolymer; Mechanics of Biomolecules

• **Ion Beam Science & Technology:** Proton Beam Writing; Proton Microscopy

• **Theoretical & Computational Physics:** Astrophysics, Cosmology; Condensed Matter Physics; Electromagnetics, Acoustics; Nonlinear Dynamics, Complex Systems; Phononics & Thermal Metamaterials; Quantum Finance; String Theory

• **Quantum Information Technologies:** Cold Atoms & Molecules, Atom & Ion Trapping; Cryptography, Quantum Entanglement & Information Theory; Quantum Optics & Atom-Photon Interaction

Statistics and Applied Probability

• **Applications:** Biostatistics; Computational Biology; Environmental Statistics; Financial Statistics; Infectious Disease Modelling; Neural Science; Statistical Genetics

• **Statistical Methodology:** Bayesian Inference; Empirical Likelihood; High Dimensional Data Analysis; Probability; Semi- and Non-Parametric Regression; Survival Analysis

For the latest research news, please visit: [www.science.nus.edu.sg/research/news](http://www.science.nus.edu.sg/research/news)
Learning Opportunities in Science

After embarking on your course of study in your primary major, you may further enhance your learning by choosing and creating your own study plan from a kaleidoscope of choice programmes, designed to add more colour and vibrancy to your educational experiences at the Faculty of Science.

- Specialisations in Majors
- Final-Year Honours Project
- Double Majors
- Minors
- Double Degrees
- Joint Degrees
- Concurrent Degrees
- Undergraduate Research Opportunities Programme in Science
- Special Programme in Science
- Global Science Programme
- NUS Pre-Medical Programme
- Internship Programme
- Study Abroad Programmes
- Summer Programmes
Lee Kong Chian
Natural History Museum
>>
Overview

The Lee Kong Chian Natural History Museum (LKCNHM) has its origins in the Raffles Museum which was founded in 1849 as a result of an idea mooted by Sir Stamford Raffles. LKCNHM inherited the natural history collection from the Raffles Museum of Biodiversity Research. Established on 1 April 2014, LKCNHM is now an academic unit in the Faculty of Science. Its faculty and students study all aspects of biodiversity using the facilities and personnel of the animal and plant collections. LKCNHM is a leader in Southeast Asian biodiversity and conservation research, education, and outreach.

Strengths

- LKCNHM exhibition gallery opens its doors in April 2015 and the 2,200 square metre gallery will display specimens for more than 2,000 species and fossils of three sauropod dinosaurs. The gallery is dedicated to the biodiversity of Southeast Asia and complements the museum’s research and education programmes.
- LKCNHM’s collection is internationally renowned and contains the historical collection of the former Raffles Museum. Today, it is the largest collection of Southeast Asian biodiversity in the region containing more than 500,000 specimens.
- LKCNHM is the national centre for the cryopreservation of biodiversity tissue samples and contains tissues for more than 3,000 species.
- LKCNHM hosts “Animal and Plants of Singapore” and DNA, the nation’s largest collections of online information on Singapore’s biodiversity.

Public Education

LKCNHM offers a range of educational workshops and programmes for teachers and students on natural history, biodiversity and ecology. They leverage on the Museum’s extensive knowledge base in biodiversity research, and are interactive with cutting-edge content delivered through engaging hands-on learning.

Publications

Raffles Bulletin of Zoology is a leading international, peer-reviewed SCI journal that publishes papers on the taxonomy and conservation of animals in Southeast Asia and its adjacent areas. Nature in Singapore (NiS) is an online, peer-reviewed journal publishing papers on the natural history, biology and conservation of Singapore’s biodiversity. The museum also publishes Raffles Museum Books (RMB) and the popular “Private Lives” book series on Singapore’s habitats.

Volunteer Programme

LKCNHM Toddcats! programme was started as an undergraduate programme to expose, develop and enthuse Singaporeans to natural history, conservation, and biodiversity research. It is now also open to members of the public with enthusiasm and commitment toward Singapore’s biodiversity.
Testimonials

Sean Yap
Life Sciences Major, Year 2

Since young, I’ve been interested in plants, animals and nature. So naturally, when I first entered university, I wanted to meet like-minded people who shared this passion. Having encountered the Toddycats at a number of outreach events, they seemed like a group of fun, passionate individuals dedicated to their mission in public education. Since joining as a Toddycat, I have done many things, such as engaging the public at outreach events like the Festival of Biodiversity, leading guided walks at MacRitchie to raise awareness about local wildlife and the potential impact of the Cross Island Line, and helping in the coordination of the International Coastal Cleanup Singapore. I learned many cool new things about biodiversity in Singapore (even the seemingly boring organisms!) from seniors while also reading up to expand my knowledge base. What’s cooler than all these “whoa” moments when learning, is sharing this information with others, and watching them experience it themselves. There is a sense of pride whenever a member of the public asks, “You mean all these can be found in Singapore?” Truly it is amazing how little we know about our local biodiversity, and the things that go on in our seas and forests that most people are unaware of. It sounds clichéd, but as a nature lover, joining the Toddycats was one of the best decisions.

Delicia Cheong
Environmental Studies Major, Year 4

I was not a nature enthusiast before I learnt about Toddycats!, which is a programme with year-round activities for their volunteers and which caters to people from all backgrounds! I first joined the 20th Sungei Buloh Anniversary event as a newbie. Since then, I have participated in Love MacRitchie walks, the Festival of Biodiversity and International Coastal Cleanup. These activities provide a meaningful platform to interact with other nature enthusiasts and the public while giving back to the environment. My experience in Toddycats! has been enriching and has inspired me to do more for our biodiversity.

Contact Us

Lee Kong Chian Natural History Museum
National University of Singapore
2 Conservatory Drive
Singapore 117377

Tel : (65) 6516 5082
Fax : (65) 6774 8101
Email : nhmsec@nus.edu.sg
Website : lkcnhm.nus.edu.sg
Department of Biological Sciences

Strengths

• Deliver undergraduate programmes that arm students with skills and knowledge relevant to Singapore’s Life Sciences industry

• Innovative graduate training programmes that promote research excellence, participation in seminars and conferences, and scientific collaborations

• Dynamic research culture in Life Sciences, covering areas from Biophysical Sciences and Cell, Molecular and Developmental Biology to Ecology and Evolutionary Biology

• Dedicated team of professors with international research accolades and are highly recognised for teaching excellence

• Advanced and well-equipped research and teaching laboratories, with state-of-the-art equipment and strong research funding

• Core and related research centres and facilities, including Mechanobiology Institute (MBI), Centre for BioImaging Sciences (CBIS) and Lee Kong Chian Natural History Museum (LKCNHM)

• Strong international ties and collaborations with top universities including Massachusetts Institute of Technology, University of California, San Diego, University of Toronto, University of Alberta, Tsinghua University, King’s College London and Academia Sinica

• Active and competent organisation and hosting of international scientific conferences

Undergraduate Programmes

BSc (Hons) and BSc in Life Sciences

NUS Life Sciences Undergraduate Programme offers the BSc (Hons) and BSc in Life Sciences. The BSc (Hons) degree programme is pursued with a specialisation in 1 of these 3 areas:

• Biomedical Science (BMS)
• Molecular and Cell Biology (MCB)
• Environmental Biology (EVB)

The programme is jointly taught by the Faculty of Science and the Yong Loo Lin School of Medicine. Hosted by the Department of Biological Sciences, the Life Sciences Major is designed to provide NUS undergraduates with fundamentals in biological and biomedical sciences. With solid foundation in the core knowledge vital to all areas of Life Sciences acquired during the first 2 levels of study, students select advanced level modules relevant to their interests and specialisations. Graduates from this Major can expect to develop critical skills in fundamental concepts, laboratory competence and research techniques.

Double Degree Programme in Law [LLB (Hons)] and Life Sciences [BSc/BSc (Hons)]

The intersection between law and life sciences is expansive; it cuts across many areas including biotechnology, bioethics, environmental regulation, forensic science, and the protection of intellectual property. The Double Degree in Law and Life Sciences Programme combines the strengths of the NUS Faculty of Law and NUS Life Sciences Undergraduate Programme in these areas. It enables students to discover the broad connections between law and life sciences and acquire expertise in both fields.
Graduate Programme

**MSc/PhD by Research**

The department offers a graduate programme leading to a MSc and/or PhD degree by research. Its research focus is in 3 main areas: Biophysical Sciences; Cell, Molecular and Developmental Biology; Ecology and Evolutionary Biology. There is a strong research culture in the department underpinned by a sound infrastructure and state-of-the-art facilities.

Career Prospects

The Life Sciences Major prepares students well for careers related to research in biomedical science, molecular and cell biology and agro-horticulture and marine-related biology.

Other than engaging in challenging careers in R&D of academic and research institutions, hospitals, government agencies, statutory boards, and biopharmaceutical industries, our Life Sciences graduates are also employed in other Life Sciences-related fields as clinical analysts, biostatisticians, food technologists, forensic scientists or biomedical engineers.

In addition, having a general Science degree, coupled with the analytical skills acquired at NUS, our graduates have also found fulfilling careers in non-life sciences industries such as mass media productions and communications, information services, teaching, banking and finance, law, defence, and civil services, including foreign affairs.

Pursuing graduate studies at NUS or overseas institutions, or graduate medical education such as that offered by Duke-NUS Graduate Medical School, are also options taken up by our students immediately after graduation or after some years of working experience.
Testimonials

Lim She Yah  
BSc(Hons) in Life Sciences  
Class of 2012  
PhD Student, NUS

The NUS Faculty of Science provides students with many learning opportunities where we can be inspired and challenged, and have our intellectual abilities and personal qualities developed.

Studying in the faculty has given me sound foundation in Life Sciences. In the 1st two years, the modules are structured to build up students’ foundation in the Life Sciences and we will start to apply the knowledge gained in our respective areas of specialisations in the 3rd and 4th year.

We are also given many opportunities to handle research projects, which allow us to experience first-hand what research work entails. Through this, we can also enhance our public speaking skills through frequent oral presentations on our project work.

With a heightened interest in research, I took part in the Harvey Mudd-GLOBAL Clinic programme where I teamed up with students from the Harvey Mudd College in the US, to test and evaluate the viability of a new clinical diagnostic product designed for Life Sciences research.

The Life Sciences undergraduate programme at NUS truly offers an exhilarating journey and provided me with the important skillsets needed to pursue my PhD studies.

Teo Min Hui  
Life Sciences Major, Year 4  
NUS Global Merit Scholarship Recipient

Before starting university, I had been to NUS for camps and attachments. I found the campus and people really nice and the student life vibrant.

With the fond memories I had and my familiarity with it, NUS was my choice, naturally.

As student, we are encouraged to not only ask questions, but to also ask the right ones. And, rather than learn purely about what has been discovered, we seek out what has yet to be found. This trains us to approach our subjects with greater intellectual rigour and to think in a more multi-faceted manner.

I am glad that such approach and way of thinking have become second nature to me now.

The Department of Biological Sciences where I am now enrolled in, offers opportunities that go beyond the programmes and syllabi. Its academic programmes and tie-ups with prestigious overseas institutions are numerous, facilitating our learning beyond what is taught in lecture theatres.

The opportunities have all been provided for; our task is to step forward and grab them.
Dr Christopher Syn Kiu Choong
BSc (Hons) in Cell and Molecular Biology
Class of 1996
PhD in Molecular Biology
Class of 2001
Outstanding Science Alumni Award 2011 Recipient
Director, DNA Profiling Laboratory
Health Sciences Authority

After I graduated from NUS with a PhD more than 10 years ago, I embarked on a career in forensic science. What we do is not dissimilar to the CSI TV programme, although nothing as glamorous.

Forensic biology work is exciting, challenging, and satisfying. Using DNA identifications, we help to solve criminal cases, identify victims of mass disasters such as the 2004 Tsunami in Phuket and the 2011 earthquake in New Zealand, determine kinship, and even verify biopsies in a clinical setting.

Apart from my case work, I have been establishing a second DNA laboratory and growing my team to over 70 scientists and technical officers since I became the Director a few years ago. The new laboratory is operational from FY2012. It will support the growing demands for the application of biological sciences in the criminal justice system.

I am confident that graduates from the Department of Biological Sciences will have promising career prospects.

Contact Us

Life Sciences Undergraduate Programme
Department of Biological Sciences
National University of Singapore
16 Science Drive 4
Singapore 117558
Tel : (65) 6516 2698
Fax : (65) 6516 2703
Email : dbsbox2@nus.edu.sg
Website : www.dbs.nus.edu.sg
(National University of Singapore)
www.lifesciences.nus.edu.sg
(NUS Life Sciences Undergraduate Programme)
Strengths

- International reputation for research excellence. The department is one of the most productive departments in chemistry research, with its output comparing favourably with reputable universities worldwide
- Constant recruitment of outstanding or promising scientists from all over the world for research and training of undergraduates in the department
- All faculty members are well-qualified with PhD degrees and most have had postdoctoral training in top universities such as Massachusetts Institute of Technology, California Institute of Technology, Harvard, Yale, Princeton, University of California Berkeley, Stanford, Oxford and Cambridge
- Development of research and teaching programmes according to relevance, national needs and international impact
- Emphasis on good teaching practices
- State-of-the-art equipment
- Long established history with a well connected network of alumni at leadership positions in various sectors and industries

Undergraduate Programmes

BSc (Hons) and BSc in Chemistry

The flagship programme will establish a good foundation in the principles of chemistry vital for career opportunities in the industry, research and development (R&D), the public and education sector. The first 2 years of the curriculum are designed with the aim of building a strong foundation in traditional areas of Chemistry.

Thereafter, students can strengthen their chemical knowledge by choosing one of these areas to specialise in – Materials Chemistry, Medicinal Chemistry or Environment and Energy during their 3rd and 4th year of study. Modules offered in these areas provide excellent grounding for professional work after graduation as well as for advanced graduate study. In addition to classroom and laboratory instruction, students in their final year will perform an independent research project (final year project, FYP). Students at junior levels are also encouraged to participate in cutting-edge research through UROPS. Students who wish to take up internship during their undergraduate studies can take part in UPIP and intern in related chemical companies.

The NUS BSc (Hons) Chemistry was accredited by the Royal Society of Chemistry\(^1\) in December 2014 as a robust and rigorous programme that emphasizes good quality teaching and promotes active learning and development of its students in the field of the Chemical Sciences. This is possible because the NUS Chemistry Department incorporates the latest trends to produce a relevant and updated degree programme besides offering a comprehensive range of chemistry topics and up-to-date scientific experimental techniques in its teaching of the Chemical Sciences.

\(^1\) The Royal Society of Chemistry is a world leading chemistry community, based in the United Kingdom, with a heritage that spans 170 years. Its aim is to advance excellence in the chemical sciences through strategic partnerships with organisations and education institutions across the world which share similar goals and vision.
BSc (Hons) and BSc in Food Science and Technology

This is a boutique programme (with an enrolment cap) that caters to the needs of the food industry and enforcement authorities for graduate level staffing and the development of R&D capabilities in food science and technology, in the region.

This programme emphasises food safety, new food product development, food processing, and nutrition. The Professional Placement Programme (PPP) is an integral part of the Food Science and Technology programme. Students are attached to companies in their 3rd year of studies, both local and overseas, for a period of up to 6 months for on-the-job training and exposure.

The BSc (Hons) and BSc in Food Science and Technology were accredited by the International Union of Food Science and Technology¹ (IUFoST) in September 2013 and are the only IUFoST-accredited degrees in Singapore.

¹ IUFoST is the global scientific organisation for food science and technology supporting programmes and projects to increase the safety and security of the world’s food supply. It is a non-profit country member organisation, each country represented by its national food science organisation. IUFoST is one of the 31 Unions worldwide elected to full membership in the International Council for Science (ICSU) and it represents food science and technology to other world bodies.

The IUFoST accreditation certifies that the NUS FST courses meet international standards and guidelines for outcome-based academic programmes. The accreditation also facilitates mutual recognition of qualifications among the IUFoST accredited courses globally.

Graduate Programmes

Joint MSc in Industrial Chemistry

This is a joint MSc programme between the Department of Chemistry, NUS, and the Faculty of Chemistry of Technical University of Munich (TUM). TUM is one of the leading German institutions in Chemistry for research and education. It aims to groom future leaders in selected areas of technology.

MSc by Coursework

This programme is designed for students with either a 3-year or a 4-year degree to pursue a graduate degree in Chemistry. It provides advanced training in Chemistry primarily through coursework, supplemented by a research project.

