LIFE SCIENCES & CHEMICAL TECHNOLOGY

BIOMEDICAL SCIENCE
MOLECULAR BIOTECHNOLOGY
PHARMACY SCIENCE
VETERINARY BIOSCIENCE
LANDSCAPE DESIGN & HORTICULTURE
CHEMICAL & BIOMOLECULAR ENGINEERING
ENVIRONMENTAL & WATER TECHNOLOGY
RE-CODE YOUR DNA

Come unlock the mysteries of life with the School of Life Sciences & Chemical Technology where an exciting journey into a fascinating world awaits you from day one.

SCHOOL OF LIFE SCIENCES & CHEMICAL TECHNOLOGY

6  BIOMEDICAL SCIENCE N59
9  MOLECULAR BIOTECHNOLOGY N49
12  PHARMACY SCIENCE N73
15  VETERINARY BIOSCIENCE N90
18  LANDSCAPE DESIGN & HORTICULTURE N57
20  CHEMICAL & BIOMOLECULAR ENGINEERING N56
23  ENVIRONMENTAL & WATER TECHNOLOGY N74
Looking for a school that offers a robust education in life sciences and chemical technology? Here are six reasons why Ngee Ann Poly’s School of Life Sciences & Chemical Technology (LSCT) is one of the most reputable institutions in Singapore.

A proven track record
Our graduates have completed their degrees at top universities around the world and six have been accepted into the National University of Singapore’s Yong Loo Lin School of Medicine. Some have even clinched prestigious PSC and A*STAR scholarships.

The edge in R&D
Besides having one of the most extensive polytechnic research programmes in Singapore, we are also known for our expertise in areas such as biocatalysts, aquatic science, sky-rise greening, molecular diagnostics and cancer biology. Providing practical hands-on training is also an important aspect of your experience at NP, where you will get to work on research projects while being guided by our faculty.

Top lecturers
All of our lecturers hold postgraduate qualifications, and are well equipped with rich research and industry experience.

More options
You can pursue a wide range of degrees and careers with our broad-based curriculum and specialisations.

Unique partnerships
Our strong industry partnerships with organisations such as National University Hospital, National Parks Board and PUB (Singapore’s national water agency) enable you to apply what you have learnt in the classroom to a real-world setting.

Global exposure
You will gain a global perspective by participating in overseas internships and immersion programmes to places such as Seoul, Manchester, Dublin, London and Washington DC.

Find us online at www.np.edu.sg/lsct
Making their Mark

“I had the opportunity to be attached to the University of Liverpool, where I studied scent secretions from hamsters. I aspire to become a research veterinarian and work with animal models to develop new drugs and vaccines, and uphold the high standards of animal welfare.”

Kristine Tan
Diploma in Veterinary Bioscience, Class of 2014
Kristine has received an A*STAR scholarship to pursue Veterinary Medicine at the University of Glasgow, followed by a Doctorate in animal research.

“Ngee Ann has helped me establish the fundamental foundations of being a successful scientist and to achieve my childhood dream of working in the field of space biology.”

Natasha Sng
Diploma in Biotechnology (now renamed as Diploma in Molecular Biotechnology), Class of 2005
Natasha is pursuing her PhD in Plant Molecular and Cell Biology at the University of Florida. Her research explores the possibility of growing plants in space.

“At Ngee Ann, I discovered in myself a whole new dimension. It set the stage for me to clinch the coveted PSC scholarship.”

Low Hong Wei
Diploma in Chemical & Biomolecular Engineering, Class of 2010
Hong Wei received a prestigious scholarship from the Public Service Commission (PSC) to pursue a degree in Chemical Engineering at the National University of Singapore.

From Poly to NUS Medical School
Since 2007, six NP graduates have made it to the National University of Singapore’s medical school.

“I’ve been interested in biology since I was in secondary three and I chose to take a Biomedical Science diploma because I wanted something more practical and focused. The firm foundation that I received at Ngee Ann has put me in good stead for my medical degree.”

Lim Xin Yan
Diploma in Biomedical Science, Class of 2014
Xin Yan is NP’s first female graduate to be accepted into the NUS Yong Loo Lin School of Medicine.

Environmental Champions

“As a PUB Diploma scholar, I had a fulfilling and exciting internship with PUB. The skills that were taught in school were very applicable to my internship. This has further sparked my interest in the water industry. I hope to work in the area of water reclamation or policy management in the future.”

Shawn Seah
Diploma in Environmental & Water Technology, Class of 2013
Shawn was awarded the National Environment & Water Scholarship by PUB to pursue his degree in Civil Engineering at University College London.

“People think it’s impossible to stop climate change, but we need to believe that we can work to at least slow it. Small actions can have a big impact.”

