

2024

SCHOOL OF APPLIED SCIENCE

#becausewecan

nanyang polytechnic

PROFESSIONAL COMPETENCY MODEL

#becausewecan

Introducing: A curriculum that helps you develop crucial skills to succeed in your future workplace.

Instead of learning subjects in silos, you'll be equipped with the skills and competencies needed to perform work tasks, similar to what you will do in the workplace.

A key feature? PCM courses are co-developed by industry majors and leading companies. They also co-teach and co-mentor our students. You may even emerge with additional industry certifications alongside your diploma, putting you ahead of the pack.

Some of NYP's industry partners include Google, Microsoft, NVIDIA, Ubisoft, Capella and Shimadzu.

Find out more at nyp.edu.sg/PCM


GAME CHANG ER

School of Applied Science (SAS)

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For more information, go to nyp.edu.sg

 contactNYP@nyp.edu.sg

 fb.com/nanyangpoly

 instagram.com/nanyangpoly

 tiktok.com/@nanyangpoly



Why NYP?

THE SECRET SAUCE

What will set you apart? Being innovative, and creating solutions. Gain that #winningquality here.

INDUSTRY EDGE

Our strong network of industry partners = exciting opportunities for development.

GLOBETROT

Travel around the world for internships, competitions, exchange programmes, or immersion trips.

80 CCAS

Spark that fire and find your family. Sports, dance, music, art — there's plenty here to explore.

LOCATION

6-min walk from Yio Chu Kang MRT Station and 3 bus stops away from Ang Mo Kio Bus Interchange.

FACILITIES FUN

We've got gaming lounges, dance and jamming studios — accessible to only students.

FAM FIT

Soak in our nurturing and caring culture. Find your second family and grow with us.

Why choose SAS?

Our top-notch facilities provide a conducive learning environment to help nurture potential and spark creativity through innovation. We also have a team of professional and caring lecturers to impart the essential skills you'll need to succeed.



Look forward to...



COMPETENCY-BASED 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 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)
- Dow Chemical
- Health Promotion Board
- Huntsman (Singapore)
- Jumbo Seafood
- Merck
- National Healthcare Group
- Pall Corporation
- POKKA
- Procter & Gamble
- Roche Singapore
- Sembcorp Industries
- Shimadzu (Asia Pacific)
- Singapore Refining Company
- Tan Tock Seng Hospital



JAE CODE C27

Common Science Programme



Common Science Programme

This is for you if you want to immerse yourself in the world of applied science for a semester before picking your preferred diploma.

Embark on inspiring learning journeys with industry leaders and explore the exciting possibilities of science.

This programme lets you...

- Choose a suitable diploma and career path for yourself after exploring your options in the first semester.
- Acquire essential skills through an agile and engaging curriculum that keeps up with industry changes.
- Gain invaluable knowledge and skills from multiple disciplines in a dynamic learning environment.
- Cultivate life skills such as innovation, critical thinking, interpersonal skills and collaboration through project-based learning.

Benefits

- Have more time to discover your area of interest and aptitude.
- Explore the various applied science disciplines before making an informed choice.
- Gain the fundamental skills to strengthen your learning in the diploma of your choice.

Course Structure

The NYP-PCM for the Common Science Programme consists of:

• 5 Competency Units

Within each Competency Unit, the skills and knowledge of different disciplines are integrated and taught holistically. This enables you to fulfil specific work tasks upon completion.

• 1 Competency Canvas

The Competency Canvas, Applied Science in Action, consists of a collection of Competency Units and a Work-Integration Unit (WIU), which is a workplace-contextualised project. Competency Canvases help you develop and demonstrate your abilities to perform work tasks at a higher proficiency.

• 11 General Studies Modules

You will complete a total of 11 General Studies modules across the Common Science Programme and your chosen diploma course. Explore other areas of interest beyond your chosen area of specialisation.