Through the MSc degree programme, students will be better equipped for more senior industrial positions, or gain acceptance to advanced degree programmes, including PhD programmes and medical school. There will be 4 areas of specialisations offered, namely, Analytical Chemistry, Synthetic Chemistry, Materials Chemistry and Medicinal Chemistry.

MSc/PhD by Research

The Department of Chemistry’s primary graduate programme is research-based requiring the submission of a formal thesis leading to an MSc or a PhD degree. Research areas include Analytical Science, Catalysis, Computation, Modelling & Spectroscopy, Food Science and Technology, Inorganic & Organic Chemistry, Materials Science, Medicinal Chemistry & Chemical Biology and Surface Science.

Career Prospects

• Chemistry

Career opportunities are available in industry, R&D, public sector and the education services. This includes analytical jobs in laboratory; quality assurance; and technical jobs in the chemical, petroleum, pharmaceutical, biomedical and specialty chemicals organisations; becoming technical and scientific officers in the civil service, and Science teachers in the education service. Our graduates are well prepared to pursue graduate programmes anywhere in the world leading to PhD degrees.

Increasingly, R&D opportunities are becoming prevalent in the universities, polytechnics, research institutes and industries, and many of our graduates pursue a career in R&D or become technopreneurs.

• Food Science and Technology

Challenging careers are available in the food industry, as well as key positions in enforcement authorities such as the Agri-Food and Veterinary Authority of Singapore and National Environmental Agency.
Testimonials

Tan Gou Jie Nicole
BSc (Hons) in Chemistry
(Minor in Forensic Science)
Class of 2013

Since young, I have been interested in Forensic Science. I feel that having a Chemistry background would stand me in good stead when I pursue my dream of becoming a forensic scientist in the near future.

I chose to pursue a degree in Chemistry at the NUS Faculty of Science as I believe NUS has an environment that is conducive to developing me further as an individual.

I also like that I am able to do a minor in Forensic Science, which exposes me to a curriculum that is vastly different from my major. It is a fun learning experience, having the chance to attend lectures by external experts, who have many interesting experiences to share with students.

What is more, at NUS, there is a lot of emphasis on inter-disciplinary learning. I leveraged on it to take up modules in the Biophysical Environment of Singapore and Global Environmental Issues. These modules gave me a better understanding of the physical environment of Singapore and the increasing importance of green technology in today’s world.

From Year 2, I started to get involved in the Freshmen Orientation Camps organised by NUS Chemical Sciences Society (CSS). I am also the Assistant Project Director of Chemistry Graduation Night 2012. Being involved in these ad-hoc events organised by CSS, I got to interact with more people, which helped improve my interpersonal skills.

Ng Sin Wee Benny
BSc (Hons) in Chemistry
Class of 2012
Education Officer
Ministry of Education

I chose Chemistry because I was drawn to its versatility. Chemistry truly is broad; it covers the materials of several scientific disciplines, and I find that there is much to learn.

I took the Honours track and research forms a large part of it.

Research work demands that I be perseverant and honest with my findings, especially when the results don’t turn out as expected.

Chemistry has taught me the importance of observing discipline and integrity in all that I do. These qualities, I believe will be what I will hold dear to for a long time to come.

I must mention my Honours supervisor, Dr Zhao Jin. As much as she expects quality research from us, she empathises with students and understands that we have classes to go to and deadlines to meet. Being in her research group allows me to experience how inspiring she is as a mentor.

Although competitive and occasionally overwhelming, education in NUS is a fulfilling experience.
Haresh S/O Sivaram  
BSc (Hons) in Chemistry  
Class of 2011  
MSc, Class of 2013  
MOE Teaching Scholarship  
Teacher, Ministry of Education

The curriculum offered by the Faculty of Science (FoS) challenges you. Apart from reading modules from your chosen major, there were modules from other departments that had to be read as well. I think the great thing about this is how it really made you see the integrated nature of the sciences, and how knowledge is truly interwoven and cannot be simply segmented into strict subject groups. In a way, this really prepares one for the reality of the world beyond NUS, where issues can never be considered through just one perspective, and have to be dealt with in a more holistic manner. As a teacher, this is a lesson I hope to pass on to my own students, and I’m thankful that FoS has prepared me well for this task.

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Department of Mathematics
- Mathematics
- Applied Mathematics
- Quantitative Finance

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Strengths

- Wide range of modules catering to Mathematics students contemplating careers in education, pure research or in the application of advanced Mathematics to Science, Technology and Commerce

- Broad spectrum of mathematical activities ranging from basic research in pure and applied mathematics to multi-disciplinary research conducted with engineers, scientists and economists

- One of the most established departments in NUS with over 85 years of experience, the department houses many internationally renowned mathematicians and award-winning star lecturers to deliver the curriculum

- Leveraging on the combined and varied expertise of more than 70 faculty members and researchers

- Supportive and stimulating environment where students can gain an enriching experience while acquiring a basic education in mathematical sciences

Undergraduate Programmes

BSc (Hons) and BSc in Mathematics

Students will be exposed to all important areas of mathematical knowledge, including algebra, logic, number theory and combinatorics, real and complex analysis, differential equations, geometry and topology, with a focus on mathematical foundations and fundamental techniques.

BSc (Hons) and BSc in Applied Mathematics

In this major, students focus on Mathematics that deals with algorithms, problem-solving techniques and applications to other areas of human concern.

Topics offered include financial mathematics, optimisation and operations research, scientific computing and data modelling, computational biology, and many more.

Students will also have the option to choose during their 3rd and 4th year of study one of the following areas to specialise in:

(A) Operations Research and Financial Mathematics

(B) Mathematical Modelling and Data Analytics

BSc (Hons) and BSc in Quantitative Finance

This is a multi-disciplinary course covering mathematical theory and applications, statistical tools, computing theory and techniques, financial theory and principles, and core financial product knowledge. These are essential to developing crucial quantitative and analytical skills for financial services.

Double Degree in Mathematics/Applied Mathematics [BSc/BSc (Hons)] and Computer Science [BComp (Hons)]

This inter-disciplinary course focuses on the synergistic areas of Mathematics/Applied Mathematics and Computer Science.

Students may pursue specialisation in either Algorithms and Computation or in Multimedia Modelling.
Double Major in Mathematics/Applied Mathematics & Economics

This double major, jointly offered by the departments of Mathematics and Economics, is part of the university-wide scheme which allows students to study in two disciplines. Due to the central role of mathematical methods in the development of economic theory and analysis, it will be of considerable benefit for students to read mathematics in conjunction with economics*. Being a double major, this programme is academically more intense and in-depth than a single major, and provides students with the advantages of a Mathematics and Economics combination.

*Students may also do a double major in Mathematics/ Applied Mathematics with other closely related disciplines.

Graduate Programmes

MSc in Mathematics by Coursework

This offers opportunities for Mathematics teachers and other professionals to upgrade their professional skills and qualifications.

It provides advanced training in Mathematics primarily through coursework.

MSc in Quantitative Finance by Coursework

Jointly offered by the Department of Economics and the Department of Statistics and Applied Probability, this coursework programme aims to equip students with advanced knowledge in Quantitative Finance, as well as a deep understanding of the background and implications of the use of quantitative methods in the financial industry.

MSc/PhD by Research

This programme leads to the MSc and PhD degrees in the main areas of pure, applied and financial mathematics.

The degree is awarded on the basis of original research work under the supervision of a faculty member and subject to fulfilling the coursework requirements.

Career Prospects

Mathematics graduates are able to find employment as operations research analysts in the aviation and maritime industries; financial analysts, actuaries, financial engineers and financial planners in banks, investment houses and insurance companies; data and system analysts, cryptanalysts in multinational and defence organisations; software engineers, computer programmers; lecturers, teachers, curriculum developers and publication officers or editors in educational institutions and publishing houses; researchers; and administrators.
Kesavan S/O Thanagopal  
BSc (Hons) in Mathematics  
Class of 2012  
PhD student, University of Oxford

I have always known that I wanted to study Mathematics, and pursuing it at the Bachelor degree level at the NUS Faculty of Science (FoS) came as a natural progression.

I have received rigorous training in Mathematics at the Faculty, in addition to being able to pick up modules in Statistics, Computing Sciences, Physics, and Life Sciences. With Mathematics, I find that the more I know, the more there is to learn. This has helped restore a childlike inquisitiveness I thought I had ‘lost’ in the process of growing up.

I had the chance to act on stage to explore my artistic side as I got involved in a student interest group founded by my senior. I was also able to exercise leadership by getting involved in Science Club activities like the Freshmen Orientation projects. During my second year of studies in 2009, I co-hosted the first CITYNET Youth Workshop held in Japan.

In 2010, I experienced what it was like to study overseas when I spent a year at Durham University, UK, as part of NUS’ Student Exchange Programme. While there, I completed 6 modules. I not only learnt, but have also become more independent and culturally aware.

Loh Bo Huai Victor  
BSc (Hons) in Mathematics  
Class of 2012  
NUS Faculty Award Recipient

I took Further Mathematics whilst in JC, and so it was natural for me to study Mathematics when I enrolled in NUS.

During my studies, I took advantage of the interdisciplinary learning practised in the Department of Mathematics. I took a total of 9 modules in Computer Science, including a graduate module on Computational Complexity.

I was thrilled that I was able to pick and choose modules that I find interesting, rather than being limited to a fixed set of syllabus, as how it is typically done for a degree in Computer Science or Computer Engineering. These modules have widened my knowledge of Computer Science.

I even did French 1 and an introductory module to world religions.

I am thankful to Professor Chan Heng Huat, who has imparted a lot of knowledge to me. He taught me not just Mathematics, but also life lessons that are beyond normal curriculum.

To Prof Chan, one should not stop learning, re-learning, and ought to learn things that are beyond one’s field of specialisation. His rationale: You can acquire a broader view of Mathematics this way!

I look forward to starting work as a software engineer with Facebook in California after my graduation.
Tung Soo Hua  
BSc (Hons) in Mathematics  
Class of 1997  
Master in Social Sciences  
Class of 2007  
Outstanding Science Alumni Award 2011 Recipient  
Presenter/Editor, Chinese News  
MediaCorp Pte Ltd

I joined the media industry after graduating from NUS with a Bachelor of Science in Mathematics. I began my career in journalism as a Chinese-language news producer 15 years ago.

I wanted to embark on a career that was unexpected of a Mathematics graduate. Besides, I have a passion for current affairs, having being influenced by my dad. I started reading newspapers since I was in Primary 1.

I co-host the ‘Evening News at 10 pm’ on Channel 8 and front ‘Money Week’, a weekly financial programme on Channel U.

I have had the opportunity of covering major events such as APEC, ASEAN summits, World Bank/IMF meetings and Singapore’s General Elections between 2001 and 2011. The latest ‘Singapore General Election 2011’ was a 6-hour mega ‘live’ show telecast on Channel 8.

Between year 2002 and last year, I hosted too the annual Budget Forums after the Finance Minister’s Budget Statement in Parliament, interviewing panellists, among whom was Prime Minister Lee Hsien Loong.

I encourage students to follow their heart and be true to themselves, whether it is in choosing their field of studies or career.
Strengths

- Pharmacy education started in the Department of Pharmaceutics within King Edward VII College of Medicine in 1905. Even until today the Department of Pharmacy in NUS has remained as the sole provider of university-level pharmacy education in Singapore. The Department has been recognised as an integral part of the Singapore healthcare community, playing the important role of educating and training pharmacists for the local healthcare and pharmaceutical sectors.

- Pharmacy students are immersed in a learning environment that is nurturing and multidisciplinary. In the programme, they will learn to acquire, integrate and apply the knowledge and skills gained to a level of competency that will ensure quality pharmaceutical care for patients.

- The Pharmacy curriculum is designed to be theme-based and experientially enriching. Emphasis is placed on balancing and integrating pharmaceutical sciences with clinical science and pharmacy practice.

- The Pharmacy programme also aims to inculcate and groom its students into health professionals who will conduct ethical practices with professionalism. This is achieved through pre-employment clinical training and internship programmes.

- In a survey conducted by a leading higher education and career research company, Quacquarelli Symonds (QS), NUS was ranked 12th by subject (under Pharmacy and Pharmacology) in the 2014 World University Rankings®. This ranking provides a guide on the best universities in the world to study Pharmacy or Pharmacology.

- Pharmacy students can look forward to opportunities to participate in basic, clinical or applied research projects focusing on different research areas. Students may select projects in drug discovery, health products formulation, pharmacological evaluation, drug disposition elucidation, health outcomes, drug use evaluation and many other areas.

- Pharmacy students will have plentiful opportunities to interact and learn with students from Medicine, Dentistry, Nursing and Social Work in the Interprofessional Education programme on the Kent Ridge campus. This programme is designed to train students to become collaborative practice-ready health professionals.

- The broad-based Pharmacy education at NUS equips students with the foundations for a lifetime of multiple careers in healthcare services, academia, clinical and translational research or the pharmaceutical industry, thus fulfilling the future aspirations of every graduate.
Undergraduate Programmes

BSc (Pharmacy) (Hons) and BSc (Pharmacy)

The professional programme in Pharmacy aims at imparting knowledge and skills that are relevant to the preparation of drug substances from natural and synthetic sources to suitable and convenient forms for distribution and use in the treatment and prevention of diseases.

The Department of Pharmacy admits students directly into its 4-year professional programme. The degree BSc (Pharmacy) with Honours will be awarded to students who have performed well throughout the course. The few who do not qualify for Honours classifications will be awarded a BSc (Pharmacy) degree.

Graduates with either degree can become registered pharmacists with the Singapore Pharmacy Council after completing satisfactorily a 12-month pre-registration training programme and passing a competency assessment.

Minor in Pharmaceutical Sciences

Non-pharmacy registered students who read this minor will be equipped with fundamental knowledge and skills in pharmaceutical sciences that will supplement their domain knowledge in Science, Engineering or other major disciplines. With this supplementation, graduates have more career opportunities in the pharmaceutical and human health-related industries. They may also choose to pursue further studies by enrolling in the coursework MSc (Pharmaceutical Science and Technology) programme or pursue PhD or MSc research programmes in Pharmacy.

Graduate Programmes

The Department also provides abundant options for postgraduate education. Students with basic degrees in Pharmacy, Science, Medicine or Engineering can enrol in Pharmacy postgraduate research or Master of Science (Pharmaceutical Science and Technology) coursework programmes, to be trained as pharmaceutical scientists-engineers, researchers, educators, administrators or decision-makers who are in demand by public and private enterprises both locally and internationally.

In addition, pharmacists may enrol in the Doctor of Pharmacy (PharmD) and residency programmes to be trained as specialist pharmacists and clinical pharmacist-scientists.

MSc (Pharmaceutical Sciences & Technology) by Coursework

This programme is designed to cater to special interest groups of prospective students who are already working, or aspiring to enter the pharmaceutical industry.

The programme will prepare Science, Engineering and Health Science graduates for employment in the areas of manufacturing and quality assurance of active pharmaceutical ingredients and/or finished products; regulatory compliance, medication utilisation review, drug registration, quality assurance, and many others. The learning outcomes will entail the acquisition of in-depth knowledge and practical skills for formulation and process manufacturing of chemical and biological drugs into a range of dosage forms.

MSc/PhD by Research

This programme requires students with basic degrees in Science, Engineering or Health-related disciplines to work on an individual research project during the course of the candidature. The graduate students are admitted into the graduate programme leading to an MSc degree.

Those students who wish to pursue a PhD degree must pass the 2-part Qualifying Examination within the first 3 semesters upon admission.
Doctor of Pharmacy (PharmD) by Coursework and Clinical Clerkship

The main objective of the PharmD programme is to equip pharmacists with not only the additional clinical knowledge, but also the clinical skills, attitudes and values required to deliver high quality, consistent and safe medication therapies to patients in collaboration with other health professionals.

The PharmD programme will also serve as the foundation for the development of Specialist Clinical Pharmacists in Singapore.

The 2-year full-time programme comprises both didactic and clerkship components. It will build on the foundations laid in the undergraduate programme, focusing on essential pharmacotherapy topics at greater depth, as well as broadening the students’ clinical pharmacy knowledge and skills in the care of patients.

Career Prospects

Career opportunities for pharmacists and pharmaceutical scientists with postgraduate research experience are abundant and diverse.