Cherry Goh
Diploma in Landscape Design & Horticulture, Class of 2014
A recipient of the HSBC/NYAA Environmental Award, Cherry was given the opportunity to participate in an expedition to the Arctic’s Edge in Canada, where she studied the effects of climate change and global warming. She hopes to work as an environmentalist in the future.
DIPLOMA IN BIOMEDICAL SCIENCE

- An established and recognised biomedical science programme
- Final-year projects and internships with renowned research institutions and organisations
- Choice of three specialisation options: Biomedical Research, Clinical Laboratory Technology and Medicinal Chemistry

WHAT THE COURSE IS ABOUT

From cancer screening to diagnosing HIV, drug discovery and development, biomedical science is the foundation of modern healthcare today. Get an understanding of how diseases evolve, the functions of the human body and the world of bacteria through the Diploma in Biomedical Science (BMS).

The course covers the latest in biomedical sciences and medical breakthroughs, including areas such as cancer biology, infectious diseases, clinical chemistry, developmental biology and immunology.

In your first year, you will take modules such as chemistry, microbiology, physiology and cell biology that will give you a firm foundation in biomedical science. In your second year, you can specialise in Biomedical Research, Clinical Laboratory Technology or Medicinal Chemistry.

The Biomedical Research specialisation will develop your research skills needed to understand how diseases arise and are treated, while the Clinical Laboratory Technology specialisation allows you to be trained at National University Hospital (NUH) alongside doctors, nurses and medical technologists to diagnose diseases.

The Medicinal Chemistry specialisation will provide you with opportunities to work with experts from the pharmaceutical industry, hospitals and research institutes to hone your understanding of diseases, as well as the design and discovery of new drugs.

WHAT YOU WILL LEARN

YEAR 1
- Inorganic & Physical Chemistry
- Microbiology
- Mathematics
- Physiology
- Cell Biology
- Organic Chemistry
- Introduction to Medical Science
- Biostatistics

YEAR 2
- Medical Microbiology
- Immunology
- Cell Culture & Tissue Applications
- Developmental Biology & Genetics
- Medical Biochemistry
- Instrumentation & Analytical Chemistry
- Molecular Biology
- Bioinformatics
- Applied Biostatistics
- Any two IS electives^

YEAR 3
- Critical Thinking and Communication^
- Innovation Toolkit^
- Sports & Wellness^

At the end of Year 1, you will select one of three specialisation options:
- Biomedical Research
- Clinical Laboratory Technology
- Medicinal Chemistry

Biomedical Research Specialisation Option

YEAR 2
- Clinical Chemistry 1
- Clinical Haematology 1
- Clinical Microbiology 1
- Advanced Topics in Biomedical Science
- Applied Biostatistics
- Lab Techniques in Clinical Haematology
- Lab Techniques in Clinical Microbiology
- Lab Techniques in Clinical Chemistry 1
- Lab Techniques in Clinical Chemistry 2

YEAR 3
- Clinical Chemistry 2
- Clinical Haematology 2
- Clinical Microbiology 2
- Genomics & Proteomics
- Bioinformatics
- Integrative Module 1
- Integrative Module 2
- Laboratory Endocrinology
- Laboratory Management
- Molecular Diagnostics
- Project
- World Issues: A Singapore Perspective^

Clinical Laboratory Technology Specialisation Option

Students will receive additional certification in phlebotomy.

YEAR 2
- Chemical Lab Techniques
- Structural Chemistry
- Molecular Biology
- Bioinformatics
- Applied Biostatistics
- Medical Biochemistry
- Analytical & Separation Chemistry
- Advanced Organic Chemistry
- Toxicology & Pharmacology
- Any two IS electives^

YEAR 3
- Drug Discovery
- Genomics & Proteomics
- Forensic Science
- Forensic Chemistry
- Chemistry of Natural Products
- Project (Part A and B)
- Internship (4 months)
- Any two elective modules
- World Issues: A Singapore Perspective^
- Any one IS elective^

Medicinal Chemistry Specialisation Option

YEAR 2
- Medicinal Chemistry 1
- Medicinal Chemistry 2
- Applied Biostatistics
- Lab Techniques in Medicinal Chemistry 1
- Lab Techniques in Medicinal Chemistry 2
- Medical Research Project

YEAR 3
- Clinical Chemistry 1
- Clinical Haematology 1
- Clinical Microbiology 1
- Advanced Topics in Biomedical Science
- Applied Biostatistics
- Lab Techniques in Clinical Haematology
- Lab Techniques in Clinical Microbiology
- Lab Techniques in Clinical Chemistry 1
- Lab Techniques in Clinical Chemistry 2
- Medical Research Project

Any two IS electives^

^ Interdisciplinary Studies (IS) electives are taken on top of core discipline modules and account for 15 per cent of curriculum hours. They cover diverse areas such as the arts & humanities, business, design, and science & technology.
DIPLOMA IN MOLECULAR BIOTECHNOLOGY

– Get a strong foundation in applied biology and molecular biosciences
– Local and overseas internships with research institutes, life science companies and the R&D laboratories of universities
– Take the exciting Biopharmaceutical or Forensic Science specialisation option in your final year
– Attractive electives in Aquaculture & Marine Biology, Food Science and Plant Biotechnology

CAREER

Start your career as a research assistant, medical technologist, laboratory biologist or laboratory analyst before moving on to senior positions in research, biomedical science, healthcare, forensic, pharmaceutical, drug design and discovery, clinical trials and clinical labs.