Competency Units

YEAR 1, SEMESTER 1

- Applied Calculus in Scientific Processes
- Applied Science Project (WIU)
- Biochemical Analysis
- Chemical Laboratory Skills
- Data & Statistical Methods
- Instruments & Measurements

YEAR 1, SEMESTER 2 ONWARDS

Get a foundation and learn about the different diplomas you can progress to:

- Diploma in Applied Chemistry
- Diploma in Biologics & Process Technology
- Diploma in Chemical & Pharmaceutical Technology
- Diploma in Food Science & Nutrition
- Diploma in Pharmaceutical Science



JAE CODE C45

Diploma in Applied Chemistry

JAE CODE C45



Diploma in Applied Chemistry

This is for you if you want to develop innovative chemical and pharmaceutical solutions that impact lives. Or play a part for the environment by developing eco-friendly chemical solutions that tackle the challenges faced by the chemical and pharmaceutical industries.

Gain insights into laboratory management and be skilled at designing scientific experiments. Stay ahead of emerging technologies in chemistry through research projects with industry leaders.

This diploma lets you...

- Develop competencies in chemical synthesis and analysis, which are highly valued and transferable across specialty chemical, food, pharmaceutical and biologics industries.
- Gain industry-relevant knowledge and technical skills and get extensive hands-on training in laboratories with state-of-the-art equipment.
- Be mentored by industry leaders from Shimadzu, AGC Inc, DSM Nutritional and Merck.
- Look forward to a rewarding and dynamic career in leading chemical, food, pharmaceutical and biologics industries, where you co-create value-added solutions and products.

Career Paths

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

Benefits

- Attain invaluable skills in designing experiments to develop value-added solutions.
- Partner renowned industry leaders in projects to develop solutions that address global challenges in the chemical and pharmaceutical industries.
- Develop innovative chemicals and pharmaceuticals to make meaningful impact on lives.

Course Structure

The NYP-PCM for Diploma in Applied Chemistry consists of:

• 25 Competency Units

Within each Competency Unit, the skills and knowledge of different disciplines are integrated and taught holistically. This enables you to fulfil specific work tasks upon completion.

• 6 Course Competencies

Each Course Competency consists of a collection of Competency Units that develops specific learning outcomes and competencies.

• 4 Competency Canvases

Each Competency Canvas consists of a collection of Competency Units and a Work-Integration Unit (WIU), which is a workplace-contextualised project. Competency Canvases help you develop and demonstrate your abilities to perform work tasks at a higher proficiency.

• 1 Final Year Project

• 1 Internship Programme

• 11 General Studies Modules

These modules allow you to explore other areas of interest beyond your chosen area of specialisation.

JAE CODE C45

Competency Canvases

These consist of Competency Units and workplace-contextualised projects known as Work-Integration Units (WIUs).

1. Applied Science in Action

- Applied Science Project (WIU)
- Biochemical Analysis
- Chemical Laboratory Skills
- Data & Statistical Methods
- Instruments & Measurements

2. Product Design

- Organic Methodologies
- Product Design Project (WIU)
- Sample Preparation & Extraction Techniques
- Specialty Chemicals Development

3. Experimental Design

- Chromatographic Techniques
- Experimental Design Project (WIU)
- Organometallic & Catalytic Applications
- Sustainable Design & Implementation
- Synthesis & Purification Techniques

4. Chemical Analysis

- Chemical Analysis Project (WIU)
- Chemical Structures & Reactivities
- Chromatographic Techniques
- Sample Preparation & Extraction Techniques

Course Competencies

Completing the required Competency Units will equip you with six Course Competencies:

1. Bioanalytical & Microbial Testing
2. Experimental & Product Design
3. Instrumental Analysis
4. Laboratory Operations & Quality System
5. Synthesis & Purification
6. Wet Analytical Applications

Competency Units

YEAR 1

- Applied Calculus in Scientific Processes
- Applied Science Project (WIU)
- Biochemical Analysis
- Chemical Laboratory Skills
- Chemical Structures & Reactivities
- Chromatographic Techniques
- Data & Statistical Methods
- Instruments & Measurements
- Microbiology Techniques
- Organic Methodologies
- Sample Preparation & Extraction Techniques
- Titrimetric & Gravimetric Analysis

