


NGEE

ANN

POLY



SCHOOL OF

# LIFE SCIENCES & CHEMICAL TECHNOLOGY

- › BIOMEDICAL SCIENCE
- › CHEMICAL & BIOMOLECULAR ENGINEERING
- › ENVIRONMENTAL & WATER TECHNOLOGY
- › LANDSCAPE DESIGN & HORTICULTURE
- › PHARMACEUTICAL SCIENCE
- › VETERINARY BIOSCIENCE

# RE-CODE YOUR DNA

## School of **LIFE SCIENCES & CHEMICAL TECHNOLOGY**

- 6 Biomedical Science (N59)
- 10 Pharmaceutical Science (N73) **RENAMED**
- 13 Veterinary Bioscience (N90)
- 16 Landscape Design & Horticulture (N57)
- 19 Chemical & Biomolecular Engineering (N56)
- 23 Environmental & Water Technology (N74)



Your natural curiosity about the world makes you the best person to unlock the mysteries of life and create wonders of science. Start your exciting journey with the School of Life Sciences & Chemical Technology.



# 6 DIPLOMAS ONE COMMON GOAL

No matter where your interest lies, our six diplomas aim to prepare you for the world of science and fuel your passion for discovery.

## Life Sciences

### Diploma in Biomedical Science

- An established and recognised biomedical science programme
- Specialisation options in General Biomedical Science or Clinical Laboratory Technology
- Final-year Capstone Projects and internships with renowned research institutions and organisations

### Diploma in Pharmaceutical Science\* **RENAMED**

- Broad-based training opens doors to wide range of careers
- Exclusive Pharmacy Training Programme with the National University Hospital's (NUH) Pharmacy Department

\* Previously known as Pharmacy Science

### Diploma in Veterinary Bioscience

- A distinctive course that combines bioscience and veterinary science
- Learn how to care for, handle and manage animals
- Final-year projects and internships with renowned research institutions and organisations

## Horticulture & Landscape

### Diploma in Landscape Design & Horticulture

- The only diploma of its kind that combines landscape design with plant science and horticulture
- Strong partnership with the National Parks Board

## Chemical & Environmental Technology

### Diploma in Chemical & Biomolecular Engineering

- Specialisation options in General Chemical Engineering or Pharma & Biopharmaceuticals open doors to careers in a fast-growing industry
- Internship opportunities at internationally recognised companies or research facilities

### Diploma in Environmental & Water Technology

- Widen your career choices with three additional Workforce Skills Qualification (WSQ) certificates
- Supported by the National Environment Agency and PUB, Singapore's National Water Agency
- Enhanced study trip at an overseas eco-city in South Korea or Taiwan





# LOOKING FOR A SCHOOL

**that offers a robust education in life sciences and chemical technology? Here are seven reasons why Ngee Ann Polytechnic's School of Life Sciences & Chemical Technology (LSCT) is one of the most reputable institutions in Singapore.**

## **Top lecturers**

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

## **Strong partnerships**

We have close links with organisations such as the National University Hospital (NUH), National Parks Board and PUB, Singapore's National Water Agency. Our strong partnerships will provide you with lots of opportunities to learn in a real-world setting.

## **Global exposure**

You will gain a global perspective by participating in various overseas internships and immersion programmes to places such as Boston, London, Dublin, Brisbane, Bangkok, Shanghai and Seoul.

## **Mentorships**

With our Industry Mentors Network and Education & Career Guidance programmes, you can count on industry practitioners as your mentors and lecturers as your advisers. They will offer real insights about the industry and coach you in your career choice.

## **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 aquatic science, biocatalysis, cancer biology, membrane technology, fermentation, molecular diagnostics, food technology and sky-rise greening. Our edge will give you a head start in pursuing research work in these fields!

## **Proven track record**

Our graduates have completed their degrees at top universities around the world. Some have even clinched prestigious PSC, PUB, MOHH, NEA and A\*STAR scholarships.

## **More options**

Thanks to our broad-based curriculum, you can pursue a wide range of careers and degrees after graduation.

Find us online at [www.np.edu.sg/lscct](http://www.np.edu.sg/lscct)

# OUR GRADUATES WITH THAT SOMETHING XTRA

"The BMS course provided a firm foundation for me to understand the scientific background in clinical trial protocols. It played a significant role in deciding my career path and helped me secure my first two jobs at pharmaceutical MNCs."

## **Sylvia Chiang**

**Diploma in Biomedical Science, Class of 2007**

As a Senior Clinical Research Associate and Cluster Training and Compliance Manager at Novartis Asia Pacific Pharmaceuticals Pte Ltd, Sylvia specialises in monitoring early phase oncology clinical trials. She also supports the implementation of programmes that focuses on trial monitoring, training and excellence.



"With its excellent lecturers and rigorous curriculum, NP has set the stage for allowing me to love and understand biology, and find the best ways to apply theoretical knowledge in the real world."