FURTHER STUDIES

BMS graduates are able to pursue a wide range of degree programmes such as biological science, medicine, dentistry, chemistry, laboratory medicine, medical technology, bioengineering, education, architecture, business, business administration, psychology, environmental studies and social science.

In fact, about 60 per cent of our graduates enrol into the National University of Singapore, Nanyang Technological University and Singapore Management University every year. Top overseas universities also welcome our graduates with exemptions of up to two years. They include:

– RMIT University (Australia)
– University of Melbourne (Australia)
– University of Queensland (Australia)
– Queensland University of Technology (Australia)
– McGill University (Canada)
– Imperial College (UK)
– University of Leicester (UK)
– University of Manchester (UK)
– University of Edinburgh (UK)
– University of Dundee (UK)
– University of Liverpool (UK)
– Queens University Belfast (UK)
– Armstrong Atlantic State University (US)
– Cornell University (US)

ENTRY REQUIREMENTS

AGGREGATE TYPE ELR2B2-C
To be eligible for consideration, candidates must have the following GCE ‘O’ Level examination (or equivalent) results.

<table>
<thead>
<tr>
<th>SUBJECT</th>
<th>‘O’ LEVEL GRADE</th>
</tr>
</thead>
<tbody>
<tr>
<td>English Language*</td>
<td>1-7</td>
</tr>
<tr>
<td>Mathematics (Elementary/Additional)</td>
<td>1-6</td>
</tr>
<tr>
<td>Science (with Physics, Chemistry or Biology component)</td>
<td>1-6</td>
</tr>
<tr>
<td>or Biotechnology or Fundamentals of Electronics</td>
<td></td>
</tr>
</tbody>
</table>

You must also fulfil the aggregate computation requirements.
* Candidates with English as a second language (EL2) must have attained a minimum grade of 6.

CONTACT US

For the most up-to-date information on NP’s Diploma in Biomedical Science, log on to www.np.edu.sg/bms

The Diploma in Biomedical Science has provided me with well-rounded skill sets for both work and university studies. Beyond this, the course has also challenged and developed my passion for the sciences. I am now a step closer to achieving my dream of being a clinician-scientist.

Alvin Chew
Diploma in Biomedical Science, Class of 2012
An NTU Nanyang Scholarship recipient. Alvin also received the LKY-STEP Award and is currently pursuing a degree in Biological Science.
WHAT THE COURSE IS ABOUT

If you want to know how living systems and organisms can be used to improve our quality of life, the Diploma in Molecular Biotechnology (MBIO) may just be the course for you. Molecular Biotechnology is a growing field of science that combines applications from biochemistry, immunology, genetics and microbiology.

It can offer innovative solutions to tackle global problems ranging from human and animal health to agriculture and sustainable energy production. MBIO equips you with a strong foundation in the biosciences. In your first year, you will study a number of basic science subjects including chemistry, cell biology and microbiology before proceeding onto more advanced subjects such as biochemistry, cell culture technology, genomics and proteomics in your second year.

In your final year, you will get to take on research projects during your internship at the R&D laboratories of local and overseas universities, research institutes and life science companies. In addition, you will have the choice of deepening your knowledge with one of two exciting specialisation options.

The Biopharmaceutical specialisation focuses on the discovery, development and manufacturing of biopharmaceuticals. In the Forensic Science specialisation, students will learn about the forensic and DNA techniques used by criminal investigators and forensic scientists.

WHAT YOU WILL LEARN

YEAR 1
- Inorganic & Physical Chemistry
- Microbiology
- Mathematics
- Physiology
- Cell Biology
- Organic Chemistry
- Introduction to Medical Science
- Biostatistics
- Innovation Toolkit^a
- Sports & Wellness^a
- Critical Thinking & Communication^a

YEAR 2
- Applied Microbiology
- Immunology
- Cell Culture & Bioprocess Engineering
- Biochemistry
- Instrumentation & Analytical Chemistry
- Molecular Biology
- Bioinformatics
- Applied Biostatistics
- Any one elective module:
  - Plant Biotechnology
  - Food Science
  - Aquaculture & Marine Biology
- Any two IS electives^a

YEAR 3
- Life Sciences Seminar Series
- Genomics & Proteomics
- Research Project
- Internship
- World Issues: A Singapore Perspective^a
- Any one IS elective^a

Choose one of the two specialisations:

Forensic Science Specialisation Option
- Forensic Science
- Forensic Chemistry

Biopharmaceutical Specialisation Option
- Drug Discovery & Development
- Biomanufacturing Practices

CAREER

MBIO graduates have been successful in a range of careers including marine biology, aquaculture, agrotechnology, education, healthcare, pharmaceutical and biologics manufacturing, food technology and forensic science. You can become a research assistant, laboratory biologist, technical specialist, scientific product executive, laboratory support officer or project executive.