YEAR 2

- Bioanalytical Techniques
- Chemical Analysis Project (WIU)
- Chemical Systems
- Elemental Analysis
- Laboratory Quality Management
- Pharmaceutical Synthesis & Formulation
- Product Design Project (WIU)
- Reactions & Mechanism
- Specialty Chemicals Development
- Spectroscopic Techniques
- Synthesis & Purification Techniques

YEAR 3

- Applied Research & Development
- BizSAFE
- Experimental Design Project (WIU)
- Final Year Project (WIU)
- Good Manufacturing Practice
- Internship Programme (WIU)
- Organometallic & Catalytic Applications
- Sustainable Design & Implementation

Our Industry Partners



PREM ANAND

EXECUTIVE OFFICER & SENIOR GENERAL MANAGER, SHIMADZU (ASIA PACIFIC)

Shimadzu is honoured to partner NYP in bringing cutting-edge innovation and advanced technologies in laboratory instruments to academia. Being the only Nobel Prize-winning organisation in the industry, we have been spearheading futuristic technologies including Analytical Intelligence, Living Instruments and more. As part of our partnership, we will bring the precious knowledge of these innovations and more to NYP and co-create the curriculum.

The NYP-Shimadzu Innovation N Education (NYP-SHINE) Centre has contributed to the scientific landscape of Singapore. Similarly, our partnership in the Professional Competency Model (PCM) of the Diploma in Applied Chemistry will continue to enhance the quality of education in Singapore and shine a path for others to follow in the APAC region.

Shimadzu has, in the last 30 years, developed many mutually beneficial academic collaborations with tertiary institutes in Asia. As technology has rapidly accelerated due to COVID-19, it is essential that learners and educators keep up with the times — an endeavour that is supported by Shimadzu's Digital Classrooms and Digital Laboratories. As part of our Corporate Philosophy of "Contributing to Society through Science & Technology", Shimadzu looks forward to collaborating with NYP to nurture a professionally competent and industry-ready workforce.



NG SOON HUANG

HEAD OF QCA, DSM NUTRITIONAL PRODUCTS ASIA PACIFIC

DSM has been collaborating with NYP for more than 10 years. We are very excited to co-mentor and co-assess NYP students with this enhanced teaching pedagogy. DSM's purpose is to create brighter lives for all. We believe that through science and innovation, we can tackle some of the world's greatest challenges like malnutrition. With this industry-relevant curriculum, learners will be equipped with various laboratory and leadership skills and, importantly, a bigger vision on the importance of nutrition, which will greatly prepare them for their future careers.



CASEY ONG

SENIOR DIRECTOR, CHEMICALS DIVISION, AGC ASIA PACIFIC

The NYP-PCM is carefully designed with the holistic needs of their students, the workforce and the industries in mind. By collaborating with major industry players and companies, NYP gives their students the opportunity to acquire practical skills and industry-specific insights, so they may graduate as professionally competent individuals. AGC Asia Pacific is proud to support NYP in developing a generation of chemists and engineers who are both technically proficient and business-savvy.



JAE CODE C49

Diploma in Biologics & Process Technology



Diploma in Biologics & Process Technology

This is for you if you want to be at the forefront of cutting-edge biopharmaceutical manufacturing technology.

Join the growing biologics manufacturing sector that produces biopharmaceuticals including vaccines and medicinal products used for treating conditions such as cancer, diabetes, haemophilia, and infectious and autoimmune diseases.

Unravel the secrets of biologics, such as vaccines and insulin, and how they have altered the course of modern medicine and improved lives. Acquire versatile engineering skills to optimise and modulate high-tech biologics, pharmaceutical and chemical processes.

This diploma lets you...

- Experience the only full-time diploma in Singapore that focuses on biologics manufacturing technology.
- Learn to make high-value medicinal drugs from living cells.
- Simulate, operate and optimise processes in high-tech biologics, pharmaceutical and chemical manufacturing plants.