Depending on the individual’s interests and aspirations, he or she may seek employment in academia and research; in patient-care areas such as in community pharmacies, hospitals and the pharmaceutical industry; in non patient-care areas such as pharmaceutical manufacturing, health product regulation and development, as well as sales and marketing of pharmaceuticals in Singapore and overseas.

Testimonials

Ong Kheng Yong
BSc (Pharm) (Hons)
Class of 2013
NUS Undergraduate Scholarship Recipient
President, 50th Executive Committee,
NUS Pharmaceutical Society
Registered Pharmacist at Singapore General Hospital

I chose Pharmacy for the diverse career paths that it offers.

While the course equips us with core competencies in the various domains of pharmacy practice, it also equips us with skills such as independent learning and critical thinking, both of which are crucial given today’s ever-changing healthcare landscape.

I also had the privilege of serving as the President of the NUS Pharmaceutical Society in my second year of study. Leading my Executive Committee and the various sub-committees has helped improve my people skills and management skills, amongst others.

Living in the campus residence, Raffles Hall, has further enhanced the vibrancy of my university life through my involvement in the various social, sporting and recreational activities.
Dr Yap Yi-Lwern Kevin
BSc (Pharm) (Hons)
MEng, SDMC, PhD, ARPharmS
Lecturer, Department of Pharmacy, NUS
Senior Manager, Academic Informatics Office
National University Health System

I have received strong support from various professors in the Department of Pharmacy; they have shaped the unique experience I had at NUS during my postgraduate candidature.

Associate Professor Alexandre Chan inspired me as a clinician and an academic. He helped me to see the novelty, practicality and applicability of my PhD research.

Thanks to him, I was able to think like a true clinician-scientist. Collaborating with Assoc Prof Chan has geared my research towards the solving of real-life problems encountered in the various healthcare settings.

I was also mentored and guided by Associate Professor Chan Sui Yung, Head of Department of Pharmacy. Through her mentorship, I was able to take on leadership roles and hone my qualities as a leader. She taught me to never give up and to always strive to be a leader in my field of expertise.

The one who inspired me to teach was Associate Professor Chui Wai Keung. His dedication to students and his interests in the various teaching pedagogies have encouraged me to explore novel ways to improve my own teaching philosophies.

To establish my own as an educator of younger generations, I will continuously review and adapt as I wish to train my students to be their best when they graduate.

Dr Priscilla How
BSc (Pharm) (Hons)
Class of 1999
Assistant Professor
Department of Pharmacy, NUS
Principal Clinical Pharmacist
Department of Medicine (Nephrology Division)
National University Hospital

The NUS Pharmacy programme has taught me to be meticulous, accurate, precise and thorough, all of which are essential skills for a pharmacist.

I was encouraged by my Honours final-year project supervisor, Assoc. Prof. Chan Sui Yung, to take up the Doctor of Pharmacy (Pharm.D.). So, when I was awarded the Lee Foundation Study Award to undertake my postgraduate Pharm.D. education in the USA, I did not hesitate.

The analytical and clinical skill sets that I was imparted with, have helped me tremendously in my postgraduate education as well as in my career as an academician, researcher and clinician.

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Department of Physics

Strengths

- Top-notch faculty and world-class Physics research: Nanoscience, Quantum Information Technology, Biophysics and much more, with both experimental and theoretical research groups
- Both teaching and research are carried out in state-of-the-art research laboratories, for example the Centre for Ion Beam Applications and the Centre for Superconducting and Magnetic Materials
- Flexible curriculum structure, allowing students to choose from various programmes (double degree, double major, major and minor combinations, double degree with overseas universities), or they can even design their own curricula
- Opportunities for students to be involved in research, student exchanges, overseas immersion programmes, independent studies, etc

Undergraduate Programmes

**BSc (Hons) and BSc in Physics**

A rigorous course covering the core topics in physics, such as electro-magnetism, thermo- and electrodynamics, quantum mechanics, atomic and nuclear physics, nanophysics, relativity and the relevant mathematical methods.

The breadth of the curriculum and the training in critical thinking and analysis will prepare students for a wide variety of careers.

The BSc (Hons) students can choose to study towards a general honours degree, or to specialise in one of the following areas:

(i) **Astrophysics**
(ii) **Nanophysics**

The general honours degree is sufficiently equipped to prepare students for further study and diverse career options. Among the physics undergraduates, many choose to specialise, as specialisation will empower students with in-depth know-how of their respective specialisation areas.

The Astrophysics specialisation programme is designed to provide interested students with a firm foundation in celestial physics so as to prepare them for advanced studies and research later on. Students will also become acquainted with the problems of modern astrophysics and cosmology. This specialisation is also particularly suitable for undergraduates who aspire to become physics teachers in schools and JCs.

The specialisation in Nanophysics combines fundamental training in physics with an emphasis on a broad application of physics in modern technologies so as to fill the knowledge gap between academic science and engineering.

Students will be armed with a clear understanding of scientific principles and methods and at the same time be aware of how physics is applied to industrial problem-solving and technological development.
Double Degree Programme in BEng in Materials Science and Engineering and BSc/BSc (Hons) in Physics

The double degree programme aims to provide a science-driven, engineering-oriented education to both science and engineering students.

The programme emphasises the understanding of the physics underlying material properties and their technological applications.

Students who graduate from the programme are expected to play important roles in the development of future technological innovations.

Graduate Programmes

MSc by Coursework or Research

This programme prepares students for advancement in their careers in R&D and industry.

PhD by Research

This programme prepares students for a career in academia and/or R&D after they graduate.

Career Prospects

Physics graduates will be able to embark on career paths in R&D in the physical sciences, engineering and microelectronics industries, as well as education and training, and scientific services in government and the IT sector.

Physics graduates have also chosen careers as administrators, auditors, consultants, financial analysts, engineers, geophysicists, medical technologists, meteorological officers.

The unique problem-solving skills our graduates acquire have also enabled them to work and succeed in commerce, banking and finance.
Testimonials

Tan Tee Hao
BSc (Hons) in Physics
(Minor in Nanoscience)
Class of 2014

As a child, I was tremendously curious about the origin and cause of things. This inevitably led to me believing that the Universe was the only thing left worth figuring out since so little is known, or can be proven about its beginning, present and future.

So began my pursuit in the field of physics and my enrolment in the course.

From my studies, I have learnt to analyse critically, with the help of the General Education and Philosophy modules. This skill has enabled me to digest texts quicker, and at the same time more cautious about the nuances in the written words.

I have also learnt to visualise and correspond. I can now see the physical significance of what used to be mathematical jargon and deduce its relevance to the other physical concepts.

I try to have a balanced student life at NUS and took part in the NUS Canoe Polo team. Being in the team has taught me much about the importance of teamwork and commitment.

Tan Ying Zhe Ernest
Physics Major, Year 4
(Second major in Mathematics)
NUS Global Merit Scholarship Recipient

As the old adage goes, “knowledge is power”. The art of discovery and learning captured my attention at a young age, and since then I have spent a large part of my life in the pursuit of Science.

Joining the Faculty of Science has allowed me to explore this interest in Science much further. In particular, being part of the Special Programme in Science (SPS) has proven to be a most enjoyable and stimulating experience as its multi-disciplinary approach towards Science enables me to understand deeper other aspects of Science outside my majors. In addition, the SPS provided me with valuable learning opportunities as I get to conduct research projects on topics of my choice, which primed me for graduate studies and a future research career.

I also appreciate the fact that the Faculty members, besides imparting scientific knowledge to us through different and interesting pedagogical approaches, helped to develop our writing ability as well as sharpen our critical and analytical skills, so that we could communicate our scientific ideas more effectively and competently.

Overall, I am thankful for the high quality Science education I receive at NUS and coming to the Faculty of Science is one of the best decisions that I have made in life so far.
Lee Suling  
BSc (Hons) in Physics  
(Minor in Geosciences)  
Class of 2012  
Assistant Language Teacher  
Agamachi Board of Education

Through the Department of Physics, I was presented with the opportunity to study Physics in Stockholm.

My training in NUS gave me the chance to appreciate the studying of particle physics and astrophysics overseas.

In addition, NUS provided me with the opportunity to participate in various overseas stints. One highlight was the expedition to Island Peak in Nepal with the Make-It-Real (MIR) Mountaineering team.

Although we did not succeed in the summit attempt due to the weather, failure taught me so much more.

In a fundraising project, I found being responsible for leading students up Mt Fuji far more challenging than climbing tougher mountains.

It further expanded my horizons, and was truly an adventure of a lifetime.

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Department of Statistics & Applied Probability
- Statistics

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Strengths

- The only university-level Statistics Department in Singapore and one of the largest in the world with more than 30 faculty members
- Offering a wide array of modules ranging from theoretical to applied statistics
- Diverse research interests in both statistical theory and methodology, including applications to several multi-disciplinary areas such as biostatistics, computational biology, statistical genetics, neural science, infectious disease modelling, environmental statistics and financial statistics
- Internationally reputable having hosted major international statistical conferences
- Many faculty members are internationally recognised experts in their own fields and they publish actively in top journals
- 13 faculty members currently serve on the editorial boards of leading international journals in statistics
- 1 faculty member awarded the prestigious and highly competitive National Research Foundation Research Fellowship in 2010
- Student-centric faculty members dedicated to teaching and mentoring
- Teaching and research supported by state-of-the-art computer laboratories that are equipped with a wide variety of statistical software

Undergraduate Programmes

BSc (Hons) and BSc in Statistics

Statistics is the scientific application of mathematical principles to the collection, analysis, and presentation of data.

The BSc (Hons) and BSc in Statistics programmes are designed to provide sound knowledge of statistical theory and methods. Being thus educated, students will be prepared for careers in the business, education and government sectors, as well as for graduate studies.

BSc (Hons) in Statistics with Specialisation in Biostatistics

This specialisation in Biostatistics combines fundamental education in statistics with an emphasis on the application of statistics to quantitative research in the health sciences that encompass subject matters such as pharmacology, medicine, biotechnology, biology, genetics, and public health.

It will prepare students for biostatistics careers in industrial and government sectors, as well as for graduate study in statistics or biostatistics.
BSc (Hons) in Statistics with Specialisation in Finance and Business Statistics

This specialisation combines fundamental education in statistics with an emphasis on the application of statistics to the areas of investment and financial analysis, insurance, marketing research, and management.

It will prepare students for careers in business and finance, as well as for graduate study in finance and business statistics.

Double Major in Statistics and Economics

The disciplines of Statistics and Economics are closely related, with statistical procedures playing a key role in describing and forecasting economic behaviour and testing economic theories of that behaviour, and economics providing a variety of problems and cases to help in the understanding of statistics.

The Double Major in Statistics and Economics programme is jointly offered between Faculty of Science and the Department of Economics in Faculty of Arts and Social Sciences, which is within the university’s framework for double major programmes.

Graduate Programmes

MSc by Coursework

This programme is designed to equip students with an excellent knowledge of statistical principles and methods required by practising statisticians and professionals who are interested in the application of statistics.

The MSc by coursework programme focuses on developing practical skills in solving real-world problems found in various industries, including finance, service, life and health sciences, pharmaceutical, manufacturing, education, and agriculture.

The programme is intended for students with a bachelor degree in Statistics, Mathematics, or related fields.

MSc by Research

This programme is designed to provide advanced knowledge of theoretical and applied statistics to students who intend to pursue a career, or advance their career in statistics, R&D and industry.

PhD in Statistics

This programme is designed to provide guidance to students on the product of high quality research in statistics.

It will prepare students for a career in R&D, or academia.
Career Prospects

• **Statistics**

Statistics graduates are able to gain employment in various sectors such as banking and finance, media, telecommunication, transportation, insurance, semiconductor, electronics manufacturing, aerospace, medical and pharmaceutical, research, chemical, life sciences, education and civil service.

The specific positions they could assume include business or research analysts, consumer risk or marketing research analysts, actuary and quality assurance or pharmaceutical engineers.

• **Statistics with Specialisation in Biostatistics**

Graduates of this specialisation can expect to gain employment in private and public sectors with entry positions such as biostatisticians and health research analysts.

• **Statistics with Specialisation in Finance and Business Statistics**

Graduates of this specialisation can expect to gain employment in areas such as investment and financial analysis, insurance, marketing research, and management.

Testimonials

**Chen Yirong**  
BSc (Hons) in Statistics  
(Second major in Economics)  
Class of 2013

Long before I entered university, I have held on to the belief that statistics is a useful and indispensable tool in the world. I can appreciate how problems in the financial and life sciences sectors are solved using statistical and analytical tools. I can also imagine how chaotic the whole world would be without statisticians.

During my studies at the Faculty of Science (FoS), my liking for statistics gradually turned into passion, and I find myself enjoying what I am learning.

Students are taught various analytical methods, in addition to the generic modules taught in NUS. During the course of my studies at NUS, I have discovered that its teaching method suits me.

Besides Statistics, I am doing a double major in Economics.

I believe I am on the right track; economic knowledge will complement my Statistics major.
In choosing where to go for your tertiary education, it is important to consider the academic staff of the university.

The FoS certainly has many great lecturers and researchers. I especially remember my supervisor in charge of my Honours’ FYP (Final Year Project) - Dr Alex Cook.

Dr Cook was patient when he imparted his statistical knowledge to his students. He has a friendly demeanour that makes him approachable. My peers and I would go to him whenever we are in doubt.

He also managed to bring across dry statistical theories to his students in a light-hearted manner, thereby making them more comprehensible.

His patience and fresh teaching approach inspired me to work hard for my FYP. I did so well I was given the chance to co-publish the findings in an online open access Science journal - PloS One. It was uncommon for an Honours year student to get the chance to showcase his or her findings to the scientific community.

Dr Cook was also instrumental in pointing me to my current job, for he got me interested in areas that are related to Applied Statistics. I am happy to be doing what I like - I presently deal with the areas of applied labour force statistics in my job.
Computational Biology Programme

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Computational Biology Programme

Overview
The Faculty of Science (FoS) and the School of Computing (SoC) jointly offer an innovative four-year programme in Computational Biology, one of the most exciting fields of modern science. This multi-disciplinary programme involves the participation of 11 departments across three faculties. These include the departments of Biological Sciences, Chemistry, Mathematics, Pharmacy, Physics and Statistics and Applied Probability from the FoS; the Department of Computer Science from the SoC; and the departments of Biochemistry, Microbiology, Physiology and Pharmacology from the Yong Loo Lin School of Medicine.

Strengths
• Interdisciplinary education in computer-based analysis of biological problems, the fastest growing area of the life sciences
• One of the first universities in the world to offer an undergraduate major in Computational Biology
• A diverse range of education and research opportunities relevant to growing knowledge-based economies, such as new drug target discovery, computer-aided drug design, next-generation DNA and RNA sequencing, neuroscience, environmental biology and biodiversity, and individualised medicine
• Excellent research opportunities and mentorship in cross-disciplinary sciences. Students are often mentored by two professors in different faculties

Undergraduate Programme
BSc (Hons) in Computational Biology
This multi-disciplinary programme equips undergraduates with fundamental knowledge and broadly applicable skills in biological sciences, mathematical and statistical analysis, and computer science. In the first two years, students will learn the foundations of university level Life Sciences and Computer Science. When reading Computational Biology modules, however, students will come to understand how these fields intersect: how to develop, apply, and interpret algorithms to biology, and how to reason analytically about biological problems.

In the third and fourth year, students will begin to specialise depending on their interests. Some of the key topics include:
• Theoretical foundations and analysis of genes/proteins
• “Big data” analysis of next-generation DNA and RNA sequencing
• Biological and pharmaceutical databases
• Mathematical models of genetic interactions, metabolic and cell signaling pathways
• Modeling of biological systems
• Computational Neuroscience
• Computer-aided drug design
• Algorithmic design

The programme is highly suited for those with keen interest and aptitude in Mathematics and Life Sciences.
Career Prospects

Graduates of this programme can look forward to excellent career prospects in the pharmaceutical, biomedical or biotechnology industries.

Those interested in advanced degrees could also pursue graduate studies in bioinformatics, computational biology and other life sciences or biomedical sciences-related programmes.

Testimonial

Too Muzhen Tomithy
BSc (Hons) in Computational Biology
(Minor in Technopreneurship)
Class of 2013
NOC at Bio Valley 2010
NUS University Scholars Programme
NUS Faculty Award Recipient
Seeker, Starhub Ltd

Computational Biology is one very compelling and sexy field to be in. Not only is it intellectually challenging and multi-disciplinary, it is also able to bring together the best of what Mathematics, Bioinformatics and Computational Science have to offer. It is potentially the most rewarding field of research. Imagine Life Sciences research being empowered by 3D visualisation, simulation, evolutionary algorithm...the list goes on.