FURTHER STUDIES

MBIO graduates can pursue a wide range of degree programmes such as biological science, medicine, chemistry, materials engineering, bioengineering, architecture, dentistry, law and business.

Each year, a large proportion of our graduates enrol into National University of Singapore, Nanyang Technological University and Singapore Management University. So far, more than 200 of our graduates have completed PhDs and at least 14 have been admitted into prestigious medical schools locally and overseas.

Top overseas universities also welcome our graduates with exemptions of up to two years. They include:
- Australian National University (Australia)
- University of Melbourne (Australia)
- University of Queensland (Australia)
- McGill University (Canada)
- University of Toronto (Canada)
- University of Manchester (UK)
- University College London (UK)
- Leeds University (UK)
- Imperial College (UK)
- Edinburgh University (UK)
- Cornell University (US)
- University of California (US)
- University of Michigan (US)

ENTRY REQUIREMENTS

AGGREGATE TYPE ELR2B2-C
To be eligible for consideration, candidates must have the following GCE ‘O’ Level examination (or equivalent) results.

<table>
<thead>
<tr>
<th>SUBJECT</th>
<th>‘O’ LEVEL GRADE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mathematics (Elementary/Additional)</td>
<td>1–6</td>
</tr>
<tr>
<td>Science (with Physics, Chemistry or Biology component)</td>
<td>1–6</td>
</tr>
<tr>
<td>or Fundamentals of Electronics</td>
<td></td>
</tr>
</tbody>
</table>

You must also fulfil the aggregate computation requirements.

^ Candidates with English as a second language (EL2) must have attained a minimum grade of 6.

CONTACT US

For the most up-to-date information on NP’s Diploma in Molecular Biotechnology, log on to www.np.edu.sg/mbio

* Interdisciplinary Studies (IS) electives are taken on top of core discipline modules and account for 15 per cent of curriculum hours. They cover diverse areas such as the arts & humanities, business, design, and science & technology.
DIPLOMA IN
PHARMACY SCIENCE

WHAT THE COURSE IS ABOUT

Find out what it is like to work at the forefront of drug therapy and get hands-on experience in managing pharmacies through the Diploma in Pharmacy Science (PHARM). This course will equip you with a foundation in biological, chemical and pharmaceutical sciences, and cover topics such as clinical trials and research, pharmaceutical operations, drug manufacturing as well as pathology and pharmacology.

In your final year, you will be attached to the Pharmacy Department of National University Hospital (NUH) for a one-year training stint. This extensive internship will feature attachments with pharmacies in NUH’s Cancer Centre and Satellite Wards, as well as the hospital’s Clinical Trials Unit and Aseptic Dispensing and Compounding Laboratory — all designed to allow you to engage and learn directly from practising doctors and pharmacists.

In addition, you will take up a course-related research project at NUH and choose one of three electives in your final year. The elective in Nutrition & Dietetic Science will provide you with a basic understanding of nutritional and dietetic concepts, including the study of nutrients in the diet and their effects on health. The Cosmetic & Perfumery Science elective introduces students to the science and regulatory control behind the development of cosmetic products and fragrances.

You will also learn to evaluate the evidence behind alternative therapies and traditional Chinese medicines in the Complementary Medicine & Traditional Chinese Medicine elective.

WHAT YOU WILL LEARN

YEAR 1
– Introduction to Pharmacy
– Organic & Biological Chemistry
– Cell & Molecular Biology
– Anatomy & Physiology
– Inorganic & Physical Chemistry
– Mathematics
– Biostatistics
– Innovation Toolkit^
– Sports & Wellness^
– Critical Thinking and Communication^

YEAR 2
– Microbiology & Infectious Diseases
– Pharmacology
– Clinical Biochemistry
– Pharmaceutics
– Clinical Immunology
– Pathology
– Current Good Manufacturing Practice
– Medicinal Chemistry & Drug Discovery
– Pharmaceutical Analysis
– Applied Biostatistics
– Any two IS electives^

YEAR 3
– Clinical Pharmacy
– Pharmacotherapeutics
– Good Dispensing Skills
– Pharmacy Practice
– Pharmacy Management & Logistics
– Aseptic Dispensing & Compounding
– Research Project
– World Issues: A Singapore Perspective^
– Any one IS elective^

Choose one elective module:
– Nutrition & Dietetic Science
– Cosmetic & Perfumery Science
– Complementary Medicine & Traditional Chinese Medicine (TCM)

^ Interdisciplinary Studies (IS) electives are taken on top of core discipline modules and account for 15 per cent of curriculum hours. They cover diverse areas such as the arts & humanities, business, design, and science & technology.

DIPLOMA IN
PHARMACY SCIENCE

– Go on an exclusive one-year internship with the National University Hospital’s Pharmacy Department
– Train under practising pharmacists and doctors
– Broad-based training in pharmacy practice and pharmaceutical sciences will open doors to more career options
– Choice of three final-year electives: Nutrition & Dietetic Science, Cosmetic & Perfumery Science and Complementary Medicine & Traditional Chinese Medicine
CAREER
Due to the shortage of qualified pharmacy technicians, you will be in high demand upon graduation. Your hands-on training with NUH will ensure that you are ready for careers in clinical research and healthcare services. What’s more, you can become a regulatory executive or even an entrepreneur of healthcare products and services. You can also work with clinical research organisations and pharmaceutical companies such as Eli Lilly and GlaxoSmithKline.