Career Paths

- Laboratory Analyst
- Manufacturing Biotechnologist
- Manufacturing Sciences & Technology Officer
- Operations Associate
- Quality Assurance Specialist
- Quality Control Officer
- Regulatory Affairs Officer
- Safety & Environment Engineer
- Scientific Support Specialist
- Validation Executive

Benefits

- Explore internship programme opportunities with leading biopharmaceutical companies to gain in-depth industry experience.
- Look forward to a rewarding and dynamic career in the growing biopharmaceutical industry.
- Be equipped with practical skills and knowledge through training at the state-of-the-art NYP-Pall Centre of Excellence in Biologics Manufacturing Technology and internships at world-class biopharmaceutical manufacturing firms.
- Start your career in world-class multinational organisations or pursue further studies locally or abroad.

Course Structure

The NYP-PCM for Diploma in Biologics & Process Technology consists of:

• 25 Competency Units

Within each Competency Unit, the skills and knowledge of different disciplines are integrated and taught holistically. This enables you to fulfil specific work tasks upon completion.

• 6 Course Competencies

Each Course Competency consists of a collection of Competency Units that develops specific learning outcomes and competencies.

• 5 Competency Canvases

Each Competency Canvas consists of a collection of Competency Units and a Work-Integration Unit (WIU), which is a workplace-contextualised project. Competency Canvases help you develop and demonstrate your abilities to perform work tasks at a higher proficiency.

• 1 Final Year Project

• 1 Internship Programme

• 11 General Studies Modules

These modules allow you to explore other areas of interest beyond your chosen area of specialisation.

JAE CODE C49

Competency Canvases

These consist of Competency Units and workplace-contextualised projects known as Work-Integration Units (WIUs).

1. Applied Science in Action

- Applied Science Project (WIU)
- Biochemical Analysis
- Chemical Laboratory Skills
- Data & Statistical Methods
- Instruments & Measurements

2. Process Improvement

- Data & Statistical Methods
- Process Improvement Project (WIU)
- Process Operations & Optimisation
- Quality Systems & Good Manufacturing Practice
- Safe Process Operations

3. Process Integration

- Engineering Drawing
- Heat Transfer Analysis
- Mass Balance Applications
- Mass Transfer Operations
- Process Integration Project (WIU)

4. Quality Risk Assessment

- Biopharmaceutical Operations & Applications
- Chemical Laboratory Skills
- Quality Risk Assessment Project (WIU)
- Safety & Risk Management

5. Biologics Manufacturing

- Biologics Downstream Operations
- Biologics Manufacturing Project (WIU)
- Biologics Upstream Operations
- Biopharmaceutical Analysis

Course Competencies

Completing the required Competency Units will equip you with six Course Competencies:

1. Biologics Downstream Processes
2. Biologics Upstream Processes
3. Environment, Health & Safety
4. Production Optimisation
5. Quality Control & Assurance
6. Transfer & Unit Processes

Competency Units

YEAR 1

- Applied Calculus in Scientific Processes
- Applied Science Project (WIU)
- Biochemical Analysis
- Biopharmaceutical Analysis
- Biopharmaceutical Operations & Applications
- Chemical Laboratory Skills
- Data & Statistical Methods
- Instruments & Measurements
- Mass Balance Applications
- Molecular Biology Techniques
- Organic Synthesis Methods
- Sustainability Practices

YEAR 2

- Biologics Downstream Operations
- Biologics Upstream Operations
- Energy Balance Applications
- Engineering Drawing
- Fluid Mechanics Applications
- Heat Transfer Analysis
- Mass Transfer Operations
- Process Integration Project (WIU)
- Quality Risk Assessment Project (WIU)
- Quality Systems & Good Manufacturing Practice
- Safe Process Operations
- Safety & Risk Management

YEAR 3

- Biologics Manufacturing Project (WIU)
- Final Year Project (WIU)
- Internship Programme (WIU)
- Process Control & Automation
- Process Improvement Project (WIU)
- Process Operations & Optimisation
- Reactor Operations
- Thermodynamic Cycles & Applications

Our Industry Partners



NELSON TEO

HEAD OF MANUFACTURING EXCELLENCE, TAKEDA MANUFACTURING SINGAPORE

Guided by Takeda's corporate values, we aim to make a positive impact on the communities in which we operate. As we strive to use our proprietary know-hows to find better, sustainable solutions for patients, investments in the future workforce will be imperative. The curriculum of the Diploma in Biologics & Process Technology course provides a strong foundation to enable learners to be industry-ready. The approach that NYP takes to involve the industry partners clearly presents a forward-looking strategic plan to turn raw talent into high value-adding professionals for the industry. Takeda is glad to be part of this effort to support the building of a strong talent pool for the biopharmaceutical landscape.