The interdisciplinary coursework in both Computational Biology and the University Scholar Programme has further prepared me to engage in lateral thinking and to operate well in exploratory and ambiguous situations, which is often the case in my current job that deals with investment assessment and business development.

NUS Computational Biology programme has certainly given me a chance to explore and excel.

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Email : compbio@nus.edu.sg
Website : www.science.nus.edu.sg/undergraduate-studies/ugprog/primary-majors/174-undergraduate/ugprog/554-computational-biology

Career Prospects

Graduates of this programme can look forward to excellent career prospects in the pharmaceutical, biomedical or biotechnology industries.

Those interested in advanced degrees could also pursue graduate studies in bioinformatics, computational biology and other life sciences or biomedical sciences-related programmes.

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Bachelor of Environmental Studies

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Bachelor of Environmental Studies Programme

Overview
The Bachelor of Environmental Studies (BES) is a 4-year direct Honours programme that was offered from year 2011.

It is an inter-disciplinary programme, jointly hosted by the Faculty of Science (FoS) and the Faculty of Arts and Social Sciences (FASS), with participation from the Faculty of Engineering, Faculty of Law, School of Design and Environment, NUS Business School, Yong Loo Lin School of Medicine, Saw Swee Hock School of Public Health, and Lee Kuan Yew School of Public Policy.

Strengths
• One-of-its-kind programme in NUS and Singapore, and internationally unique
• Harnesses the synergies and strengths of domain experts from the various faculties and schools
• Adopts a broad-based and inter-disciplinary approach in addressing pressing issues such as climate change, land use, water usage, alternative energy and the building of liveable high-density cities so that students can have a broader and clearer idea of these complex, modern environmental issues
• Adopts new pedagogies to ensure students receive the best in environmental education

Programme Structure
This inter-disciplinary programme provides undergraduates with a solid foundation in environmental issues through 2 years of broad-based curriculum where students read modules in Biology, Chemistry, Mathematics, Statistics, Economics, Geography, Building, Law, Public Health, Management and Policy before they progress to read modules in their chosen specialisation in either Environmental Biology hosted by FoS, or Environmental Geography hosted by FASS in the 3rd and 4th year.

• In the Environmental Biology Specialisation, students will read modules in:
  - Behavioural Biology
  - Biodiversity
  - Evolution
  - Field Studies
  - Freshwater & Terrestrial Ecology
  - Marine Biology
  - Physiology

• In the Environmental Geography Specialisation, students will read modules in:
  - Climate
  - Economics
  - Environmental Management
  - Geography
  - Geographical Information Systems
  - Geosciences
  - Modelling
  - Sustainability
Programme Highlights

• Experiencing of integrated modules specially designed for students enrolled in this programme. These modules emphasise small-group discussions, case studies, fireside chats with key environmental luminaries, policy makers and governmental CEOs

• Participation in undergraduate research, as well as internship in environmental agencies, natural resource management agencies, and environmental research centres/institutes

• Participation in study abroad programmes such as semester-long Student Exchange Programme, Summer Programme, or Overseas Summer Research Programme

• Participation in real-world and real-time field studies of selected environmental challenges facing Asia

Career Prospects

The career options for graduates of this programme are endless.

Graduates can embark on exciting and challenging careers as conservation biologists, ecologists, environmental consultants, environmental educators, environmental health officers, environmental impact assessors, environmental policy makers, environmental quality specialists, environmental technologists, forest conservationists, geographers, geologists, parks managers, public policy analysts, regional planners, researchers, teachers, or wildlife biologists.

The BES programme also prepares students well for graduate studies.
Lee Sui Kei Rachel  
Environmental Studies  
Cohort AY2013/2014

BES has been a wonderful experience so far, and the multi-disciplinary course has exposed me to various aspects of environmental issues. The specially tailored environmental modules were refreshing and thought provoking, and the opportunities to go on fieldtrips to various sites were one of the highlights of the course. Not only were the fieldtrips fun and enjoyable, they encourage us to experience and think more deeply, gaining a clearer picture of the environmental issues concerning the current and future generations. Studying is also made much more enjoyable with the BES family, a group of like-minded people who also share a passion for the environment. This definitely drives me to do more for the environment! I look forward to the many more awesome semesters in the BES programme!

Teoh Shi Hao Sean  
Environmental Studies  
Cohort AY2013/2014

Environmental problems are immensely complex and challenging to overcome. While the BES curriculum is not able to provide direct answers or solutions to these problems, it offers a multitude of modules spanning across various disciplines that provides a solid foundation for understanding the core issues behind environmental problems. In general, the BES curriculum is diverse in its coverage and provides great flexibility to students in exploring their interests and passion in the various sub-disciplines within the environmental discipline regardless of the specialisation that they choose.

Wee Shi Yi Crystle  
Environmental Studies  
Cohort AY2013/2014

The environmental studies programme has been challenging, yet rewarding. The classes are a combination of different fields of study. This allows students to understand the different perspectives, assimilating them before coming up with probable solutions to tackle the environmental problems. The best moments of the course are the ones where we are encouraged to think about environmental problems within Singapore through fieldtrips to places like Pulau Semakau, Gardens by the Bay as well as the S.E.A. Aquarium. It is also great to experience these issues first-hand, and to be able to discuss and debate about our views with friends from the course.

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Special Programmes

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71 Undergraduate Professional Internship Programme (UPIP)
73 NUS Pre-Medical Programme (PMP)
The Special Programme in Science (SPS) provides an avenue to nurture students with a passion for Science and turn them into budding scientists. It fosters creative and critical thinking in students through scientific investigations and in-depth studies. It also helps to cultivate their attributes and attitudes holistically.

Under SPS, students will have opportunities to engage in activities such as discourses based on published works, presenting scientific papers gleaned from journals and magazines and examining issues from a multi-disciplinary perspective.

In addition, SPS students will be mentored by senior SPS students, graduate students, instructors and professors. They will also have access to SPS’ own facilities, such as the study lounge, library and computer clusters.

In 2011, the SPS curriculum was revised with the inclusion of the Integrated Science Curriculum (ISC), which comprises four specially-designed thematic modules that integrates Biology, Chemistry, Mathematics and Physics, and two research-oriented modules. The ISC is intended to prepare students for modern multi-disciplinary scientific challenges at a professional level.

Admission into the SPS is highly selective; prospective students will be interviewed to determine the passion they demonstrate in science and their intellectual maturity.

For more information about SPS, please visit sps.nus.edu.sg

You are also welcome to send your enquiries to:
Mr Andreas Dewanto
Assistant Director
Special Programme in Science
Email: phyda@nus.edu.sg
INTEGRATED SCIENCE CURRICULUM

ATOMS TO MOLECULES Insights into the fundamental properties of atoms, the concepts of orbitals and relationship between the shape of a molecule, and the nature of the atoms in it, will be introduced in this first module of the series. The interdisciplinary perspectives of atoms and molecules from Physics and Chemistry will also be emphasised.

THE CELL Key chemical and physical principles underlying several biological processes where cells can integrate and function as an autonomous machine in order to regenerate (self-replicate), repair and re-programme (differentiate), respond (force-sensing) and re-model (tissue formation), will be explored in this second module. These processes can occur from single molecule, single cell to multi-cellular or tissue levels because of their general ability to self-assemble; harness and utilise energy; and store, decode and process information.

THE EARTH This module focuses on the physical, chemical and biological processes that have shaped the development of the Earth. A systems approach is taken in order to understand the interconnectivity between the various components of the Earth system.

THE UNIVERSE This module traces the developments in theoretical and observational cosmology, starting from Newtonian cosmology, Hubble’s observations, the Big Bang, formation of stars and black holes to recent ideas in the origin and fate of the Universe.
Testimonials

Ng Kia Boon  
Physics Major, Year 4  
NUS Global Merit Scholarship Recipient

The Special Programme in Science (SPS) is not like any other programme--- it covers both depth and breadth in various disciplines of Science, and allows me to develop a vast web of knowledge of what Nature has to offer. Under the guidance of knowledgeable lecturers and passionate instructors, and the company of brilliant fellow course mates, I find my time in SPS spent very meaningfully. There is always a new discovery every day!

Cai Yu  
BSc (Hons) in Physics  
(Second major in Mathematics)  
Class of 2011  
PhD student  
Centre for Quantum Technologies, NUS

SPS is special in the sense that students play an active role in learning.

Through SPS, I meet mentors and peers who share the same passion in Science and research; I also get to choose and design the projects, work closely with the faculty and graduate students, and polish my communication skills and critical thinking by preparing reports, posters, presentations and oral defences.

My relationship with SPS did not end with my SPS module. I went on to become a student mentor and shared my interest and experience with new SPS students.

While I mentored students through their projects, both my mentees and I saw our scientific knowledge and interpersonal skills improve significantly.

Beyond my academic pursuits, I have also participated in various SPS activities such as night cycling, newbie orientation camp, mentor appreciation night and Dean’s tea performances. These events have left me with memories of much joy and laughter.

Ng Wei Jie  
Life Sciences Major, Year 4

SPS is for people who are passionate about all aspects of science and are interested in a scientific career, whether academically-inclined or research-orientated. It has a student-orientated programme where student mentors will help to guide their juniors through the rigorous tutorials and research modules. It also provides a conducive learning environment that allows students to learn from one another and at the same time have fun.

Ives Lim Yubin  
BSc (Hons) in Life Sciences  
Class of 2010

The SPS is uniquely different from the NUS curriculum in more ways than one.

First, the SPS community is a close-knit one where anyone can discuss scientific concepts and ideas amongst peers from different Science backgrounds, freely and constructively. Second, SPS provides a phalanx of seniors (some Principal Investigators and even faculty staff today) who are more than willing to share scientific knowledge and guidance. These opportunities help develop interdisciplinary thinking and novel research directions beyond the curriculum.

Third, the curriculum is fluid as many of the professors are more than happy to bend the curriculum to cater to my academic curiosities.

Remembering those who have provided for me and how their aid went a long way, I volunteered to mentor my juniors in peer-led journal discussions, scientific reviews and bench work. As a mentor, I definitely learnt much more in terms of scientific content, mentoring, communication and management skills than I would anywhere in NUS.

SPS exemplifies a holistic education environment for the budding researcher; it also represents an irreplaceable aspect of my NUS education.
Global Science Programme

The Global Science Programme (GSP) was established by the Faculty of Science in 2009. It is an exclusive through-train undergraduate cum postgraduate programme, designed to attract the top 5% of each freshmen cohort to study Science, moulding them for PhD studies.

In the GSP, students will first embark on the Special Programme in Science (SPS) and then be given the opportunity to spend 1 or 2 summer semesters overseas to work on their Undergraduate Research Opportunities Programme in Science (UROPS) projects. The UROPS projects are conducted by the students in the laboratories of the world-class partner universities* during their second or third year undergraduate candidature. Students will be mentored by top-notch professors and be exposed early to the research culture of top overseas universities. These opportunities would undoubtedly groom the students holistically for future postgraduate studies.

Top GSP students are provided the opportunity to read an accelerated 3-year BSc (Hons) degree. This will come with an optional one-year Master of Science (MSc) degree by research within NUS or with a partner university*. Upon completion of these degree programmes, students can advance to pursue a 3- to 4-year joint PhD with approximately 50% of their candidature spent at an overseas partner university*.

The concerted efforts invested in the GSP will certainly culminate in the training of outstanding scientists to boost Singapore’s R&D imperatives and meet the demands of the country’s knowledge-based economy.

* Some of our partner universities include the Massachusetts Institute of Technology (MIT), Imperial College London (ICL), King’s College London (KCL), École Polytechnique (EP), Australian National University (ANU), German Institute of Science and Technology (GIST), Technical University of Munich (TUM), and many more.

For more information on GSP, please visit www.science.nus.edu.sg/undergraduate-studies/ugenh/gsp
Overview

Global Science Programme (GSP)

Special Programme in Science (with Integrated Science Curriculum)
- Integrated modules with thematic approach
- Academic mentorship by illustrious Professors
- Small class size
- Research focused
- Peer-learning and peer-teaching
- Team-teaching
- Scholarship opportunities

BSc (Honours)
Students can spend up to 2 summer semesters doing UROPS in labs of partner universities

Joint MSc
- KCL
  MSc (Biophysics), MSc (Analytical Toxicology, Forensic Science)
- ANU
  MSc (Science Communication)
- GIST, TUM
  MSc (Industrial Chemistry)

Students can exit with a MSc

Top students not in SPS can also join in at Year 2

Other PhD Options*
- NGS
- SMART/CREATE
- Duke-NUS GMS

With Minors in: Forensic Science Nanoscience Biophysics

Years 1 - 2

Years 3 - 4

Year 5

Years 6 - 8

* NGS: NUS Graduate School of Integrative Sciences & Engineering
CREATE: Campus for Research Excellence & Technological Enterprise
SMART: Singapore-MIT Alliance for Research & Technology
Duke-NUS GMS: Duke-NUS Graduate Medical School
Here are some of the programmes designed under the GSP framework.

**Concurrent Degree Programme in NUS BSc (Hons) in Life Sciences and King’s College London MRes in Biophysics**

This 4-year programme, jointly designed by the Faculty of Science and King’s College London (KCL), leads to an NUS BSc (Hons) degree in Life Sciences and a KCL’s Master of Research (MRes) degree in Molecular Biophysics.

This programme focuses on the increasingly important field of Biophysics, with the Randall Division of Cell & Molecular Biophysics in KCL, and the Mechanobiology Institute and Centre for Biomolecular Sciences in NUS, lending their expertise to the programme. The intensive 1-year MRes programme focuses on in-depth practical biophysics research, complemented by courses in molecular biophysics and biology.

Students of Life Sciences Major interested in this concurrent degree programme can contact the Department of Biological Sciences for more information.

**Concurrent Degree Programme in NUS BSc (Hons) in Life Sciences or Chemistry and King’s College London MSc in Forensic Science or Analytical Toxicology**

Designed as a through-train 5-year course, this set of concurrent degree programmes focuses on the exciting field of forensic studies. Each programme awards a NUS BSc (Hons) degree in Chemistry or Life Sciences and a KCL Master of Science (MSc) degree in Forensic Science or Analytical Toxicology.

The KCL MSc in Forensic Science is the longest running programme of its type in the UK. Taught by practising forensic practitioners and field experts, students are exposed to on-site technology and methodology in the area of forensic science research and development. They will also be granted placement opportunities in the laboratories of the Forensic Science Service and Metropolitan Police Forensic Services.

The KCL MSc in Analytical Toxicology is a unique programme in the UK, integrating the theories and practices in Analytical Science with Clinical and Forensic Toxicology. It seeks to prepare students for careers in analytical and supervisory roles within government and private institutions.

Graduates from these two programmes are competent in meeting the demand for forensic experts in Singapore.

Students of Life Sciences and Chemistry Majors interested in these concurrent degree programmes can contact their respective departments for more information.

**Joint Doctor of Philosophy Programme with King’s College London**

In January 2012, the Faculty of Science formalised the Joint Doctor of Philosophy (PhD) Programme with King’s College London, with the aim of escalating research in biological, biomedical and biophysical sciences to greater heights. Students are registered in one home university, but will spend part of their candidature in the host university. Students will be guided in their research project, as well as assessed by faculty members from both universities. The students will graduate with a joint qualification, earning a certificate that bears the crest of both universities.

This programme will nurture highly competent PhD holders to tackle increasingly complex interdisciplinary scientific problems.

For more information about this Joint PhD programme, please visit [www.science.nus.edu.sg/graduate-studies/overview/jdp-phd/nus-kcl-jdp-phd](http://www.science.nus.edu.sg/graduate-studies/overview/jdp-phd/nus-kcl-jdp-phd)
I want to pursue graduate studies in a field related to Biophysics, hence, I chose to enroll in the Concurrent Degree Programme in Biophysics, which is a programme jointly offered by NUS and King’s College London (KCL).

The Randall Division of Cell & Molecular Biophysics at KCL, which is co-teaching the course, is renowned for its well-established and highly recognised work in the increasingly important field of Biophysics. For 12 weeks in the summer, I was at Randall doing research on what enable certain cells to invade physiological barriers or boundaries; the upside is a discovery that could potentially improve world health. This makes me excited and I continued to engage in this research work as my Final Year Project in NUS.