FURTHER STUDIES
You will be able to pursue degrees in pharmacy, pharmaceutical science, chemistry, life science, biological science, biomedical science, medicine and dentistry as well as other healthcare-related courses at universities both locally and abroad.

PHARM graduates are also eligible to pursue a wide range of other degrees offered by National University of Singapore, Nanyang Technological University, Singapore Management University and Singapore University of Technology and Design. They include education, arts, architecture, business, psychology and social science.

You may be granted up to two years of exemptions when applying for related degree programmes at the following universities:
- Monash University (Australia)
- RMIT University (Australia)
- University of Queensland (Australia)
- University of Melbourne (Australia)
- University of Sydney (Australia)
- University of Otago (New Zealand)
- University of London (UK)
- University of Dundee (UK)

ENTRY REQUIREMENTS
AGGREGATE TYPE ER2B2-C
To be eligible for consideration, candidates must have the following GCE ‘O’ Level examination (or equivalent) results.

<table>
<thead>
<tr>
<th>SUBJECT</th>
<th>‘O’ LEVEL GRADE</th>
</tr>
</thead>
<tbody>
<tr>
<td>English Language*</td>
<td>1-7</td>
</tr>
<tr>
<td>Mathematics (Elementary/Additional)</td>
<td>1-6</td>
</tr>
<tr>
<td>Science (with Physics, Chemistry or Biology component)</td>
<td>1-6</td>
</tr>
<tr>
<td>or Biotechnology or Fundamentals of Electronics</td>
<td></td>
</tr>
</tbody>
</table>

You must also fulfil the aggregate computation requirements.
* Candidates with English as a second language (EL2) must have attained a minimum grade of 6. Candidates with colour vision deficiency should not apply for the course.

CONTACT US
For the most up-to-date information on NP’s Diploma in Pharmacy Science, log on to www.np.edu.sg/pharm

DIPLOMA IN VETERINARY BIOSCIENCE
- A course that combines bioscience and veterinary science to offer wider career options
- Strong focus on the proper care, handling and management of laboratory animals for scientific purposes
- Training that prepares you to assist veterinarians in providing animal medical care and treatment
- Four-month internship with top local or overseas research institutions, life science companies, animal theme parks and veterinary clinics
WHAT THE COURSE IS ABOUT

The Diploma in Veterinary Bioscience (VBS) will teach you how to care for, handle and manage various animals, ranging from laboratory animals to pets.

You will learn about the maintenance and wellbeing of animals through modules such as Animal Anatomy & Physiology, Animal Nutrition and Animal Welfare, Behaviour & Handling. Modules such as Wildlife Conservation & Biodiversity will give you an understanding of animals in their natural habitats. This course will also cover the clinical diagnosis and treatment of animal diseases, including modules such as Veterinary Immunology.

You will be trained to assist veterinarians in a clinical setting, as well as learn about the importance of animal models in the search for new drugs and vaccines. This course also gives you a head start in a career in biomedical research.

In your final year, you will carry out a research project and undertake a four-month internship either locally or abroad, where you could be attached to research laboratories, veterinary clinics or animal theme parks such as the Singapore Zoo.

WHAT YOU WILL LEARN

YEAR 1
- Animal Anatomy & Physiology
- Animal Nutrition
- Animal Welfare, Behaviour & Handling
- Biostatistics
- Cell Biology
- Inorganic & Physical Chemistry
- Organic & Biological Chemistry
- Veterinary Microbiology
- Wildlife Conservation & Biodiversity
- Critical Thinking & Communication
- Innovation Toolkit
- Sports & Wellness

YEAR 2
- Animal Developmental Biology & Genetics
- Animal Diseases & Pathology
- Applied Biostatistics
- Aquaculture & Fish Diseases
- Cell Culture & Tissue Applications
- Clinical Biochemistry & Haematology
- Clinical Diagnostics, Surgical & Veterinary Practices
- Molecular Biology & Bioinformatics
- Veterinary Immunology
- Veterinary Pharmacology & Toxicology
- Any two IS electives

YEAR 3
- Animal Genomics & Proteomics
- Animal Husbandry & Breeding
- Preclinical & Clinical Trials
- Research Project
- Internship
- World Issues: A Singapore Perspective
- Any one IS elective

* Interdisciplinary Studies (IS) electives are taken on top of core discipline modules and account for 15 per cent of curriculum hours. They cover diverse areas such as the arts & humanities, business, design, and science & technology.

CAREER

VBS graduates enjoy a wide range of careers in the veterinary and biomedical science industries upon graduation. You can become a laboratory biologist in a research institution or university laboratory, or a veterinary bioscientist in an animal research facility or preclinical trial centre. Alternatively, you may choose to be a veterinary assistant in a veterinary clinic or animal hospital.