KPP PRASAD

VICE PRESIDENT/SITE LEADER, TESSA THERAPEUTICS

The Diploma in Biologics & Process Technology course provides learners with an excellent foundation in scientific and engineering principles essential for a career in the pharmaceutical and biopharmaceutical manufacturing sector. This is a growth industry in Singapore, offering rewarding career opportunities. Statistics, data analytics, safety risk assessment, good manufacturing practices, and quality systems are some of work-relevant topics that are taught in the course. Learners can also leverage the project modules and internship programmes to prepare for their future employment.



CAINE LEONG

HEAD OF COMMERCIAL, ASIA PACIFIC, MERCK CONTRACT TESTING SERVICES

We're excited to collaborate with NYP to enhance the diploma programme with internship opportunities. An internship experience within a Good Manufacturing Practice (GMP) biosafety testing facility will provide learners with insights into the biosafety testing requirements within the biomanufacturing industry. They will learn about the importance of ensuring the safety of the world's medicines by delivering the highest quality testing services and regulatory expertise to bring life-changing medicines to patients.



JAE CODE C73

Diploma in
Chemical &
Pharmaceutical
Technology



Diploma in Chemical & Pharmaceutical Technology

This is for you if you want to craft innovative and green solutions to improve sustainability and enhance lives. Make a significant impact in fields ranging from chemical and pharmaceutical to environmental and sustainable energy.

Embark on an exciting learning journey in advanced chemical and pharmaceutical manufacturing technologies.

Contribute to the growing chemical and pharmaceutical sector as a highly skilled chemical technologist with a strong foundation in science and technology.

This diploma lets you...

- Discover how advanced technologies transform chemical compounds into useful everyday products and life-saving medicines.
- Attain practical competencies and valuable expertise in advanced chemical and pharmaceutical manufacturing technologies by working at our Secondary Pharmaceutical Technology Centre and Active Pharmaceutical Ingredient Plant.
- Seize career opportunities in diverse fields such as oil and gas, petrochemicals, specialty chemicals, high-end polymers, and pharmaceuticals/medicinal products.

Career Paths

- Assistant Process Engineer
- Laboratory Analyst
- Maintenance Engineer
- Manufacturing Biotechnologist
- Operations Associate
- Quality Control Officer
- Quality Assurance Specialist
- Research & Development Officer
- Safety & Environment Engineer
- Validation Executive

Benefits

- Gain valuable knowledge required to become a skilled chemical technologist.
- Attain practical know-how and expertise in diverse fields.
- Experience what it's like working in state-of-the-art chemical and pharmaceutical pilot plants and laboratories.

Course Structure

The NYP-PCM for Diploma in Chemical & Pharmaceutical Technology consists of:

• 25 Competency Units

Within each Competency Unit, the skills and knowledge of different disciplines are integrated and taught holistically. This enables you to fulfil specific work tasks upon completion.

• 6 Course Competencies

Each Course Competency consists of a collection of Competency Units that develops specific learning outcomes and competencies.

• 5 Competency Canvases

Each Competency Canvas consists of a collection of Competency Units and a Work-Integration Unit (WIU), which is a workplace-contextualised project. Competency Canvases help you develop and demonstrate your abilities to perform work tasks at a higher proficiency.

• 1 Final Year Project

• 1 Internship Programme

• 11 General Studies Modules

These modules allow you to explore other areas of interest beyond your chosen area of specialisation.

JAE CODE C73

Competency Canvases

These consist of Competency Units and workplace-contextualised projects known as Work-Integration Units (WIUs).

