2021 SCHOOL OF APPLIED SCIENCE #becausewecan
Your journey to a rewarding career in the world of science and technology starts here! Achieve your dreams with our diplomas, which will empower you with essential “work-ready” knowledge and skills, so that you can play a leading role in transforming lives for a better tomorrow.
School of applied science

Diploma Courses @ SAS

Applied Chemistry 4
Biologics & Process Technology 8
Chemical & Pharmaceutical Technology 12
Food Science & Nutrition 16
Pharmaceutical Science 20

The SAS Experience 24

Minimum Entry Requirements/ 2020 JAE Range of Net ELR2B2 28

why choose sas?

Our top-notch facilities provide a conducive learning environment, so as to nurture fertile minds and spark creativity through innovation. We also have a team of professional and caring lecturers who impart the essential skills you’ll need to succeed.

Look forward to...

HANDS-ON CURRICULA
Benefit from extensive training in our state-of-the-art, industry-standard pilot plants and laboratories.

WORKING WITH CUTTING-EDGE TECHNOLOGY
Our partners have invested in industry centres, giving you opportunities to come up close with the latest technologies.

LEARNING FROM VALUABLE FINAL YEAR PROJECTS
Partner with reputable pharmaceutical, chemical and food companies.

EXPANDING YOUR HORIZONS
Become socially responsible and globally connected through competitions, community projects and overseas study trips.

Industry partners

Learn from the following renowned companies:

- Barramundi Asia
- BioMérieux
- Covance (Asia)
- Health Promotion Board
- Huntsman (Singapore)
- Jumbo Seafood
- National Healthcare Group
- Pall Filtration
- Pokka
- Roche Singapore
- Sembcorp Industries
- Shimadzu (Asia Pacific)
- Singapore Refining Company
- Tan Tock Seng Hospital
Diploma in Applied Chemistry

(formerly known as Diploma in Medicinal Chemistry)
The Diploma in Applied Chemistry is for you if you are eager to explore the wonders of chemical and pharmaceutical compounds.

Create meaningful impact on lives by developing innovative chemicals and pharmaceuticals. Get equipped with skills in chemical analysis and synthesis, which are highly valued and transferable across the chemical and pharmaceutical industries. Hone your skills in designing experiments, and keep abreast of emerging technologies in chemistry by being involved in research projects with industry players.

This diploma lets you...

- Learn how to develop innovative solutions to address current global challenges in the chemical and pharmaceutical industries.
- Gain industry-relevant knowledge and technical skills from a range of chemistry modules and extensive hands-on training in laboratories with state-of-the-art equipment.
- Look forward to a rewarding and dynamic career in large chemical and pharmaceutical companies, where you co-create value-added solutions and products.

Career Paths
- Analytical Chemist
- Associate Scientist
- Formulation Chemist
- Laboratory Analyst
- Laboratory Officer
- Product Researcher
- Quality Assurance Specialist
- Quality Control Chemist
- Regulatory Affairs Executive
- Research & Development Officer
- Technical Sales & Support Representative
- Quality Control Chemist
- Regulatory Affairs Executive
- Research & Development Officer
- Technical Sales & Support Representative

### Year 1
#### CORE MODULES
- Analytical Chemistry
- Biochemistry
- Cell & Molecular Biology
- Effective Communication Skills
- Fundamentals of Innovation & Enterprise
- Inorganic Chemistry
- Introduction to Applied Chemistry
- Laboratory Skills
- Mathematics
- Microbiology Techniques
- Organic Chemistry
- Physical Chemistry

### Year 2
#### CORE MODULES
- Bioanalytical Chemistry
- Chemical Reactions & Mechanisms
- Chromatographic Techniques
- Communication & Personal Branding
- Experimental Design in Chemistry
- Innovation & Enterprise Project
- Instrumental Analysis Techniques
- Laboratory Quality Management & Statistics
- Organometallic & Catalytic Chemistry
- Pharmaceutical Chemistry
- Spectroscopic Techniques
- Synthesis & Purification Techniques

### Year 3
#### CORE MODULES
- Final Year Project
- Good Manufacturing Practice
- Internship Programme
- Sustainable Chemistry