You can also find job opportunities in animal theme parks (such as the Singapore Zoo, Night Safari, River Safari, Jurong Bird Park and Marine Life Park), equine establishments (such as the Bukit Timah Saddle Club), animal-related businesses (such as pet shops and pet supply companies), the government sector and animal welfare organisations such as the SPCA.

FURTHER STUDIES

You can pursue a wide range of degrees including biological science and biomedical science in local and overseas universities. These degrees will advance you further when it comes to careers in the life sciences and biomedical research.

If you want to become a veterinarian, you can enrol into veterinary medicine programmes offered by universities in Australia, New Zealand, and the UK. Other related areas include degrees in Animal Science, Zoology and Marine Biology from overseas universities. In fact, Murdoch University in Australia offers our graduates a one-year exemption from their Bachelor of Veterinary Medicine and Surgery programme.

ENTRY REQUIREMENTS

AGGREGATE TYPE ELR2B2-C
To be eligible for consideration, candidates must have the following GCE ‘O’ Level examination (or equivalent) results.

<table>
<thead>
<tr>
<th>SUBJECT</th>
<th>‘O’ LEVEL GRADE</th>
</tr>
</thead>
<tbody>
<tr>
<td>English Language*</td>
<td>1-7</td>
</tr>
<tr>
<td>Mathematics (Elementary/Additional)</td>
<td>1-6</td>
</tr>
<tr>
<td>Science (with Physics, Chemistry or Biology component)</td>
<td>1-6</td>
</tr>
<tr>
<td>or Biotechnology</td>
<td></td>
</tr>
<tr>
<td>or Fundamentals of Electronics</td>
<td></td>
</tr>
</tbody>
</table>

You must also fulfil the aggregate computation requirements.

* Candidates with English as a second language (EL2) must have attained a minimum grade of 6.

CONTACT US

For the most up-to-date information on NP’s Diploma in Veterinary Bioscience, log on to www.np.edu.sg/vbs

Valerie Oh
Diploma in Veterinary Bioscience, Class of 2014
Valerie will be pursuing a degree in Veterinary Medicine at the University of Edinburgh.
DIPLOMA IN LANDSCAPE DESIGN & HORTICULTURE

- The only polytechnic diploma that combines broad-based training in landscape design with plant science and horticulture
- Strong partnership with National Parks Board to offer practical outdoor lessons at Botanic Gardens and Learning Park @ Clementi Woods

WHAT YOU WILL LEARN

YEAR 1
- Plant Anatomy & Morphology
- Taxonomy & Plant Identification
- CAD & Graphic Applications
- Floristry & Interiorscapes
- Chemistry
- Soil Science & Plant Nutrition
- Urban Ecology & Conservation
- Landscape Design Communication 1
- Landscape Studio 1 - Design Fundamentals
- Innovation Toolkit^
- Sports & Wellness^
- Communication and Contemporary Issues^

YEAR 2
- Plant Biochemistry & Physiology
- Plant Pathology & Entomology
- Horticulture & Turf Management
- Plant Identification 2
- Hardscape Design
- Softscape Design
- Arboriculture
- Genetics & Plant Breeding
- Propagation & Nursery Management
- Landscape Design Communication 2
- Landscape Studio 2 - Design Process
- Any two IS electives^

YEAR 3
- Landscape Studio 3 - Independent Projects
- Leisure & Park Management
- Landscape Project Management
- Urban Horticulture Technology
- Project (Choose one)
  • Landscape Design Track
  • Horticultural Research Track
- World Issues: A Singapore Perspective^
- Any one IS elective^
- Internship

WHAT THE COURSE IS ABOUT

If you have a love for nature and a flair for design, join the Diploma in Landscape Design & Horticulture (LDH) and play a part in developing Singapore as a City in a Garden. Combining landscape design, plant science and horticulture management, LDH is the only diploma-level course of its kind here.

As an LDH student, you will develop skills in landscape design, project management and park management. You will also learn about the anatomy, biochemistry, physiology, pathology, genetics and breeding of plants, as well as how to apply your plant science knowledge in the design of the lush landscapes that you see around you.

In addition, this course will provide you with the opportunity to hone your horticultural and project management skills at the Learning Park @ Clementi Woods and Singapore Botanic Gardens. You will be able to conduct hands-on practice and attend classes at The Greenhub, a dedicated classroom set in the midst of the Learning Park.

FURTHER STUDIES

You can apply for courses ranging from science, architecture and business to law and social studies at National University of Singapore, Nanyang Technological University, Singapore Management University and Singapore University of Technology and Design.

You can also apply for a related degree course (such as architecture, landscape architecture, business, horticulture, plant science, botany and arboriculture) at the following universities and enjoy up to two years of exemptions:
- University of Melbourne (Australia)
- University of New South Wales (Australia)
- University of Queensland (Australia)
- Lincoln University (New Zealand)
- University of Manchester (UK)
- University of Georgia (US)

ENTRY REQUIREMENTS

AGGREGATE TYPE ELR2B2-D
To be eligible for consideration, candidates must have the following GCE ‘O’ Level examination (or equivalent) results.