1. Applied Science in Action

- Applied Science Project (WIU)
- Biochemical Analysis
- Chemical Laboratory Skills
- Data & Statistical Methods
- Instruments & Measurements

2. Process Sustainability

- Chemical Plant Equipment Operations
- Sustainability Practices
- Sustainability Project (WIU)
- Water Treatment & Applications

3. Process Integration

- Engineering Drawing
- Heat Transfer Analysis
- Mass Balance Applications
- Mass Transfer Operations
- Process Integration Project (WIU)

4. Safety Management

- Chemical Laboratory Skills
- Process Control & Automation
- Safety & Risk Management
- Safe Process Operations
- Safety Management Project (WIU)

5. Energy Optimisation

- Data & Statistical Methods
- Energy Analysis & Optimisation
- Energy Balance Applications
- Energy Optimisation Project (WIU)
- Fluid Mechanics Applications
- Process Operations & Optimisation
- Thermodynamic Cycles & Applications

Course Competencies

Completing the required Competency Units will equip you with six Course Competencies:

1. Energy & Resource Management
2. Laboratory Analysis & Quality Management
3. Manufacturing Technology & Processes
4. Process Operations & Control
5. Safety & Health Management
6. Transfer Processes

Competency Units

YEAR 1

- Applied Calculus in Scientific Processes
- Applied Science Project (WIU)
- Biochemical Analysis
- Chemical Analysis Methods
- Chemical Laboratory Skills
- Chemical Plant Equipment Operations
- Data & Statistical Methods
- Instruments & Measurements
- Mass Balance Applications
- Organic Synthesis Methods
- Sustainability Practices
- Water Treatment & Applications

YEAR 2

- Energy Balance Applications
- Engineering Drawing
- Fluid Mechanics Applications
- Heat Transfer Analysis
- Mass Transfer Operations
- Pharmaceutical Manufacturing
- Process Control & Automation
- Process Integration Project (WIU)
- Quality Systems & Good Manufacturing Practice
- Safe Process Operations
- Safety & Risk Management
- Sustainability Project (WIU)

YEAR 3

- Energy Analysis & Optimisation
- Energy Optimisation Project (WIU)
- Final Year Project (WIU)
- Internship Programme (WIU)
- Process Operations & Optimisation
- Reactor Operations
- Safety Management Project (WIU)
- Thermodynamic Cycles & Applications

JAE CODE C73

Our Industry Partners

CRODA

CHAN CHIAN YEOW

OPERATIONS DIRECTOR, CRODA SINGAPORE

Croda's commitments are to be Climate, Land and People Positive by 2030 and to be the most sustainable supplier of innovative ingredients. As part of our ambitious goals, Croda Singapore has collaborated with NYP to create the Professional Competency Model (PCM) curriculum for the Diploma in Chemical & Pharmaceutical Technology. The new curriculum places emphasis on sustainability, safety management and Industry 4.0 applications. These are the megatrends that will address the current needs in the process industry and, most importantly, prepare NYP graduates in a VUCA (volatile, uncertain, complex, and ambiguous) landscape.



BONG HEAN TAR

DEVELOPMENT ENGINEERING MANAGER, SINGAPORE REFINING COMPANY

The Diploma in Chemical & Pharmaceutical Technology's PCM curriculum is a collaboration between NYP and its partners, aimed at developing a pipeline of highly trained talent, who are crucial to Singapore's status as a process industrial hub. The Singapore Refining Company (SRC) believes that our employees are our most important assets and the driving force behind our success. One of our primary goals is to train young people, challenge their abilities, and continue to develop them. SRC is glad to work with NYP to ensure that the curriculum is aligned with the industry's best practices and designed to optimise a learner's potential and develop competencies relevant to the current industry needs.

HUNTSMAN

Enriching lives through innovation

HAN WEE GUAN

ENVIRONMENT, HEALTH & SAFETY MANAGER, HUNTSMAN SINGAPORE

As a global chemicals company, Huntsman finds it key that the industry workforce is highly skilled and innovative. The NYP-PCM focuses on allowing learners to apply their knowledge in industry-relevant tasks. With the PCM, learners are equipped with key competencies and skills to contribute to the workplace and the industry. They also gain invaluable insights from industry partners, which will help them learn, innovate, and thrive. We look forward to building the next generation of career-ready talent by working alongside NYP to enhance the Diploma in Chemical & Pharmaceutical Technology curriculum and its delivery.