*General Studies
Students are to complete 30 hours of General Studies modules each semester.
Diploma in Biologics & Process Technology
## course curriculum

### YEAR 1

**CORE MODULES**
- Algebra
- Biochemical Science
- Calculus
- Chemical Engineering Principles
- Effective Communication Skills
- EHS for a Sustainable Economy
- Flow Diagrams & Material Selection
- Fundamentals of Innovation & Enterprise
- Inorganic & Physical Chemistry
- Introduction to Biologics Manufacturing
- Organic Chemistry
- Process Engineering Fundamentals

### YEAR 2

**CORE MODULES**
- Analytical Chemistry
- Basic Process Operations
- Bioprocess Applications
- Differential Equations & Series
- Fluid Mechanics & Equipment
- Heat & Mass Transfer
- Molecular & Cell Biology
- Probability & Statistics
- Process Control & Automation
- Process Integration Project
- Process Safety
- Thermodynamics

### YEAR 3

**CORE MODULES**
- Communication & Personal Branding
- Internship Programme
- Process Operations & Optimisation
- Reactor Systems
- Semestral Full-Time Project

### Elective modules (choose three)

**BIOPHARMACEUTICAL TECHNOLOGY ELECTIVES**
- Analytical Biochemistry
- Biologics Processes
- Biologics Purification
- Quality Systems & Good Manufacturing Practice

**PROCESS TECHNOLOGY ELECTIVES**
- Advanced Instrumentation & Control
- Petrochemical Processes
- Primary Pharmaceutical Processes
- Secondary Pharmaceutical Processes
- Specialty Chemicals

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This diploma lets you...

Unravel the secrets of biologics and how they have altered the course of modern medicine and improved the lives of patients.

Experience an extended 31-week internship programme with leading biopharmaceutical companies — an opportunity borne out of years of partnership and trust.

Look forward to a rewarding and dynamic career in the biopharmaceutical industry, producing vaccines, anti-cancer drugs and other modern medicines.

### Career Paths

- Manufacturing Engineer
- Operations Associate
- Process Development Engineer
- Project Engineer
- Quality Assurance Specialist
- Quality Control Officer
- Regulatory Affairs Officer

- Compliance & Qualification Engineer
- Control & Automation Engineer
- Electrical & Instrumentation Engineer
- Laboratory Analyst
- Manufacturing Biotechnologist
- Manufacturing Sciences and Technology Officer
- Safety & Environment Engineer
- Scientific Support Specialist
- Validation Executive

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*General Studies

Students are to complete 30 hours of General Studies modules each semester.
Diploma in Chemical & Pharmaceutical Technology
The Diploma in Chemical & Pharmaceutical Technology is for you if you aspire to build a more sustainable world and enhance lives by crafting innovative solutions.

Embark on an exciting journey to become a highly skilled chemical technologist with knowledge of chemistry, biotechnology, mathematics, IT, chemical engineering concepts, equipment and products. You will also attain valuable practical know-how and gain expertise working in the state-of-the-art chemical and pharmaceutical pilot plants and fully equipped laboratories.

This diploma lets you...

Discover how chemical compounds can be transformed into useful everyday products and life-saving medicines with the use of advanced technologies.

Gain knowledge and skills in advanced chemical and pharmaceutical manufacturing technologies.

Explore career opportunities that await you in industries ranging from petrochemical and pharmaceutical to environmental and clean energy.

Career Paths

- Assistant Process Engineer
- Laboratory Analyst
- Manufacturing Biotechnologist
- Maintenance Engineer
- Operations Associate
- Quality Control Officer
- Quality Assurance Specialist
- R&D Officer
- Safety & Environment Engineer
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- R&D Officer
- Safety & Environment Engineer
- Validation Executive
Diploma in Food Science & Nutrition
The Diploma in Food Science & Nutrition is for you if you want to improve the well-being of the community by developing innovative and nutritious food products.

Become a food scientist and discover the wonders of science in food and nutrition as you conceptualise and develop new and exciting food products to satisfy the taste buds of consumers today. This course prepares you for the popular food science and nutrition industry. It provides you with a strong foundation in food safety and quality, food chemistry and microbiology, as well as food processing and food ingredient applications.