Having a biologist and a physicist as mentors at Randall gave me an edge in understanding interdisciplinary research from two different perspectives. I also had the chance to meet people from around the world and learn different cultures and practices, all within the same division.

With this research experience, I am better prepared to embark on my graduate studies in Biophysics under the Global Science Programme.

Biophysics is a combination of two seemingly unrelated disciplines: Biology and Physics. I have never appreciated this combination until I took the module, ‘Physics in the Life Sciences’, where I saw the amazing inter-relation between Biology and Physics. This prompted me to take up the concurrent degree programme with KCL in Biophysics.

The highlight of this programme was the 12-week summer research attachment opportunity with the Randall Division of Cell & Molecular Biophysics, KCL. Through this attachment, I could better appreciate Biophysics and have the chance to meet many wonderful people in the Randall Division who were always willing to extend a helping hand.

I was also offered a studentship by KCL to pay for the air ticket and accommodation in London.

What was more, I had the opportunity to travel around UK and Scotland during the weekends, where I learnt about the culture and history of the English and Scottish people through interactions with them. This has enhanced my global perspectives.

To sum it up, my research experience through this summer attachment would definitely prepare me well for the MRes in Molecular Biophysics at KCL in the near future.
University Scholars Programme

The University Scholars Programme (USP) is designed to develop the intellectual, leadership and inter-personal qualities of its students. Created to provide a broad-based education founded on critical analyses and multidisciplinary studies, the programme aims to train students to think and write critically, clearly and effectively; make path-finding connections within and among diverse disciplines; have a global perspective, and a deep understanding of themselves.

The programme offers a wide range of multidisciplinary modules, excellent teachers, interactive pedagogy, and small class sizes. The USP students and professors come from different faculties and disciplines. Exploring across disciplinary boundaries in open-ended discourse and inquiry, students have the opportunity to learn from and collaborate with people of diverse social, academic, and cultural backgrounds. This collaborative spirit is further enhanced by a two-year residential component for students at the USP residential college – Cinnamon College – at UTown, where learning and living spaces are all integrated in one location. Students and professors engage in intensive, yet fulfilling intellectual endeavour, with learning, questioning, and debate occurring inside and outside the classroom, at the dining hall, and along corridors and walkways.

Students also organise and take part in the USP International Programmes, which expose them to a variety of issues outside their usual fields of interests, and challenges them to bridge the gap between the academic and the outside world. Career advising and opportunities are also available for USP students to tap on anytime in their undergraduate years.

Students can apply to join USP. They are admitted based on their academic potential and co-curricular achievements, as well as their passion, motivation, and curiosity. On fulfilling the USP requirements and completion of their honours programme, USP students will graduate with an honours degree from their faculty or school, and a certificate that recognises them as a University Scholar.

USP admissions open every year with NUS’s general admissions. A second USP admissions exercise is also considered for freshmen of Faculty of Science in the 2nd semester of their study. There is no monetary scholarship associated with admission to the USP.

For more information about USP, please visit www.usp.nus.edu.sg
Mou Huiting Clara  
BSc (Hons) in Chemistry  
Class of 2011  
University Scholar

The University Scholars Programme’s (USP) multidisciplinary approach allows me to be intellectually flexible and adventurous.

I value how USP has helped me discover new avenues to explore the world, and fuelled my passion for learning, far beyond my field of study.

USP regularly informs students about a plethora of opportunities here and overseas.

I was one of the 20 scholars competitively selected from the Asia-Pacific region to be part of the pioneer batch to visit the United States Institute for the Environment (USIE) and learn about environmental stewardship. This programme was organised by the East West Center in collaboration with over 20 other organisations. Key partners included the University of Hawaii’s Environmental Center, Stanford University’s Woods Institute for the Environment, the Nature Conservancy and the University of California, Berkeley.

Lee Tingfeng  
BSc (Pharm) (Hons)  
Class of 2013  
University Scholar

Designed as a multi-disciplinary programme, the USP gave me the opportunity to undertake modules from other disciplines like law, moral philosophy, and sociology, which expanded my perspectives beyond my Science education. With a small class setting, generally 20 odd students per class, it enabled me to interact rigorously with students from other faculties through participation in academic discussions and group projects. It is also inspiring to learn from the very passionate USP professors who could make their lessons interesting and motivate students to a higher level of academic excellence.

USP lessons are mostly conducted in the Cinnamon College, which is situated in the University Town. The environment there is pleasant, cozy and well-kept, and there are also various spaces and facilities outside the classrooms that are equally conducive for learning and promoting interaction with other local and exchange students.

Loh Yue Yan Amelia  
Chemistry Major, Year 3  
(Minor in Life Sciences)  
MOE Teaching Scholarship Recipient

The modules offered in the University Scholars Programme (USP) made me understand the world better and take me beyond the ivory tower of Science.

The University Scholars’ seminar introduced me to other fields of study such as Philosophy, Engineering and Literature. Through the seminar, I gained a better insight on how I could apply the workings and research methodology of different disciplines to my research in Science. and it makes me appreciate the USP multi-disciplinary approach. The quantitative reasoning module, together with the teachings of the seminar allowed me to learn how to apply my knowledge of statistics to other fields such as Psychology, Political Science and Geography.

USP professors are very open-minded and always ready to challenge our ideas and even prepared to work with us to develop them better.
Undergraduate Research Opportunities Programme in Science

The Undergraduate Research Opportunities Programme in Science (UROPS) places students at the frontier of research, engaging them actively in research, discussions, discourses and other creative activities related to their disciplines.

Students can choose to undertake a UROPS project during regular semesters or special terms (May - July).

Through participation in UROPS, students will get a chance to:

- Enhance his/her knowledge of the latest development in science and technology and experience the exhilaration of research and discovery
- Hone his/her communication and presentation skills
- Engage in an intellectual process of problem-solving, inquiry and creative thinking
- Interact and forge closer ties with established scientists and members of their groups
- Sharpen his/her research skills in preparation for Honours, graduate studies or a career in research

Students who complete a UROPS module will have the chance to participate in the National Undergraduate Research Opportunities Programme Congress.

The congress aims to stimulate competition, foster excellence, reward outstanding achievements, and encourage the establishment of personal and institutional networks.

For more information about UROPS, please visit www.science.nus.edu.sg/undergraduate-studies/ugenh/urops-main
Testimonials

Haw Jing Yan  
BSc (Hons) in Physics  
Class of 2011

As an undergraduate, I participated in UROPS, which has equipped me well with relevant research and analytical skills. The exposure to first-hand research was invaluable.

Guided by my proficient supervisor, I learnt about research from different perspectives.

I gained a lot from the many insightful and fruitful discussions with members of the academic community.

In a nutshell, this programme serves as a good starting point on the path to research for me.

Chia May Fen Yvonne  
BSc (Pharm) (Hons)  
Class of 2013  
University Scholar  
Graduate student, Duke-NUS Medical School

The Undergraduate Research Opportunities Programme in Science (UROPS) was truly one of the most memorable educational experiences I had as an NUS student. It gave me the opportunity to develop skills essential to research, which prepared me well for my final year project (FYP).

UROPS helped to enhance my ability to think critically and apply theoretical knowledge to practical situations.

Through UROPS, I found myself being constantly challenged intellectually, which prompted me to push myself beyond my limits and recognise the areas in need of improvements, so that I could further enhance my skill sets and product knowledge. Personally, I felt this emphasis on self-learning extremely meaningful and the skills I have acquired during this period has benefitted me greatly in my graduate studies at Duke-NUS Medical School.

Pooy Ming Shurn, Benjamin  
BSc (Hons) in Chemistry  
Class of 2012

My UROPS project was entitled “Synthesis of 3, 4-disubstituted Isoxazoles via Enamine-prompted Cycloadition Reaction”. It involved developing a novel method for synthesizing 3, 4-disubstituted isoxazoles that could open up the possible commercial development of synthetic drugs containing 3, 4-disubstituted isoxazoles economically for the first time.

I was pleasantly surprised that my research work won me the AY2011/2012 Outstanding Undergraduate Researcher Prize (Individual Category)! I am very grateful to my project supervisor for without his guidance and “push”, I might not have persevered and turned my initial failures into successes!

Through this experience, I learnt that we tend to meet failure more often than success in research work. However, with tenacity and steadfastness in probing failed results further, we could eventually make discoveries that would help other scientists in their researches and developments of useful products.

UROPS truly offers invaluable learning experiences for research-inclined students. Participation in the programme was definitely one of my most memorable experiences in NUS.

Png Yi Tian  
BSc (Hons) in Life Sciences  
Class of 2013  
PhD student, NUS

UROPS is a great platform for undergraduates to experience research at first-hand. Being always keen in Immunology, I took on the opportunity to do an immunology-related UROPS project. Since then, I never regretted my decision. The eye-opening UROPS experience allowed me to learn how targeting diseases like cancer can also be achieved using immune cells. I also gained valuable hands-on experience and research skills that helped me tremendously when I was doing my honours year project.

I am really thankful for my supervisor and lab staff who helped me along the way throughout the course of my project. I highly recommend UROPS to students who wish to gain research exposure.
The Faculty’s Internship Programme provides Science undergraduates practical on-the-job training through structured internship in an external organisation during their Undergraduate Study.

Through participation in UPIP, students will benefit by being able to:

- **Plan their academic and career development**: Students will better understand their career options. They can test out their interests and develop long-term career plans. This helps them to select elective course work which integrates their studies and career goals.

- **Gain practical workplace skills**: Students will have opportunities to network with business leaders and alumni in the working world. They will learn job seeking skills, such as resume writing, interview and networking skills and business etiquette.

- **Acquire transferable skills**: The work experience develops students’ maturity by strengthening their resourcefulness, problem-solving skills, self-confidence, self-discipline and sense of responsibility. Students also acquire soft skills like communications and team work.

- **Translate scientific principles** learnt in the curriculum to perform technical assignments in a real-world professional environment.

**Year: 2/3 (non-graduating semester)**

- **XX3311** - Minimum 10 weeks internship in Special Term; 4 MC*
- **XX3312** – Minimum 16 weeks internship in regular semester; 8MC*

**Year: 1 (Semester 2 onwards)**

- CFG 1000 (Step UP) or CGF1001 (Head Start)
- 2 Online & 3 classroom sessions; 0 MC* (Offered by Centre for Future Ready Graduates)

UPIP is a credit-bearing module, designed for self-directed experiential learning. Credits earned can be counted towards unrestricted electives which are part of the student’s graduation requirements.

*MC: Modular Credits

For more information about UPIP, please visit [www.science.nus.edu.sg/students/upip](http://www.science.nus.edu.sg/students/upip)
Woon Guo Dong  
Applied Mathematics Major, Year 4  
Singapore Exchange

I was very lucky to have acquired this internship with the Market Data and Access Business Unit under the Singapore Exchange (SGX). I was tasked to transfer their customer subscription records from their Excel Spreadsheet to their Business Intelligence (BI) unit, conduct market research on the pricing of the distribution and subscription fees for market data as well as to improve and support the on-boarding processes of the Application Programme Interface Creation.

I had a fun and insightful stint at SGX. I learnt the various functions in SGX and how financial markets interact with one another. I made friends with some of the interns and staff who shared their insights on their respective roles as well as recent developments in the financial sector. I also participated in events such as the Financial Information Services Division (FISD) Forum where we discussed the progress of the Market Data industry and the direction that it will be heading in the future.

If you are thinking of gaining industrial experience, UPIP would be the best leverage for you to achieve your career aspirations through its tailored preparation and established employer network. I got to apply the critical and analytical skills acquired from the curriculum for analysis and problem-solving. The UPIP experience will definitely hone your communication and networking skills, which are greatly valued in today’s workplace.
The NUS Pre-Medical Programme (PMP) provides a select group of students a unique opportunity to better prepare themselves for entry to a graduate medical programme such as Duke-NUS or graduate programmes in biomedical science upon successful completion of their NUS degree and the requirements of the NUS PMP. First or second year students from any discipline will be invited to apply each year. Candidates will be assessed based on their academic potential, achievements, and passion to pursue medicine.

Shortlisted candidates would take a semester-long Pre-Med Freshman Seminar taught by Duke-NUS postdoctoral fellows called ‘Transforming Medicine: Bench to Bedside and Beyond’. The seminar conducted in a small-class setting allows students to develop knowledge, skills and attitudes to excel as a clinician scientist as well as the opportunity to interact with faculty members, medical students and postdocs at Duke-NUS. Based on their performance and aptitude assessed throughout the module, a few will be selected as NUS “Pre-Med” scholars. These scholars are able to take part in medical shadowing and research internships as well as regular seminars and talks. They will also have a chance to partake in a student exchange programme at Duke University, USA. This rare opportunity allows NUS Pre-Med scholars to immerse in the Pre-Med environment, receive academic mentorship from Duke’s Pre-Med advisors and read courses in one of the top private universities in the world.

To further prepare for graduate medical programmes and to do well in entrance exams such as MCAT or GAMSAT, scholars will be guided by Pre-Med advisors to build strong foundations in the Science subjects such as Biology, Chemistry, Biochemistry, Organic Chemistry, Physiology, Physics, and Mathematics. Scholars will also hone their written and communication skills as well as read modules in other areas outside their major so that they can become adept at tackling a wide range of issues.

For more information about PMP, please visit www.eng.nus.edu.sg/ugrad/SP_pre-med.html
Testimonials

Zhang Menglan
Life Sciences Major, Year 4
(Specialisation in Biomedical Science)
Pre-Med Scholar

The Student Exchange Programme to Duke University was definitely the highlight of my university life! Duke has a strong Pre-Med community with lots of opportunities. For example, I shadowed three top surgeons in Duke Hospital (one of the best hospitals in the US). For the first time in my life, I stepped into an operation room and observed a real-life surgery in action, which gave me a better idea of what surgeons do. Following surgeons during their work and talking to them also made me understand a surgeon’s life better. As I love interacting with children, I joined Duke Red Cross for Kids. Every week, I drove to a primary school and taught kids about health knowledge. It was really fun playing and interacting with those lovely children.

Duke is a community of very closely-knitted students and professors, made possible by its small class sizes (around 20 students) and also due to the school culture that encourages students and professors to interact outside of class through ‘Flunch’. ‘Flunch’ is Faculty + Lunch and is a programme that provides money for students to ask professors out for lunch/dinner (Yes, you can get free food!). I flunched two of my favorite professors by the end of the semester, and found it very enjoyable as we could chat about almost everything from our “complaints” on exam papers to “how many languages do Singaporeans speak”.

Besides academic classes, as a sports-pro school, Duke also offers many Physical Education classes ranging from fencing to horse riding. I took up yoga and it was a great way to relax from busy life. My SEP in Duke was so rewarding and amazing that I want to go back again. I am sure you will fall in love with Duke too!

Dr Sarada Harichand Bulchand,
Dr Wong Peiyan &
Dr Cheong Jit Kong
Lecturers of FMS1201D

The freshman seminar is a unique opportunity for us, the research fellows of Duke-NUS, to engage with highly talented students across various faculties at NUS. This seminar provides a vibrant and collaborative learning environment for undergraduates to increase their awareness of the process of basic and translational research. Team-based learning, our primary mode of instruction, gives students opportunities to discuss and debate on numerous scientific and ethical issues, whilst honing their critical thinking and communication skills. Our engagement with this cohort of students often extends beyond the classroom, to mentoring them for research internships at Duke-NUS, thus making this an equally enriching and fulfilling experience of mentorship for instructors.
Study Abroad Programmes

76  Student Exchange Programme
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The **Student Exchange Programme (SEP)** offers an excellent opportunity for undergraduates to gain a holistic global education during their candidature at NUS.

NUS and the Faculty of Science have established partnerships with over 200 reputable universities in 30 countries, making it possible for students to spend a semester at a foreign university whilst paying regular full tuition fees at NUS. Some of these prestigious overseas partner universities include University of British Columbia, University of California, University of Bath, University of Toronto, University of Hong Kong, King’s College London, Karolinska Institute, Utrecht University, University of North Carolina at Chapel Hill, La Trobe University, University of Copenhagen and many more.

Credits gained for approved courses taken overseas can be transferred back to NUS and contribute to the fulfilment of the graduation requirements of the SEP students.