<table>
<thead>
<tr>
<th>SUBJECT</th>
<th>‘O’ LEVEL GRADE</th>
</tr>
</thead>
<tbody>
<tr>
<td>English Language*</td>
<td>1-7</td>
</tr>
<tr>
<td>Mathematics (Elementary/Additional)</td>
<td>1-7</td>
</tr>
<tr>
<td>Science (with Physics, Chemistry or Biology component)</td>
<td>1-6</td>
</tr>
<tr>
<td>or Biotechnology or Design Studies or Design &amp; Technology or Fundamentals of Electronics</td>
<td></td>
</tr>
<tr>
<td>Any one other subject</td>
<td>1-6</td>
</tr>
</tbody>
</table>

You must have also sat for a Science or Art / Higher Art or Design & Technology or Food & Nutrition or a relevant O-level / Applied Subject and fulfil the aggregate computation requirements.

* Candidates with English as a second language (EL2) must have attained a minimum grade of 6.

CONTACT US

For the most up-to-date information on NP’s Diploma in Landscape Design & Horticulture, log on to www.np.edu.sg/ldh

N57 DIPLOMA IN LANDSCAPE DESIGN & HORTICULTURE
WHAT THE COURSE IS ABOUT

As the only course in Singapore that integrates biological and chemical sciences with engineering concepts, the Diploma in Chemical & Biomolecular Engineering (CBE) offers a broad-based curriculum covering chemical processing, pharmaceuticals, environment science, engineering and life sciences.

In your first year, you will be introduced to concepts from organic, biological, inorganic and physical chemistry, chemical and biochemical engineering, electrotechnology and biomolecular science. Second-year modules offer an in-depth study of biopharmaceutical technology, chemical engineering processes, analytical chemistry, engineering materials and reaction engineering.

In your final year, you can choose either the general chemical engineering track or the Pharma & Biopharmaceutical Specialisation, which focuses on the discovery, development and manufacturing of biopharmaceuticals. Both tracks cover modules on process engineering design, process instrumentation and control, as well as unit operations.

Besides undergoing a chemical process training programme in Jurong Island and a 16-week internship with companies such as ExxonMobil, Shell, Pfizer and GlaxoSmithKline, you can also opt to undertake the Research Track. You will learn research concepts and methods, and participate in a research-based internship either locally or overseas.

WHAT YOU WILL LEARN

YEAR 1
– Engineering Drawing & Computer Applications
– Engineering Mathematics 1 & 2
– Introduction to Chemical & Biochemical Engineering
– Biomolecular Science
– Organic & Biological Chemistry
– Inorganic & Physical Chemistry
– Thermodynamics
– Electrotechnology
– Innovation Toolkit^n
– Sports & Wellness^n
– Critical Thinking and Communication^n

YEAR 2
– Chemical Engineering Laboratory 1 & 2
– Engineering Mathematics 3
– Reaction Engineering
– Transfer Processes: Fluid Flow
– Biopharmaceutical Production
– Analysis of Chemical Engineering Processes
– Environmental Technology
– Transfer Processes: Heat & Mass
– Engineering Materials
– Analytical Chemistry
– Any two IS electives^n

YEAR 3 Semester 1
General Chemical Engineering Track
– Chemical Engineering Laboratory 3
– Process Engineering Design
– Process Control & Instrumentation
– Unit Operations
– Petrochemical Technology
– Industrial Chemical Processes
– World Issues: A Singapore Perspective^n
– Any one IS elective^n

Pharma & Biopharmaceutical Specialisation Option
– Pharmaceutical Engineering Laboratory
– Process Engineering Design
– Process Control & Instrumentation
– Unit Operations for Pharmaceutical Processes
– Biopharmaceutical Quality Control
– Current Good Manufacturing Processes
– World Issues: A Singapore Perspective^n
– Any one IS elective^n

YEAR 3 Semester 2
Industry Track
– Chemical Process Training Programme
– Internship & Project

Research Track
– Introduction to Research
– Research Internship

^ Interdisciplinary Studies (IS) electives are taken on top of core discipline modules and account for 15 per cent of curriculum hours. They cover diverse areas such as the arts & humanities, business, design, and science & technology.
CAREER

CBE graduates enjoy good employment prospects as technologists, project supervisors, assistant engineers and pollution control or plant safety officers in a quality control unit.

FURTHER STUDIES

CBE graduates can pursue a wide range of degrees offered by National University of Singapore, Nanyang Technological University, Singapore Management University and Singapore University of Technology and Design. These include degree courses in chemical and biomolecular engineering, chemical engineering, environmental engineering, material sciences, chemistry, physics and biological sciences.