## **Dr Sarah Chan**

**Diploma in Biotechnology\*, Class of 2003**

Dr Chan is a regional Business Development Manager for the Research & Innovation division at L'Oreal. She has a major impact on the sourcing, evaluation and negotiation of external regional opportunities to establish mutually beneficial partnerships with academia, startups and corporates. She also helps to shape L'Oreal Research strategy by analysing pertinent scientific research, technology trends and market competitors.

\*now renamed as Diploma in Biomedical Science



"The LDH course covers various fields of studies and is a fantastic stepping stone to progress into extensive career options that include landscape design, horticulture and urban planning."

## **Soh Xian Hui**

**Diploma in Landscape Design & Horticulture, Class of 2016**

Xian Hui clinched two awards in the Singapore Institute of Landscape Architects Student Design Award 2015 competition. She is currently reading Architecture at NUS School of Design & Environment.





Since 2007, 16 NP graduates have made it to the National University of Singapore's Yong Loo Lin medical school. In 2016, we also produced our first NP graduate to enter Nanyang Technological University's Lee Kong Chian medical school.

"I chose NP because it offered a healthcare-centred pharmaceutical science course. It gave me a good grounding in the development and prevention of diseases, which is what I am passionate about, as well as first-hand experience in different pharmacy settings."

### He Shiying

#### **Diploma in Pharmacy Science\*, Class of 2018**

Shi Ying hopes to pursue a career in public health as an epidemiologist, researching the spread and management of diseases.

\*now renamed as Diploma in Pharmaceutical Science



"CBE has exposed me to different aspects in the "chemical world".

It has given me a solid foundation to pursue the Earn and Learn Programme, which allows me to build my experience as a working professional, while completing my advanced diploma."

### Amira Yasmine Bte Sabar

#### **Diploma in Chemical Biomolecular Engineering, Class of 2017**

Amira Yasmine is currently completing her Advanced Diploma in Chemical Engineering under the SkillsFuture Earn and Learn Programme. She is also working as a process technician at Shell Eastern Petroleum.



"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 received an A\*STAR scholarship to pursue Veterinary Medicine at the University of Glasgow, followed by a Doctorate in animal research.



"My journey in NP has been nothing short of amazing. Multiple overseas programmes and an overseas internship have also broadened my global perspectives and deepened my knowledge about environmental issues. I hope to play a key role in solving water pollution problems in the future."

### Yao Yupeng

#### **Diploma in Environmental & Water Technology, Class of 2018**

Yupeng will be pursuing a Degree in Civil Engineering at the National University of Singapore.





Get latest updates on course

# N59 DIPLOMA IN BIOMEDICAL SCIENCE

- ▶ Broad-based curriculum that prepares you for exciting careers in Singapore's biomedical science and biotechnology sectors
- ▶ Elective modules in biomanufacturing, food science, and translational medicine provide a diverse range of opportunities to explore your career interest
- ▶ Final-year Capstone Projects and internships with local or overseas biopharmaceutical or food manufacturing companies, research institutes, and healthcare organisations
- ▶ Exclusive two-year Integrated Clinical Laboratory Training Programme at NUH for the Clinical Laboratory Technology specialisation option





## / WHAT THE COURSE IS ABOUT /

Learn to integrate and apply biological and chemical sciences knowledge to solve problems that our world faces, including infectious diseases, cancer, neurodegenerative diseases and an increasing demand for better nutrition and safer foods. Our Diploma in Biomedical Science (BMS) combines knowledge from bioinformatics, chemistry, molecular biology, immunology, microbiology, and proteomics to offer innovative solutions to these challenges. BMS is a launch pad for you to embark on a diversity of careers in the manufacturing, research and development, regulatory affairs and clinical trials, and clinical diagnoses industries.

In your first year, you will take modules such as Anatomy & Physiology, Cell Biology & Genetics, Biostatistics, Chemistry and Microbiology that will give you a firm foundation in chemistry and bioscience. You can build upon this solid foundation and choose one of our two specialisation options in your second year.

### SPECIALISATION OPTIONS

#### General Biomedical Science

Develop analytical, research and problem solving skills that are highly valued by the industry. You will acquire knowledge and skills in analytical chemistry, molecular biology, biopharmaceutical analysis, and biomanufacturing practices. This option includes a six-month local or overseas internship at biopharmaceutical or food manufacturing companies, laboratory testing and analysis companies, research institutes, and healthcare organisations.

#### Clinical Laboratory Technology

This option includes a two-year Integrated Clinical Laboratory Training Programme at NUH, where you will learn about clinical laboratory techniques and get trained alongside professionals such as doctors, nurses and medical technologists. You will also receive an additional certification in phlebotomy.