The programme allows students to:

- Gain a global perspective and experience a different cultural, learning and teaching environment
- Read courses that are not available in NUS
- Learn new foreign languages
- Establish and expand social networks through the interaction with course-mates of various nationalities
- Experience independent living overseas, thereby accelerating the process of personal development and maturation

For SEP, please visit: [www.science.nus.edu.sg/undergraduate-studies/ugsap/ugsap-out/sep](http://www.science.nus.edu.sg/undergraduate-studies/ugsap/ugsap-out/sep)
Eu Su Yen Elizabeth  
BSc (Hons) in Life Sciences  
Class of 2014

Spending 6 months on exchange in Lund University, Sweden had been such a wonderful experience. Having never been to the Scandinavia, the Swedish culture of having ‘fika’ or coffee breaks and the practice of greeting ‘hej’ by almost everyone from the cashiers at the supermarkets to shop owners was particularly memorable. I had fond memories of cycling everywhere, to school and around the city as well.

Academically, it was an interesting change to be able to take one module at a time instead of the five we take concurrently in NUS. I also took a research project module offered by the University for international students. It improved my problem-solving skills and made me more aware of the processes involved in conducting research.

Settling administrative and financial matters, buying groceries and cooking my own meals have definitely increased my confidence to live independently.

A major plus point of being on exchange was it makes one more open-minded. I made many new friends and learnt a lot by interacting with other people that I would not have met in Singapore. I became close friends with students from Sweden, Germany, Switzerland, Netherlands and Thailand, and got to know people from many other countries including South Africa, Spain, Ukraine, and many more. All in all, Lund is a quaint university town that is easy to fall in love with.

Tanh Long Teng  
BSc (Hons) in Applied Mathematics  
(Second Major in Economics and Minor in Statistics)  
Class of 2013  
MOE Teaching Scholarship (Local) Recipient  
School Lecturer & Tutor, Ministry of Education

I attended the Student Exchange Programme at the Eindhoven University of Technology, one of the leading technology universities in the Netherlands from September 2011 to January 2012.

The programme has exposed me to an alternative system of education and culture. The learning and insight that I had acquired from the programme have certainly improved my skills, experience, knowledge and level of independence.

What impressed me most were the close interactions and lack of social barriers among the lecturers, instructors and students during their conversations together. The faculty members made special efforts to establish rapport with the students and remember their names. This created a very open and conducive learning environment for students to ask questions and share views with the lecturers freely. At the same time, it also enabled the latter to gather feedbacks spontaneously.

Overall, I found the programme very fulfilling an enriching. I was indeed fortunate to be able to go on such an invaluable learning journey and wish to express my heartfelt gratitude to the Faculty of Science (FoS) for giving me the opportunity.

Tan Jun Rong Sherman  
BSc (Hons) in Chemistry  
Class of 2014  
PhD student, NUS

Stockholm is a clean, environmentally friendly and safe city. The primary means of transport is by rail and there is much walking to be done, even around the huge KTH campus that does not have an internal shuttle bus service like NUS.

The classroom and research facilities are modern. The learning assessment methods are slightly different. More emphasis is placed on group work. Most, if not all homework are done in groups. Presentations are common even with Science modules, which greatly boosted my confidence in giving presentations. There is no issue of language barrier as most Swedes speak fluent English. During my exchange, I learnt a lot about the Swedish culture. Despite the differences with Singapore, if I were to choose again, I would definitely choose Stockholm as my exchange destination.
The Faculty of Science partners reputable overseas universities such as the University of Toronto (Canada), University of California, Los Angeles (USA), Tel Aviv University (Israel), University of Costa Rica (Costa Rica) and Tec de Monterrey (Mexico) to offer short-term Summer Programmes to the undergraduates in Faculty of Science and its partner universities.

Summer programmes are ideal for students who prefer to explore overseas learning experience outside the regular semesters. Typically, these programmes span four to seven-weeks.

NUS Science students who successfully complete the courses at the partner universities may be able to transfer the credits back to NUS. These credits may be used to fulfil their graduation requirements.

Some of the summer programmes offer opportunities for students to read NUS modules in an overseas setting.

**Summer Programme**

**Students will benefit from the unique features of the summer programmes through:**

- Exclusivity, where places offered in most of the summer programmes of our partner universities are reserved for Science students only
- Enjoyment of an exchange experience without disrupting academic and personal schedules
- A more affordable alternative to a full semester or full-year exchange
- En bloc exchange, facilitating close interaction and forging of friendships and ties among NUS Science students

The faculty also provides reciprocal opportunities for students from University of Toronto, University of California, University of Costa Rica, Tec de Monterrey and Hong Kong University of Science & Technology during the summer vacation to read a Life Sciences module – Field Studies in Biodiversity and a language module.

For more information on summer programmes, please visit [www.science.nus.edu.sg/undergraduate-studies/ugsap/ugsap-out/summer-programme](http://www.science.nus.edu.sg/undergraduate-studies/ugsap/ugsap-out/summer-programme)
Here are some summer programmes that were implemented recently:

**Tropical and Conservation Biology**  
**Summer Programme with University of Costa Rica**

Faculty of Science, NUS, and the University of Costa Rica (UCR) have been offering a Life Sciences module – Field Studies in Neotropical Ecosystems – jointly taught by faculty members from the Department of Biological Sciences, NUS, and School of Biology, UCR. This module is part of an intensive 4-week Summer Programme conducted entirely in Costa Rica.

Students in this programme will be exposed to varying ecosystems found in the paleo- and neo-tropics. They will get to visit interesting field sites such as the Caribbean tropical rainforest, tropical Pacific rainforest, sandy and rocky Pacific coast as well as high montane forest where they will formulate and test hypotheses in the field. Students will also experience homestay to experience the Costa Rican way of life.
In Homer’s famous epic poem The Odyssey, Odysseus undergoes an epic journey of challenge and self-discovery, and returns to his homeland with a confirmation of his new identity and selfhood. Inspired by Odysseus’ journey, the Faculty of Arts & Social Sciences and Faculty of Science jointly developed and hosted the OdySEA summer programme for students from various faculties.

This relatively low-cost study abroad summer programme is designed for NUS students with a spirit of adventure and an interest in Southeast Asia (SEA).

In this programme, students will embark on a self-actualisation journey to (parts of) SEA that will challenge students, prompt self-reflexivity, and prime them to discover a new sense of self in relation to the region upon returning to Singapore. Highlights of this summer programme include a field trip to one or two countries in SEA, and reading broad-based modules covering the cultures, languages, biodiversity and socio-political issues pertinent to SEA.

The module offered by Faculty of Science for OdySEA will be FST2203 Food Commodities in Indonesia. This module aims to provide students with a practical and in-depth knowledge in food commodities in a typical tropical country. Besides lectures and tutorials, taught by academic staff from both NUS and Bogor Agricultural University (Institut Pertanian Bogor – IPB), students will also undertake a field trip mainly in the area of Bogor, stretching to Jakarta and Semarang, visiting production farms and processing industries of plant food commodities. Students will visit tea plantations, coffee plantations, slaughter houses and experience the manufacturing of food such as tempe, noodles, bread, ice-cream, Jamu (traditional Indonesian medicine) and much more. This module is ideal for students who aim to broaden their knowledge on the origin of SEA food products as well as understand how such products are processed before they reach the consumers. There is also no better way to understand a culture than through food.
Deng Xinying
BSc (Hons) in Chemistry
(Minor in Mathematics)
Class of 2011
AquaSummer 2009 at Tec De Monterey, Mexico

AcquaSummer was an experience that I would remember for life. The warmth of the Mexicans could be felt even with the language barrier. Tec de Monterrey has very dedicated professors and a team of very friendly staff and students who helped me adapt to life in Mexico. My learning experience there was particularly enriching due to my Mexican Culture class professor who brought us on field trips, allowing me to experience the lifestyles of ordinary Mexicans. The folk dance class I attended was another way to better understand the Mexican culture.

Mexico is an exciting country that has a vibrant culture, beautiful colonial buildings, and breathtaking natural landscapes. However, it was only in Mexico that I truly appreciate Singapore’s transport system. Although you could get on and off anywhere along the roads, you must get off the bus quickly, or the bus would move away with one of your legs still on board!

Testimonials

Peh Wan Yi Elaine
Food Science & Technology Major, Year 4
Food Commodities Summer School in Costa Rica

I participated in this summer programme in 2012. I had the privilege of visiting many different food factories and plantations in Costa Rica. It was an eye-opening experience as these factories and plantations could never be found in Singapore.

The most memorable part was the trip to the Pilot Plant, where we were able to produce our own food products, using real industry machineries. Through this experience, I learnt many new and innovative methods in producing and processing food products. Not only did it expand my knowledge in Food Science, it also broadened my cultural horizons.

Overall, the summer programme has been exciting and on top of this, the experience of staying with a host family overseas for the first time made the trip even more memorable.

I look forward to yet another summer programme as exciting as this one!

Nurliyana Omar
BSc in Life Sciences
Class of 2014
OdySEA 2013 to Philippines
Executive, Technical Infrastructure & QESH
Solar Energy Research Institute of Singapore

It had not been a tough choice for me to select the module LSM1305 Biodiversity in Southeast Asia when I applied for OdySEA 2013.

Besides the opportunity to study more about biodiversity, what added to my excitement was the fieldtrip to the Philippines for 12 days. Besides this module, I was expected to take a capstone module, SC2207 (Peoples and Cultures of Southeast Asia).

In the programme, the places we visited were interesting and diverse. Not only did we learn and explore for ourselves the biodiversity of the Philippines, we were also exposed to the institutions that were either studying the natural environment or utilising the natural environment to produce essential services or products.

I have found the experience gained from this programme very memorable.
Students keen to pursue research during their course of study at the Faculty of Science will have the opportunity to add an international dimension to their research work, as well as enhance their university education.

The faculty collaborates with many overseas universities to offer these research-driven students a unique opportunity to expand their research interest overseas through the summer research programmes. Some of the faculty’s overseas partnering universities are:

- California Institute of Technology (Caltech)
- Cambridge University
- Imperial College London (ICL)
- King’s College London (KCL)
- Massachusetts Institute of Technology (MIT)
- University Autonoma de Madrid (UAM)
- University of North Carolina Chapel Hill (UNC-CH)
- University of Queensland (UQ)

The Faculty’s Overseas Summer Research Programme allows students to go abroad to conduct research in the laboratories of its partner universities during the NUS vacation period. The research will be conducted under the supervision of overseas faculty members for a period of 6-12 weeks.

Through the Overseas Summer Research Programme, students will gain:

- Hands-on research experience in the host university professor’s laboratory
- Immersion in a research culture different from that of NUS, and be stimulated and encouraged to pursue postgraduate studies
- Opportunities to co-publish their summer research projects in journals, along with their supervisors

The overseas research opportunities are available to students from all disciplines. A few of these research programmes offered are credit-bearing.

The faculty also provides reciprocal research opportunities for students from Caltech, MIT, UNC-CH, Cambridge, ICL, KCL, UQ, UAM, the University of Toronto and University of British Columbia during the summer vacation.

For more information on summer programmes, please visit [www.science.nus.edu.sg/undergraduate-studies/ugsap/ugsap-out/summer-programme](https://www.science.nus.edu.sg/undergraduate-studies/ugsap/ugsap-out/summer-programme)
Testimonials

Ivan John Mercado Clement
BSc (Hons) in Computational Biology
Minors in Biophysics and Mathematics
Class of 2013
Special Programme in Science

Thanks to the research network of NUS, I was able to spend three months at the Massachusetts Institute of Technology (MIT) via the MIT-NUS Summer Research Exchange Programme doing research on modelling actin cytoskeletal structures inside living cells.

At MIT, I was thrilled by the “spontaneity” of the people I interacted with everyday. People there were very friendly and helpful and, not to mention, really brilliant. A day won’t pass by without an informal or random conversation with someone about a possible career in Science and I would be receiving tips like what kind of supervisor to pick, what ideas to deliberate further, how to write papers, how to accept criticism (and give one), etc.

On top of that, MIT’s serious commitment to striking a work-life balance is really amazing. People in the lab would organise dinners, yachting in the afternoon, and even lunchtime cornhole games! There was even a weekend where my research supervisor invited everyone to his summer house!

Overall, the most important thing that I have learnt at MIT – more than how to do the research itself – is how to do research with a happy mind and healthy lifestyle. Certainly, we need to be dedicated and driven in our work in order to deliver high-quality research outcomes but every now and then, taking time off is crucial to keep our “creative juices” flowing!

Kok Sos Fuf
BSc (Hons) in Chemistry
(Minor in Nanoscience)
Class of 2012

If I need to sum up my summer lab exchange experience at the University of North Carolina at Chapel Hill (UNC-CH) in one word, it would have to be “awesome”.

The UNC-CH Summer Research Programme provides a good and rewarding opportunity. I was able to immerse in a different research culture and learn about others’ way of living.

UNC-CH is a warm and friendly university. The people there often smile to you; it did not fail to make my day.

I was especially impressed by the close relationship between professors and students; the active discussions among peers; and the students’ enthusiasm for Science. They are certainly incredible people and it is my great pleasure to work with and learn from them.
Designed to cultivate dynamic and resourceful entrepreneurs, the NUS Overseas Colleges (NOC) programmes give students an exciting first-hand insight into the mechanisms of a high tech start-up.

Selected students will spend 12 months with a high tech start-up in Silicon Valley, Beijing, Shanghai, Stockholm or New York or spend 3-6 months in Israel or iLead, experiencing the challenges and the same adrenaline rush felt by founders of these companies.

Through NOC, students will:

• be immersed in the entrepreneurial-academic environments of leading entrepreneurial hubs around the world

• meet and work with the best and most creative people from greatly diverse backgrounds

• understand first-hand elements needed for new ventures to take off, sharpen their sense for potential business opportunities and kindle their entrepreneurial spirit

• gain a wealth of knowledge and forge friendships and ties

Students selected for NOC will also have the privilege of undergoing entrepreneurship courses at highly reputable partner universities like Stanford University, Fudan University, Tsinghua University and the KTH Royal Institute of Technology, where they will get the opportunity to network with renowned entrepreneurs and like-minded people who are passionate about growing a technology business.

Upon completing the year-long internship programme, students will not only earn credits but also a Minor in Technopreneurship that will be incorporated into their BSc or BSc (Hons) degree after they meet the requirements of the Minor.

For more information on NOC, please visit www.overseas.nus.edu.sg
The NUS Overseas College in Bio Valley (NCBV) programme, based in Philadelphia, USA, has truly been an unforgettable experience. It is a vibrant pharmaceutical, biotechnology and medical device hub and also a hotbed of start-ups and entrepreneurial activity in various industries, in addition to healthcare.

My experience during the NOC programme was indispensable in acquiring substantial overseas exposure in the fields of business and technology. Concurrently, I also learnt the ropes of managing a hi-tech venture through close interaction with the CEO and COO of the start-up that I was interning in. Through the inspirational NOC experience, I have developed a robust theoretical and experiential understanding of business and its related processes.

The NCBV programme has definitely presented me with limitless opportunities to realise my potential. It had also helped me to understand the broader framework of industry analysis from a practical dimension, as well as imparted the skills and knowledge required for starting a business.

The NOC programme offers a truly remarkable and incredible experience!

Whether it is from experiencing work and school life in an overseas setting, interacting with inspirational and established business and academic mentors, sharing and refining ideas with brilliant peers, discovering high-tech commercial opportunities in the sciences, or just broadening my horizons through travel, the NOC programme has successfully integrated all of these within a year-long journey.

This unique blend of exposures at NCBV has not only moulded me into a more discerning and daring individual, but also a person who is better equipped to tackle any challenges that lie ahead.
Double Degree Programme with the French Grandes Écoles

The French Grandes Écoles are a cluster of world-renowned institutions of higher scientific learning with a history of over 200 years, known for educating the country’s technical and managerial elites.

NUS has set up Double Degree programmes with 6 premier French Grandes Écoles, namely:

- École Polytechnique (X)
- École Centrale Supélec (Supélec)
- École des Mines de Paris (Mines Paris Tech)
- École Nationale Supérieure des Télécommunications (Télécom ParisTech)
- École Nationale Supérieure de Techniques Avancées (ENSTA ParisTech)
- École des Ponts ParisTech (École Nationale des Ponts et Chaussées)

Candidates applying for the Double Degree Programme are selected in their 1st year from among top Engineering, Science and Computing students.

Successful students will undergo French language preparation, spend their 3rd and 4th year in a French institution, and return to NUS for their MSc Programme.