You may enjoy exemptions of up to two years when you apply for related degree programmes at the following overseas universities:

- University of Adelaide (Australia)
- University of Melbourne (Australia)
- University of New South Wales (Australia)
- University of Queensland (Australia)
- University of Western Australia (Australia)
- University of Manchester (UK)
- Imperial College (UK)
- Newcastle University (UK)
- University of Birmingham (UK)
- Loughborough University (UK)

In addition, you have the option of applying for a degree in Chemical Engineering at Singapore Institute of Technology. Offered in partnership with University of Newcastle (UK), this two-year direct honours programme is subsidised and will be conducted on NP’s campus.

ENTRY REQUIREMENTS

AGGREGATE TYPE ELR2B2-C

To be eligible for consideration, candidates must have the following GCE ‘O’ Level examination (or equivalent) results.

<table>
<thead>
<tr>
<th>SUBJECT</th>
<th>‘O’ LEVEL GRADE</th>
</tr>
</thead>
<tbody>
<tr>
<td>English Language*</td>
<td>1-7</td>
</tr>
<tr>
<td>Mathematics (Elementary/Additional)</td>
<td>1-6</td>
</tr>
<tr>
<td>Science (with Physics, Chemistry or Biology component)</td>
<td>1-6</td>
</tr>
<tr>
<td>or Biotechnology</td>
<td></td>
</tr>
<tr>
<td>or Computer Studies</td>
<td></td>
</tr>
<tr>
<td>or Design &amp; Technology</td>
<td></td>
</tr>
<tr>
<td>or Fundamentals of Electronics</td>
<td></td>
</tr>
</tbody>
</table>

You must also fulfill the aggregate computation requirements.

* Candidates with English as a second language (EL2) must have attained a minimum grade of 6.

CONTACT US

For the most up-to-date information on NP’s Diploma in Chemical & Biomolecular Engineering, log on to www.np.edu.sg/cbe

---

“Through problem-based learning and project work in Ngee Ann, I developed critical thinking skills and the ability to analyse problems, which is highly useful at work.”

Natassia Putri
Diploma in Chemical & Biomolecular Engineering, Class of 2014

Natassia is working as a production specialist in the Children’s Safe Drinking Water Operation Department in the Procter & Gamble Singapore Pioneer Plant.
WHAT THE COURSE IS ABOUT

With a growing world population and climate change, the pressure on water supplies is set to increase. If you want to play a role in addressing the environmental challenges facing the world today, consider the Diploma in Environmental & Water Technology (EWT).

Jointly developed with the PUB, this diploma will equip you with a firm grounding in the key areas of water technology, waste management and resource conservation, as well as pollution monitoring and control.

In your first year, you will be introduced to basic concepts of environmental science, engineering and technology with modules such as noise monitoring & control, computer aided design and hydraulics.

In your second and third year, you will move on to in-depth modules in various aspects of environmental engineering and water technology such as air and water quality monitoring & control.

In your final year, you will also apply concepts learned earlier to work on an environmental innovation & research project and go on a four-month internship.

In your final year, you will also apply concepts learned earlier to work on an environmental innovation & research project and go on a four-month internship.

CAREER

You will be well prepared for careers in government agencies, multinational corporations, university laboratories and research institutes. You can work as an environmental technologist, assistant engineer, research officer, water treatment specialist and many more. Additional WSQ certificates will also qualify you for jobs such as a Noise Monitoring Officer or Noise Control Officer.

FURTHER STUDIES

You may be granted up to one year’s exemption when you apply for environmental engineering programmes at National University of Singapore and Nanyang Technological University.

EWT graduates can also be admitted to a wide range of degree programmes from business, architecture and engineering, to science and the arts at all the four local universities as well as Singapore Institute of Technology and Singapore University of Technology and Design. You may enjoy exemptions of up to two years when you apply for related degree programmes at the following overseas universities:

- Murdoch University (Australia)
- University of Adelaide (Australia)
- University of New South Wales (Australia)
- University of Queensland (Australia)
- University of Western Australia (Australia)
- University of Manchester (UK)
- Newcastle University (UK)
- University of Birmingham (UK)

ENTRY REQUIREMENTS

AGGREGATE TYPE ELR2B2-C
To be eligible for consideration, candidates must have the following GCE ‘O’ Level examination (or equivalent) results.

<table>
<thead>
<tr>
<th>SUBJECT</th>
<th>‘O’ LEVEL GRADE</th>
</tr>
</thead>
<tbody>
<tr>
<td>English Language*</td>
<td>1-7</td>
</tr>
<tr>
<td>Mathematics (Elementary/Additional)</td>
<td>1-6</td>
</tr>
<tr>
<td>Science (with Physics, Chemistry or Biology component)</td>
<td>1-6</td>
</tr>
<tr>
<td>Biotechnology or Computer Studies or Design &amp; Technology or Fundamentals of Electronics</td>
<td></td>
</tr>
</tbody>
</table>

You must also fulfil the aggregate computation requirements.

* Candidates with English as a second language (EL2) must have attained a minimum grade of 6.

Candidates with hearing deficiency or severe vision deficiency should not apply for the course. Those with colour vision deficiency may be considered, subject to an in-house test.

CONTACT US

For the most up-to-date information on NP’s Diploma in Environmental & Water Technology, log on to www.np.edu.sg/ewt