## / WHAT YOU WILL LEARN /

### YEAR 1

- Anatomy & Physiology
- Biosafety & Risk Management
- Biostatistics
- Cell Biology & Genetics
- Inorganic & Physical Chemistry
- Organic Chemistry
- Mathematics
- Microbiology
- Career & Professional Preparation I
- English Language Express\*\*
- Communication Essentials^
- Innovation Made Possible^
- Sports & Wellness^

At the end of Year 1, choose one of the two specialisation options: General Biomedical Science or Clinical Laboratory Technology

### General Biomedical Science Specialisation Option

#### YEAR 2

- Analytical Chemistry
- Applied Microbiology
- Applied Biostatistics
- Biochemistry
- Cell Culture & Bioprocess Engineering
- Immunological Techniques
- Molecular Biology & Bioinformatics
- Any two elective modules:
  - Biomanufacturing Practices
  - Biopharmaceutical Analysis
  - Food Science & Technology
  - Food Processing & Safety
- Career & Professional Preparation II
- World Issues: A Singapore Perspective^
- Any one IS elective^

#### YEAR 3

- Genomics & Proteomics
- Translational Medicine & Clinical Trials
- Capstone Project
- Internship
- Project ID: Connecting the Dots^

## CLINICAL LABORATORY TECHNOLOGY SPECIALISATION OPTION

(Integrated Clinical Laboratory Training Programme at NUH. Students will receive additional certification in phlebotomy.)

### YEAR 2

- Applied Biostatistics
- Clinical Chemistry I
- Clinical Haematology I
- Clinical Microbiology I
- Lab Techniques in Clinical Chemistry
- Lab Techniques in Clinical Haematology
- Lab Techniques in Clinical Microbiology
- Molecular Biology & Bioinformatics
- Career & Professional Preparation II
- World Issues: A Singapore Perspective^

### YEAR 3

- Clinical Chemistry II
- Clinical Haematology II
- Clinical Microbiology II
- Integrative Module
- Laboratory Endocrinology
- Molecular Diagnostics
- Translational Medicine & Clinical Trials
- Capstone Project

^ Interdisciplinary Studies (IS) modules account for up to 14 credit units of the diploma curriculum. They include modules in communication, innovation and world issues, as well as an interdisciplinary project. By bringing students from diverse diplomas together, the interdisciplinary project fosters collaboration to explore and propose solutions for real-world problems. IS aims to develop students to be agile and self-directed learners, ready for the future workplace.

\*\* For selected students only.

***To keep our curriculum current and robust, diploma modules are subject to change over the three years. Please visit our website for latest updates.***

## / CAREER /

As a versatile BMS graduate who is able to respond to fast-changing employment needs, you can enter various industries upon graduation. As an assistant food technologist, you will assist in developing new food ingredients and product prototypes through experimentation. If you aspire to become a scientist, you can choose to kick-off your career as a laboratory supporting officer or research assistant to develop novel therapeutic compounds or medical prototypes. As a graduate who specialises in clinical laboratory technology, you will be highly sought after by the hospitals as clinical laboratory technologists.

You can also take up a position as a quality control & assurance analyst in the food, pharmaceutical and biologics manufacturing industries, where you act as the "gatekeeper" to ensure vaccines, drugs, or food products are manufactured in compliance with international standards. If you are inclined towards entrepreneurship, you may choose to start off as a scientific product executive before becoming an entrepreneur.



“

The two-year integrated clinical laboratory training has equipped me with a strong foundation, which I can build on to develop my clinical skills as a practising Occupational Therapist.

”

**SHARNE LEONG**

**DIPLOMA IN BIOMEDICAL SCIENCE, CLASS OF 2016**

Sharne is reading Occupational Therapy at the University of Queensland. She was a recipient of the MOH Healthcare Merit Scholarship in 2016.

## / FURTHER STUDIES /

As a BMS graduate, you can pursue a wide range of degree programmes such as architecture, business, business administration, biological science, bioengineering, chemistry, dentistry, education, food science & technology, laboratory medicine, medicine & healthcare, medical technology, psychology and social science.

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

- Australian National University (Australia)
- Murdoch University (Australia)
- Queensland University of Technology (Australia)
- RMIT University (Australia)
- University of Adelaide (Australia)
- University of Melbourne (Australia)
- University of New South Wales (Australia)
- University of Queensland (Australia)
- University of Sydney (Australia)
- University of Technology Sydney (Australia)
- University of Western Australia (Australia)
- University of Leeds (UK)
- University of Liverpool (UK)
- University of Manchester (UK)
- University of Dundee (UK)
- University of Edinburgh (UK)
- Queen's University Belfast (UK)
- University of Auckland (New Zealand)

You can also deepen your skills and further your career by enrolling in the following post-diploma courses offered by Ngee Ann Polytechnic:

- Advanced Diploma in Medical and Pharmaceutical Technology
- Specialist Diploma in Analytical Sciences\*
- Specialist Diploma in Veterinary Clinical Practice\*

\* Offered under SkillsFuture Earn and Learn Programme

## / ENTRY REQUIREMENTS /

### AGGREGATE TYPE **ELR2B2-C**

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

SUBJECT	'O' LEVEL GRADE
English Language*	1-7
Mathematics (Elementary/Additional)	1-6
Science (with Physics, Chemistry or Biology component) or Biotechnology or Combined Science or Design & Technology or Electronics/Fundamentals of Electronics or Food & Nutrition or Physical Science or Physics/Engineering Science	1-6

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](http://www.np.edu.sg/bms)