Students will graduate with a BSc (Hons) degree and an MSc degree from NUS, coupled with a Diplome d’Ingenieur (the equivalent of Masters in France) from a French Grande École.

Students are encouraged to join the programme where they can:

- earn 3 internationally recognised degrees
- enjoy the unique opportunities of higher education and quality research from the best of both institutions in different countries
- be exposed to the French education, society and culture, and gain proficiency in the French language
- network with the French and other students of different nationalities

For more information on French Double Degree Programme (FDDP), please visit www.science.nus.edu.sg/undergraduate-studies/ugsap/ugsap-out/fddp
Testimonials

Wong Wei Pin
BSc (Hons) in Mathematics
Class of 2008
MSc, Class of 2010

Participating in the French Double Degree Programme (FDDP) has opened a brand new exciting chapter in my life.

I have gained academically from the world-class tertiary education offered by École Polytechnique.

Living in France for two and a half years has also enriched my spiritual and social development.

I have also become more knowledgeable on topics such as politics, religion, history, cuisine, architecture and fine arts. I can even discuss these subjects with my French friends who simply love to talk!

Although I have completed the programme, I continue to embrace the French philosophy “profiter de la vie” - make the most out of life, and I still look forward to returning to France one day!

Oh Swee Long Kevin
BSc (Hons) in Mathematics
Class of 2010
MSc, Class of 2011

As a student who was keen in going on the path of research, I find that the FDDP is particularly beneficial.

The school in which I was enrolled in, École Polytechnique, offered many research opportunities at various levels. There are also opportunities to work with renowned researchers in areas such as Pure and Applied Mathematics and Physics, just to name a few.

Besides, the 2 years of living in France gave me an opportunity to develop important life skills and learn how to be independent.

On the whole, I am proud to have gone through this programme.

Ting Yuan Sen
BSc (Hons) in Physics
(Minor in Mathematics)
Class of 2011
MSc, Class of 2012

I was admitted to the FDDP and enrolled in École Polytechnique in 2008.

I felt honoured when I had the chance to attend classes conducted by eminent scientists, such as Fields medalist Pierre-Louis-Lions, Jean-Pierre Bourguinon, and Antoine George.

Under this FDDP, I had the opportunity to carry out my Master project at Oxford University, which subsequently led to my project at the Australian National University (ANU). These two projects subsequently produced four publications in reputable scientific journals and were instrumental in paving the way for my postgraduate studies. The exposure also helped establish my research network all around the world. I also had the chance to go under the supervision of renowned scientists such as Ken Freeman and Joseph Silk.

It was truly a pleasant surprise that these research works later won me awards from the Singapore National Academy of Science, Institute of Physics Singapore and the offer of the James Buckee’s Scholarship from Oxford University.

I have gained enormously from enrolling in this challenging FDDP, both in terms of academics and personal development. I would strongly recommend one to join this once-in-life-time programme.

I would also like to express my gratitude to all the staff at NUS for their assistance, especially people from the Faculty of Science – Assoc Prof Roger Tan, Assoc Prof Wong Yan Loi, Assoc Prof Tay Seng Chuan, both Ms Ong Lili and Ms Sim Xiu Juan from the Dean’s Office, Ms Sng Wee Lee from the Department of Physics, and Ms Teo Hwee Ching from the Office of Student Affairs.
Joint Degree Programme with Australian National University

This 4-year **Joint Degree Programme (JDP)** combines the Bachelor of Philosophy (Hons) degree of the Australian National University (ANU) with the Bachelor of Science (Hons) degree of NUS.

A rigorous and challenging programme, the JDP is designed for students who have a strong interest and aptitude for graduate research work.

The JDP is only offered to students from the Faculty of Science who are in the University Scholars Programme, majoring in Chemistry, Mathematics and Physics.

Students are expected to acquire a strong foundation in critical analysis and depth in the principles of each subject. They are also expected to be actively engaged in independent undergraduate research work, spend 3 semesters at NUS, followed by the next 3 semesters at ANU, before returning to NUS to complete their honours year.

8-10 students will be accepted into the programme annually. Application will open in September/October each year.

Successful students will be provisionally admitted to the programme based on their academic performance and other relevant qualifications. Official admittance into the programme will only take place at the end of their 3rd semester of study.

For more information on JDP with ANU programme, please visit www.usp.nus.edu.sg/curriculum/joint-degree/anu-fos/index.html

**Testimonial**

**Sander Felicity Lim**  
Bachelor of Philosophy (Hons) (ANU) and BSc (Hons) in Physics (NUS)  
Class of 2011

It is a wonderful opportunity to be able to immerse myself in the culture of 2 great universities.

The Joint Degree Programme is a research-intensive programme so I got to work under brilliant researchers at ANU and NUS every semester. My first project at ANU was with Dr Anna Wilson of the Department of Nuclear Physics. It has a premier laboratory with 15.5 million volt accelerator.

My work was on the structure of lead nuclei, with focus on the highly deformed shapes they take at high energies.

I also worked to make high efficiency solar cells under Electronics Materials Engineering. The experience was so positive that I continued to do a summer research scholarship as well.

During that summer, a few of my lecturers brought us to sail in Lake Burley Griffin, go caving and bushwalking. I was also a member of ANU mountaineering club and had many memorable trips with friends.

I must thank both ANU and NUS for providing me with varied educational opportunities, where I acquired new experiences and friends, and for giving me a chance to explore many areas of Physics at a deeper level.
Joint Degree Programme in Life Sciences with University of North Carolina at Chapel Hill (UNC-CH)

This new 4-year Joint Degree Programme (JDP) is developed by Faculty of Science (FoS), NUS and the Department of Biology, College of Arts and Science, UNC-CH. It combines the BSc (Hons) in Life Sciences from FoS and the BSc in Biology from UNC-CH, and offers students from both institutions a unique learning experience encompassing advanced Life Sciences modules, undergraduate research and an exceptional liberal arts education.

UNC-CH is the oldest and one of the top public universities in the United States, with a long tradition of excellence in teaching and research. This JDP combines the strengths of both universities' undergraduate curricula in Life Sciences and integrates the opportunity for students to study overseas into a 4-year programme. Besides harnessing UNC-CH's strong interdisciplinary research expertise in the various branches of biology such as cell and developmental, animal behavior, and organismal and plant biology, the JDP also taps on the strength of its well-structured and multidisciplinary liberal arts education requirement known as ‘Making Connections Curriculum’. This is akin to the General Education modules requirement in NUS but with much broader offerings and requirements including modules under unique areas such as ‘North Atlantic World’, ‘Beyond North Atlantic World’, ‘World before 1750’, ‘Social & Behavioural Sciences’, just to name a few.

NUS students will generally spend Semesters 1 to 3 in NUS, Semesters 4 to 6 in UNC-CH and Semesters 7 to 8 in NUS. While students are overseas, they will continue to pay only home university tuition fees. Upon completion of the JDP requirements, students will be awarded a degree jointly validated by NUS and UNC-CH.

For more information on this JDP, please visit www.lifesciences.nus.edu.sg/jdpuncch.html
Joint Minor Programme

Leveraging on the competencies of the University of Toronto (UofT) in the areas of Environmental Sciences, Faculty of Science offers joint minor programmes in Environmental Biology and Environmental Chemistry, in which NUS students study advanced courses for 1 semester at UofT.

Under the terms of this partnership with UofT, NUS students need only to pay their usual tuition fees to NUS while studying at UofT.

Students who successfully complete the programme are generally able to transfer both credits as well as grades to satisfy their graduation requirements.

Rayston Leong
BSc (Hons) in Chemistry
(Joint Minor in Environmental Chemistry)
Class of 2014
General Education Officer
Ministry of Education

I became interested in the Joint Minor Programme in Environmental Chemistry with the University of Toronto since I picked up a brochure at the NUS Open House before joining NUS. What intrigued me was that a Chemistry major student could have the opportunity to minor in Environmental Chemistry as well. However, that was not the only reason that led me to sign up for the joint minor programme. I have always wanted to experience living life as a student abroad and this programme will fulfil that. I’m glad I took this opportunity that NUS presented to me because the learning experience abroad is certainly something different.

The small class facilitated more interaction between the lecturers and students and I felt that this in turn led to a better appreciation and retention of the subject matter. Although there were fewer contact hours in class, we had to spend more time on literature reading outside of class.

As exchange students, we had the flexibility to plan our classes as well as get involved in student life at the University.

Rayston Leong (center)
Student Life & Student Support

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Student Life & Student Support

Enriching Student Life

University education is not limited to the walls of lecture halls or laboratories. While pursuing your degree, try something that will enrich your university life — that will take you beyond the thresholds of academia, and may make you discover more about yourself that you never knew before.

All students in the Faculty of Science (FoS) are members of the NUS Students’ Science Club by default. The Science Club is the functional equivalent of the Student Council in the local junior colleges/schools. Throughout the year, the Club initiates, plans and runs various activities for bonding, as well as enriching student life within the Faculty. All these projects, e.g. Rag & Flag, Science Orientation Camp, Exam welfare pack, etc, are organised by the students for the students¹.

Complementing the Science Club is a host of academic societies that are associated with each department in FoS. These include:

- NUS Life Sciences Society
- NUS Chemical Sciences Society
- NUS Mathematics Society
- NUS Pharmaceutical Society
- NUS Physics Society
- NUS Students’ Food Science & Technology Society
- Science Computer-Based Learning Centre

These societies/groups help to promote engagement among professors and students within the respective department or programme. Students are strongly encouraged to volunteer as leaders in the societies, or participate actively to network with their peers.

¹ For the full list of activities, please visit www.science.nus.edu.sg/students/clubs/science-day

To view Student life video, please click here
The variety of projects organised by the Science Club and the societies provide a wide spectrum of options for students in FoS to pursue various interests. One key event organised annually by the Science Club together with the academic societies is Science Day in Semester 2. This is the Day in the year when the FoS Family celebrates sciences and students’ achievements together.

There are also many engagements at the University level that seek to promote camaraderie among the various faculties. For example, the Inter-Faculty Games (IFG) is an annual event in which faculties in NUS compete for the coveted IFG champion trophy. Traditionally, the NUS Rag & Flag also sees thousands of NUS students take to the streets to raise funds for the less privileged and subsequently, deliver exciting public performances as a token of appreciation for the donations raised.

To further augment your learning in FoS, there are also authentic experiences that you can undertake. The Young Educators in Science (YES) Programme provides a platform for students who have both the passion for science and enjoy the process of sharing science with others. Together with a group of like-minded professors, staff and senior students, YES members develop exciting ways to communicate science that can be used to engage anyone from their own peers to school children and the public.

The entire learning cycle of the YES member is built around a self-customised experiential journey over the undergraduate years. The YES programme ultimately aims to help students communicate science at all levels effectively.

### Student Financial Support

The FoS has set up two funds – Science Student Fund and Science Student Overseas Exposure Fund, for financially needy students. These funds are raised from alumni, staff, students and friends of the Faculty.

#### Science Student Fund (SSF)

The SSF is made up of two components, namely, the SSF Bursary and SSF Emergency Aid.

FoS students who apply for the NUS Bursary through the Office of Financial Aid will be considered for the **SSF Bursary**. No direct application is needed. In addition to the pooled SSF Bursary fund, the Faculty is also bestowed with a list of named bursaries/scholarships administrated under SSF.

The **SSF Emergency Aid** is a grant to help meet the financial needs of FoS students who encounter emergency or unfortunate situations during the semester. Circumstances could include bankruptcy, retrenchment, medical or mental disability of the student or his / her family member who is an important financial contributor. Through SSF Emergency Aid, we have disbursed short-term assistance ranging from $1,000 to $1,400 to help these students.

#### Science Student Overseas Exposure Fund (SSOEF)

To cultivate Science graduates with an enterprising and global outlook, FoS encourages students to broaden their horizons through overseas learning experiences. However, many deserving students often encounter difficulties with the costs of travel and living expenses abroad. The SSOEF is established with the aim to encourage students from low-income families to participate in these experiential learning opportunities abroad.

2For more information, please visit [www.science.nus.edu.sg/giving/ssoef](http://www.science.nus.edu.sg/giving/ssoef)
International Students

As an international student, either taking a full-time academic programme or as a short-term exchange student at FoS, you can expect to immerse yourself in an interesting mix of different nationalities and cultures, while receiving a multidisciplinary education from our professors. We welcome international students to FoS and we will assist you in your transition to fit into a different culture. Some services such as ‘Airport Meet & Greet’, orientation briefings, etc are available for our foreign friends. At the University level, a series of cross-cultural events are also lined up every year such as the International Day, cultural tours organised by student societies and other festival celebrations.

Student and Peer Support

We understand that sometimes, when starting out in a new place, you might need to make a few adjustments. We know that there are some things you have to do on your own, but sometimes your load can get a bit too heavy. If you need a listening ear or would like some advice or simply want to talk to someone, don’t hesitate to approach our friendly Student Support Unit or drop them a note at SCI STUDENT SUPPORT. This Student Support Unit, comprising student counsellors, was set up to assist students facing issues in their studies, personal or family matters.

Career Readiness and Coaching

Besides providing the necessary academic foundation for your professional development, the Faculty also recognises the importance of getting you ready for your future careers.

We believe career planning should begin the moment you step into NUS. As a freshman in FoS, you will have the CFG 1001 HeadStart module built into your curriculum in the 2nd or 3rd semester. This is a module offered by the Centre for Future-ready Graduates (CFG) comprising a series of five workshops to increase your awareness and to guide you in charting your student life, besides imparting skills on resume preparation, corporate etiquette, interview and networking skills.

You may wish to augment your undergraduate studies with internships. Such experience provides a practical training on the job and an opportunity to explore your career path. The Faculty allows you to earn modular credits through the Undergraduate Professional Internship Programme (UPIP). You may also carry out unstructured internships during vacation through the NUS Talent Connect.

For one-to-one or small group career consultations, you can approach designated CFG Career Advisors in the Faculty. Workshops on career preparation and employers events are organised frequently to assist you in developing your career goals.

We are also fortunate to have many Science alumni who are eager to assist in mentoring you. Every semester at the Science Alumni- Student Networking Evening, you can meet and hear from these alumni who hold a wealth of experiences across various companies and industries.
Career Prospects
Career Prospects for Science Graduates - One Degree, Unlimited Opportunities

Examples of industries where Science graduates are employed:

- Accommodation / Hospitality
- Administrative & Support Services
- Advertising Services & Market Research
- Air Transport
- Architectural & Engineering; Technical Testing
- Business & Management Consultancy
- Construction & Civil Engineering
- Creative Arts & Entertainment
- Defence & Security
- Education / Educational Support Services
- Food & Beverage Services
- Financial Services & Insurance
- Healthcare & Medicine
- Information & Communications
- Legal, Accounting & Auditing
- Logistics, Warehousing & Storage
- Mass Media Productions & Public Relations
- Manufacturing
- Postal & Courier Services
- Public Administration (Ministries, Statutory Boards)
- Publishing
- Real Estate
- Retail & Wholesale Trade
- Security & Investigative Activities
- Social & Community Services
- Water Supply & Waste Management

For more information on career prospects, please visit www.science.nus.edu.sg/undergraduate-studies/career-prospects
The world is always changing, but the skills in scientific, critical and analytical thinking, logical reasoning and problem solving skills that you acquire from the Faculty of Science will continue to be relevant and transferrable to any workplace situations.

**NUS Science graduates are gainfully employed and successful in both public and private sectors, playing either specialised (discipline-based) or general professional roles.**

Some of our graduates also embark on postgraduate studies or careers in academia as researchers or lecturers, and contribute to the further advancement of science.
A glimpse at some of our recent graduates:

Dr Rachel Ng Qiao Ming
Chemistry, Class of 2008
Doctor of Medicine, 2013
(Duke-NUS Graduate Medical School)
Medical Doctor, Singapore General Hospital
Ministry of Health Holdings

M. Unnaamalai
Life Sciences, Class of 2014
Research Officer
Agency for Science, Technology and Research

Chuen De Wei Benny
Applied Mathematics major, Class of 2013
Assistant Dealer
Aberdeen Asset Management

Ong Kheng Yong
Registered Pharmacist
Singapore General Hospital
Tan Kai Bin  
Statistics and Applied Probability, Class of 2013  
Executive Search Consultant  
SearchAsia Singapore

Verleen Goh  
Food Science & Technology, Class of 2010  
Founder and Owner  
Soyato Foods International Pte Ltd

Ong Lee Sheng Raphael  
Life Sciences, Class of 2012  
Management Consultant  
A.T. Kearney

Ken Lee  
Physics, Class of 2012  
Consulting Associate at Frost & Sullivan  
Partners at Conjunct Consulting
Our Illustrious Alumni

Many of NUS Science Alumni have made important contributions to various industries, sectors of R&D and the economy. Some of them have moved on to management or other leading positions in both the public and private sectors.