This diploma lets you...

Find out how food ingredients interact to create fascinating flavours and textures, and what is involved in ensuring what we eat is safe.

Learn from lecturers with industry experience and make your mark in local and international competitions.

Gain opportunities to work in food-related multinational organisations, or pursue further studies at universities in Singapore, Australia and the United Kingdom.

Career Paths

- Dietetic Assistant
- Food Hygiene Officer
- Food Safety Analyst
- Food Safety Executive
- Food Service Executive
- Food Technologist
- Health Promotion Executive
- Process & Manufacturing Executive
- Product Development Executive
- Quality Assurance Executive
- Quality Control Executive

The Diploma in Food Science & Nutrition is for you if you want to improve the well-being of the community by developing innovative and nutritious food products.
Diploma in Pharmaceutical Science
**The Diploma in Pharmaceutical Science** is for you if you are fascinated by how medicines work and aspire to help others fight illnesses through the correct use of medication.

Developed with the National Healthcare Group, Singapore Health Services and the Pharmaceutical Society of Singapore, this course helps you build a solid foundation in pharmaceutical science and related areas like clinical trials management and pharmaceutical operations. You will also be trained in pharmacology and pharmacotherapy, which help you in providing high-quality healthcare to patients.

### YEAR 1

**CORE MODULES**
- Anatomy & Physiology
- Biochemistry
- Cell & Molecular Biology
- Complementary & Alternative Modalities
- Effective Communication Skills
- Fundamentals of Innovation & Enterprise
- Introduction to Pharmaceutical Science
- Mathematics
- Microbiology
- Organic Chemistry
- Physical & Inorganic Chemistry
- Statistics

### YEAR 2

**CORE MODULES**
- Drug Delivery Systems
- Good Dispensing Practice
- Immunology
- Pathology
- Pharmacology I
- Pharmacology II
- Pharmacotherapy I
- Pharmacotherapy II
- Semestral Project

**Specialisation (choose one)**

**PHARMACY PRACTICE**
- Pharmaceutical Chemistry & Analysis
- Pharmaceutical Manufacturing Technology
- Pharmacy Practice I

**CLINICAL TRIALS**
- Clinical Laboratory I
- Good Clinical Practice
- Principles of Clinical Trials

*General Studies*

Students are to complete 30 hours of General Studies modules each semester.

## Career Paths

- Clinical Research Coordinator
- Pharmaceutical Product Executive
- Pharmacy Retail Executive
- Pharmacy Technician
- Regulatory Affairs Executive

This diploma lets you...

Discover how medications work and how our body responds to them. This is also the only course in Singapore that offers a specialisation in clinical trials.

Be mentored by licensed pharmacists, biologists as well as sales and marketing practitioners in the pharmaceutical industry.

Find opportunities at the front line of major pharmacies in Singapore. Graduates have also furthered their studies at reputable local or overseas universities.

### Course Curriculum

- **YEAR 1**
  - **CORE MODULES**
  - **YEAR 2**
  - **CORE MODULES**
  - **YEAR 3**
  - **CORE MODULES**

- **PHARMACY PRACTICE SPECIALISATION**
- **CLINICAL TRIALS SPECIALISATION**

**JAE CODE C65**
I’m grateful that NYP has given me this chance to pursue my passion.

Shahreyll Khairoullah
I met many people and gained a wealth of knowledge. I also thoroughly enjoyed the training sessions with the lecturers. This has become one of my best memories at NYP.

Christy Chung

CHRISTY CHUNG
DIPLOMA IN MEDICINAL CHEMISTRY (NOW KNOWN AS APPLIED CHEMISTRY)

Christy participated in the inaugural Chemical Laboratory Technology trade at WorldSkills Singapore Competition 2019.

She was trained intensively by her lecturers to sharpen and improve her laboratory techniques and skills, and was thrilled when she was chosen to represent NYP at the national level competition.

Christy went up against 10 other contenders from universities, polytechnics and the Institutes of Technical Education and saw her hard work and determination pay off when she was awarded the gold medal.