A glimpse at some of our very successful alumni:

Olivia Lum  
Chemistry  
Group Chief Executive Officer and President  
Hyflux Ltd

Dr Bernard Leong  
Physics & Materials Science  
Head, Digital Services  
Singapore Post Ltd

Foo Hee Jug  
Mathematics  
Chief Executive Officer  
Jurong Health Services  
Alexandra Hospital & Ng Teng Fong General Hospital
Eric Sandosham
Mathematics & Statistics
Founder and Partner
Red & White Consulting Partners LLP

Chua-Lim Yen Ching
Biological Sciences
Deputy Director - General
Education (Professional Development) &
Executive Director
Academy of Singapore Teachers
Ministry of Education, Singapore

Dr Lee Fook Kay
Chemistry
Chief Science & Technology Officer
Ministry of Home Affairs, Singapore

Lam Pin Woon
Pharmacy
Director
Allswell Trading Pte Ltd

Patrick Yong
Biological Sciences
Chief Executive Officer, MyChinaChannel
(Former) Head, Strategic Marketing
MediaCorp Pte Ltd
Admission Information

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Admission Requirements For Students with GCE ‘A’ Level (H1/H2) Qualifications or Equivalent

For admission to Faculty of Science, applicants must have good GCE ‘A’ Level (H2) passes or equivalent in at least 2 of these Science subjects: Biology, Chemistry, Computing, Mathematics, Physics

<table>
<thead>
<tr>
<th>Primary Majors leading to an Honours Degree</th>
<th>Prerequisites for students offering H2 curriculum or equivalent</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Chemistry</td>
<td>Good H2 pass or equivalent in Chemistry and at least a good ‘O’ Level pass or equivalent in Mathematics</td>
</tr>
<tr>
<td>• Chemistry</td>
<td>Good H2 passes or equivalent in Mathematics and either Biology, Chemistry or Physics</td>
</tr>
<tr>
<td><strong>• Computational Biology</strong></td>
<td>Students without H2 passes or equivalent in any two of the three Science subjects (Biology/Chemistry/Physics) should have at least ‘O’ Level or equivalent passes in them</td>
</tr>
<tr>
<td>• Food Science and Technology*</td>
<td>Good H2 pass or equivalent in Chemistry and one other Science subject, and at least a pass in O-Level or equivalent in Biology</td>
</tr>
<tr>
<td><strong>• Life Sciences</strong></td>
<td>Good H2 passes or equivalent in Biology, Chemistry, and either Mathematics or Physics</td>
</tr>
<tr>
<td><strong>• Mathematics</strong></td>
<td>Students without H2 pass in Biology are required to read the bridging module in Biology (i.e. LSM1301) in Semester 1 to fulfill the pre-requisite for the Level 1000 Life Sciences module (i.e. LSM1101) in the syllabus</td>
</tr>
<tr>
<td><strong>• Applied Mathematics</strong></td>
<td>Students without H2 pass in Biology or Chemistry may read the relevant bridging modules as entry requirements</td>
</tr>
<tr>
<td><strong>• Quantitative Finance</strong></td>
<td>Students without H2 pass in Biology or Chemistry may read the relevant bridging modules as entry requirements</td>
</tr>
<tr>
<td><strong>• Pharmacy</strong></td>
<td>Very good H2 passes or equivalent in Chemistry and either Biology, Mathematics or Physics</td>
</tr>
<tr>
<td><strong>• Physics</strong></td>
<td>Good H2 passes or equivalent in Mathematics and Physics</td>
</tr>
<tr>
<td><strong>• Statistics</strong></td>
<td>Good H2 passes or equivalent in Mathematics</td>
</tr>
</tbody>
</table>

Interdisciplinary Degree Programme

<table>
<thead>
<tr>
<th>Interdisciplinary Degree Programme</th>
<th>Prerequisites for students offering H2 curriculum</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Bachelor of Environmental Studies Programme* (Specialisation in Environmental Biology)</td>
<td>Good H1 pass or equivalent in Mathematics and good H2 pass or equivalent in either Biology or Chemistry</td>
</tr>
</tbody>
</table>

Note:
*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.

# These are strict 4-year programmes while students in other majors can graduate with a Bachelor of Science (BSc) degree after 3 years.

Specialisations are awarded only with BSc (Hons) degree.
Admission Requirements For Students with GCE ‘A’ Level (H1/H2) Qualifications or Equivalent

For admission to Faculty of Science, applicants must have good GCE ‘A’ Level (H2) passes or equivalent in at least 2 of these Science subjects: Biology, Chemistry, Computing, Mathematics, Physics

### Second Majors (Optional)

<table>
<thead>
<tr>
<th>Major</th>
<th>Prerequisites for students offering H2 Curriculum or equivalent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chemistry</td>
<td>Good H2 pass or equivalent in Chemistry</td>
</tr>
<tr>
<td>Life Sciences</td>
<td>Good H2 passes or equivalent in Biology, Chemistry, and either Mathematics or Physics</td>
</tr>
<tr>
<td>Mathematics</td>
<td>Good H2 pass or equivalent in Mathematics</td>
</tr>
<tr>
<td>Statistics</td>
<td>Good H2 pass or equivalent in Physics</td>
</tr>
<tr>
<td>Physics</td>
<td>Good H2 pass or equivalent in Physics</td>
</tr>
</tbody>
</table>

### Minors (Optional)

<table>
<thead>
<tr>
<th>Minor</th>
<th>Prerequisites for students offering H2 Curriculum or equivalent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Analytical Chemistry</td>
<td>Good H2 pass or equivalent in Chemistry</td>
</tr>
<tr>
<td>Biophysics</td>
<td>Good H2 passes or equivalent in Physics, Chemistry and/or Biology</td>
</tr>
<tr>
<td>Forensic Science*</td>
<td>Good H2 passes or equivalent in Chemistry and Biology</td>
</tr>
<tr>
<td>Life Sciences*</td>
<td>Good H2 pass or equivalent in Biology</td>
</tr>
<tr>
<td>Mathematics</td>
<td>Good H2 pass or equivalent in Mathematics</td>
</tr>
<tr>
<td>Financial Mathematics</td>
<td>Good H2 pass or equivalent in Mathematics</td>
</tr>
<tr>
<td>Statistics</td>
<td>Good H2 pass or equivalent in Mathematics</td>
</tr>
<tr>
<td>Nanoscience</td>
<td>Good H2 pass or equivalent in either Chemistry or Physics</td>
</tr>
<tr>
<td>Pharmaceutical Sciences*</td>
<td>Good H2 pass or equivalent in either Chemistry or Biology</td>
</tr>
<tr>
<td>Physics</td>
<td>Good H2 pass or equivalent in Physics</td>
</tr>
<tr>
<td>Optical and Semiconductor Technology</td>
<td>Good H2 pass or equivalent in Physics</td>
</tr>
</tbody>
</table>

### Joint Minors (Optional)

<table>
<thead>
<tr>
<th>Minor</th>
<th>Prerequisites for students offering H2 Curriculum or equivalent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aquatic Ecology*</td>
<td>Open to students from all disciplines with an interview required</td>
</tr>
<tr>
<td>Engineering Materials*</td>
<td>Good H2 passes or equivalent in either Chemistry or Physics</td>
</tr>
<tr>
<td>Environmental Biology*</td>
<td>Good H2 passes or equivalent in Biology and Mathematics</td>
</tr>
<tr>
<td>Environmental Chemistry*</td>
<td>Good H2 passes or equivalent in Physics and Mathematics</td>
</tr>
<tr>
<td>Medical Physics*</td>
<td>Open to students from Faculty of Science and Faculty of Engineering with good H2 passes or equivalent in Physics and Biology</td>
</tr>
</tbody>
</table>

* Application is subject to departmental approval
# Admission Requirements For Polytechnic Diploma Holders

List of Diplomas accepted for admission to FoS undergraduate programmes

<table>
<thead>
<tr>
<th>Nanyang Polytechnic</th>
<th>NUS Major Courses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Biologics &amp; Process Technology</td>
<td>Science (Chemistry)</td>
</tr>
<tr>
<td>Biomedical Engineering</td>
<td>Science (Physics)</td>
</tr>
</tbody>
</table>
| Chemical & Green Technology | Environmental Studies  
  Science (Chemistry) |
| Chemical & Pharmaceutical Technology | Science (Chemistry) |
| Digital & Precision Engineering | Science (Physics) |
| Electronics, Computer & Communication Engineering/ Electronics, Computer & Control Engineering | Science (Physics) |
| Food Science & Nutrition  
  (Previously named as Food Science) | Science (Food Science and Technology)  
  Science (Chemistry) |
| Manufacturing Engineering | Science (Physics) |
| Mechatronics Engineering | Science (Physics) |
| Medicinal Chemistry | Science (Chemistry)  
  Science (Pharmacy) |
| Molecular Biotechnology | Science (Chemistry)  
  Science (Life Sciences)  
  Science (Pharmacy) |
| Molecular Biotechnology  
  (Pharmaceutical & Clinical Trial track) | Science (Life Sciences)  
  Science (Pharmacy) |
| Molecular Biotechnology  
  (R&D/Bioenterprise/Manufacturing track) | Science (Life Sciences)  
  Science (Pharmacy) |
| Nanotechnology & Materials Science | Science (Chemistry)  
  Science (Physics) |
| Pharmaceutical Sciences | Science (Chemistry)  
  Science (Life Sciences)  
  Science (Pharmacy) |
## Admission Requirements For Polytechnic Diploma Holders

List of Diplomas accepted for admission to FoS undergraduate programmes

<table>
<thead>
<tr>
<th>Ngee Ann Polytechnic</th>
<th>NUS Major Courses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aerospace Technology/ Aerospace Technology (with minor in Business Management)</td>
<td>Science (Physics)</td>
</tr>
<tr>
<td>Biomedical Engineering/ Biomedical Engineering (Minor in Business Management)</td>
<td>Science (Computational Biology)&lt;br&gt;Science (Life Sciences)&lt;br&gt;Science (Physics)</td>
</tr>
<tr>
<td>Biomedical Laboratory Technology/ Biotechnology</td>
<td>Science (Chemistry)&lt;br&gt;Science (Life Sciences)&lt;br&gt;Science (Pharmacy)</td>
</tr>
<tr>
<td>Biomedical Science (for 2015 poly graduates onwards)&lt;br&gt;- Specialisation: Clinical Laboratory Technology&lt;br&gt;- Specialisation: Biomedical Research [newly renamed]</td>
<td>Science (Chemistry)&lt;br&gt;Science (Life Sciences)&lt;br&gt;Science (Pharmacy)</td>
</tr>
<tr>
<td>Biomedical Science/ Biomedical Science (Medical Laboratory Technology option)</td>
<td>Science (Chemistry)&lt;br&gt;Science (Life Sciences)&lt;br&gt;Science (Pharmacy) Environmental Studies</td>
</tr>
<tr>
<td>Chemical Engineering</td>
<td>Science (Chemistry)</td>
</tr>
<tr>
<td>Chemical &amp; Biomolecular Engineering</td>
<td>Science (Chemistry)</td>
</tr>
<tr>
<td>Electrical Engineering/ Electrical Engineering (with minor in Business Management)</td>
<td>Science (Physics)</td>
</tr>
<tr>
<td>Engineering Science</td>
<td>Science (Physics)</td>
</tr>
<tr>
<td>Environmental &amp; Water Technology</td>
<td>Environmental Studies</td>
</tr>
<tr>
<td>Landscape design and Horticulture [previously named as Horticulture &amp; Landscape Management]</td>
<td>Science (Life Sciences)</td>
</tr>
<tr>
<td>Molecular Biotechnology</td>
<td>Science (Chemistry)&lt;br&gt;Science (Life Sciences)&lt;br&gt;Science (Pharmacy) Environmental Studies</td>
</tr>
<tr>
<td>Optometry</td>
<td>Science (Life Sciences)</td>
</tr>
<tr>
<td>Pharmacy Science [For 2013 graduates &amp; earlier]</td>
<td>Science (Chemistry)&lt;br&gt;Science (Life Sciences)&lt;br&gt;Science (Pharmacy)</td>
</tr>
<tr>
<td>Veterinary Bioscience</td>
<td>Science (Life Sciences) Environmental Studies</td>
</tr>
<tr>
<td>Republic Polytechnic</td>
<td>NUS Major Courses</td>
</tr>
<tr>
<td>-----------------------------------------</td>
<td>----------------------------------------</td>
</tr>
<tr>
<td>Biomedical Science</td>
<td>Science (Chemistry) [For 2013 graduates &amp; earlier]</td>
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<td></td>
<td>Science (Life Sciences)</td>
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<td>Science (Chemistry)</td>
</tr>
<tr>
<td></td>
<td>Science (Life Sciences)</td>
</tr>
<tr>
<td></td>
<td>Environmental Studies</td>
</tr>
<tr>
<td>Materials Science</td>
<td>Science (Chemistry)</td>
</tr>
<tr>
<td></td>
<td>Science (Physics)</td>
</tr>
<tr>
<td>Pharmaceutical Sciences</td>
<td>Science (Chemistry) [For 2013 graduates &amp; earlier]</td>
</tr>
<tr>
<td></td>
<td>Science (Life Sciences)</td>
</tr>
<tr>
<td></td>
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<tr>
<td>Applied Chemistry with Pharmaceutical Science (previously named as Chemical Process Technology [Industrial Chemistry])</td>
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<td>Science (Pharmacy)</td>
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<tr>
<td>Biotechnology (Medical Technology option)</td>
<td>Science (Life Sciences)</td>
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<td>Science (Life Sciences)</td>
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<td>Science (Pharmacy)</td>
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<tr>
<td>Chemical Engineering/ Process Engineering</td>
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<tr>
<td>Environmental Management &amp; Water Technology</td>
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<tr>
<td>Food Science &amp; Technology (previously named as Chemical Process Technology [Food Technology])</td>
<td>Science (Food Science and Technology)</td>
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<td>Science (Chemistry)</td>
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<tr>
<td>Materials Engineering</td>
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<tr>
<td>Materials Science (previously named as Chemical Process Technology [Polymer Option])</td>
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<td>Medical Technology</td>
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<tr>
<td>Nutrition, Health &amp; Wellness</td>
<td>Science (Food Science and Technology)</td>
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<td>Science (Life Sciences)</td>
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<tr>
<td>Perfumery and Cosmetic Science (previously named as Chemical Process Technology [Industrial Chemistry])</td>
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<td>Science (Pharmacy)</td>
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</tbody>
</table>
## Admission Requirements For Polytechnic Diploma Holders

List of Diplomas accepted for admission to FoS undergraduate programmes

<table>
<thead>
<tr>
<th>Temasek Polytechnic</th>
<th>NUS Major Courses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Applied Food Science &amp; Nutrition</td>
<td>Science (Food Science and Technology)</td>
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<tr>
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<td>Science (Pharmacy)</td>
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<tr>
<td>Biomedical Informatics &amp; Engineering</td>
<td>Science (Computational Biology)</td>
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<td>Science (Life Sciences)</td>
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<td>Science (Chemistry)</td>
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<tr>
<td>Chemical Engineering</td>
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<tr>
<td>Pharmaceutical Science</td>
<td>Science (Food Science and Technology)</td>
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<td>Science (Pharmacy)</td>
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<tr>
<td>Veterinary Technology</td>
<td>Science (Life Sciences)</td>
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</tbody>
</table>
Advanced Placement Credits

Advanced placement credits (APCs) are given to diploma holders of approved programmes from the 5 polytechnics in Singapore. Such students admitted to a 4-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 will be granted based on performance in advanced placement tests and/or interviews set by the department offering the module

**Computation of Admission Score for AY2014/2015**

(1) Polytechnic Results 80%
(2) Singapore-Cambridge GCE ‘O’ Level Results 20%

Please visit the Office of Admissions website for more details: [www.nus.edu.sg/oam/apply/apply.html](http://www.nus.edu.sg/oam/apply/apply.html)
Unlimited Opportunities

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