Christy credits the guidance she received from her lecturers for her win. “By providing me the necessary knowledge and skills, I was equipped to not only compete, but also excel on the national stage,” she says.

Be among the best as you become one of our award-winners

Uncover your fullest potential as nurturing lecturers guide you

CHEAH KAH WEI
DIPLOMA IN PHARMACEUTICAL SCIENCE

For six consecutive semesters, star student Kah Wei made it to the Director’s List — NYP’s recognition system for students who excel academically. He believes he could not have done it without the guidance of his nurturing lecturers, who went the extra mile to guide, motivate and inspire him. He also received a commendable string of awards: the prestigious NYAA Gold Award, the AstraZeneca Bronze Medal and the AstraZeneca Award for Outstanding Project Work.

Kah Wei’s NYP experience has left him with a desire to help others, and so he has served as a student mentor to his Year 1 juniors. He now has a deeper interest in the science, and aspires to work in the healthcare industry, so that he can make a difference in the lives of the sick and needy.

My lecturers have given me the push I needed to excel, through their firm encouragement and by sharing stories of their experiences.

Cheah Kah Wei
Minimum Entry Requirements

Applicants for the diploma courses must have obtained the following minimum GCE O-Level results taken at not more than two sittings of the Singapore-Cambridge GCE O-Level Examination. The minimum GCE O-Level entry requirements for the courses under the EAE, JAE and DAE are:

The minimum GCE N-Level entry requirements for the courses under the PFP are:

ELMAB3 ① raw aggregate score (excluding CCA bonus points) ≤ 12

### Subject | Grade
---|---
English Language Syllabus A | 3
Mathematics (Syllabus A/Additional) | 3
One of the following relevant subjects:  
- Science (Chemistry/Biology)  
- Science (Physics/Biology)  
- Science (Physics/Chemistry)  
- Food & Nutrition  
- Design & Technology
Any two other subjects excluding CCA | 3

① On the day of the release of the GCE O-Level examination results, Sec 4N(A) students who obtained an ELMAB3 (English, Maths, Best 3 Subjects) raw aggregate score of 12 points or better (excluding CCA bonus points) will be eligible to apply to NYPFP, provided that they have also obtained the minimum required grades listed in the table above.

Admission procedures for diploma courses

Depending on your qualifications, you may apply through one of the following Admission Exercises:

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<thead>
<tr>
<th>Qualifications</th>
<th>Method of application</th>
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</thead>
<tbody>
<tr>
<td>GCE O-Levels</td>
<td>Early Admissions Exercise (EAE) Application opens in June. Joint Admissions Exercise (JAE) Application commences on the day of release of the GCE O-Level results.</td>
</tr>
<tr>
<td>GCE N-Levels</td>
<td>Polytechnic Foundation Programme (PFP) Application commences on the day of release of the GCE O-Level results.</td>
</tr>
<tr>
<td>ITE Certificates</td>
<td>Joint Polytechnic Admissions Exercise (JPAE) Application opens in February. Early Admissions Exercise (ITE) (EAE(I)) Application opens in June. Please refer to our website for more details on Direct Admissions Exercise (DAE) Application opens</td>
</tr>
<tr>
<td>GCE O-Levels (those who did not participate in JAE/IPY4/IGCSE)</td>
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<td>GCE A-Levels/IB</td>
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<td>ITE Certificates/Malaysian SPM/STPM</td>
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<td>Other foreign qualifications</td>
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ELR2B2

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<thead>
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<th>Courses</th>
<th>JAE Course Code</th>
<th>2020 JAE Range of Net ELR2B2</th>
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<tr>
<td>Applied Chemistry (formerly known as Medicinal Chemistry)</td>
<td>C45</td>
<td>6-10</td>
</tr>
<tr>
<td>Biologics &amp; Process Technology</td>
<td>C49</td>
<td>9-12</td>
</tr>
<tr>
<td>Chemical &amp; Pharmaceutical Technology</td>
<td>C73</td>
<td>6-15</td>
</tr>
<tr>
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<td>C69</td>
<td>6-13</td>
</tr>
<tr>
<td>Pharmaceutical Science</td>
<td>C65</td>
<td>5-10</td>
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