KOH SIONG TECK

DIRECTOR (SINGAPORE WATER ACADEMY), PUBLIC UTILITIES BOARD (PUB)

The water industry is a key growth and strategic sector in Singapore. As the National Water Agency, PUB is thrilled to support NYP in developing the next generation of professionals through strengthening the industrial relevance and co-developing the curriculum in the areas of water treatment and technology. With this collaboration, graduates will be equipped with future-ready competencies and skills to tackle evolving water challenges and contribute to building a green and resilient water system for Singapore.



JAE CODE C69

Diploma in
Food Science
& Nutrition



Diploma in Food Science & Nutrition

This is for you if you want to improve the well-being of the community through innovative and nutritious food products.

Learn how food ingredients interact to create fascinating flavours and textures, while ensuring food safety, traceability, and security. Discover the wonders of science in food and nutrition, experiment with popular food to create healthier makeovers, and deploy technologies to ensure food security.

This diploma lets you...

- Experience an interdisciplinary course that covers chemistry, biology, and physics through ingredient interaction, nutrition, safety, processing, and more.
- Be mentored by lecturers with rich industry experience and make your mark in local and international competitions.
- Be trained at state-of-the-art and industry-standard food pilot plants, including Singapore's first pilot plant for beverage production, the ISO 17025-accredited Food Safety Centre.
- Gain opportunities to work in local and multinational organisations or pursue further studies locally or abroad.

Career Paths

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

Benefits

- Conceptualise and develop new and exciting food products to satisfy the demands of consumers today.
- Gain a strong foundation in food safety, food quality and product development.
- Be equipped with knowledge and skills that will prepare you for a multi-science internship experience in the food industry.

Course Structure

The NYP-PCM for Diploma in Food Science & Nutrition consists of:

• 25 Competency Units

Within each Competency Unit, the skills and knowledge of different disciplines are integrated and taught holistically. This enables you to fulfil specific work tasks upon completion.

• 5 Course Competencies

Each Course Competency consists of a collection of Competency Units that develops specific learning outcomes and competencies.

• 4 Competency Canvases

Each Competency Canvas consists of a collection of Competency Units and a Work-Integration Unit (WIU), which is a workplace-contextualised project. Competency Canvases help you develop and demonstrate your abilities to perform work tasks at a higher proficiency.

• 1 Final Year Project

• 1 Internship Programme

• 11 General Studies Modules

These modules allow you to explore other areas of interest beyond your chosen area of specialisation.

JAE CODE C69

Competency Canvases

These consist of Competency Units and workplace-contextualised projects known as Work-Integration Units (WIUs).

1. Applied Science in Action

- Applied Science Project (WIU)
- Biochemical Analysis
- Chemical Laboratory Skills
- Data & Statistical Methods
- Instruments & Measurements

2. Nutrition Management

- Nutrition Interpretation
- Nutrition Planning
- Sensory Evaluation
- Therapeutic Diet Design Project (WIU)
- Therapeutic Nutrition

3. Food Safety & Quality Management

- Diagnostics in Food Microbiology
- Food Regulation Management
- Food Safety Analysis Project (WIU)
- Macronutrients Analysis
- Microbial Cultivation & Control
- Micronutrients & Trace Elements Analysis

4. Product Innovation

- Food Business & Marketing
- Food Ingredient Applications
- Food Product Innovation
- Food Safety Management System
- Food Technology
- Nutrition Service & Applications
- Product Concept & Development Project (WIU)
- Sensory Evaluation

Course Competencies

Completing the required Competency Units will equip you with five Course Competencies:

1. Food Processing
2. Food Safety Management & Regulatory Affairs
3. Nutrition Strategy & Intervention
4. Product Innovation
5. Quality Control

Competency Units

YEAR 1

- Applied Calculus in Scientific Processes
- Applied Science Project (WIU)
- Biochemical Analysis
- Chemical Laboratory Skills
- Data & Statistical Methods
- Food Hygiene Practice
- Instruments & Measurements
- Macronutrients Analysis
- Microbial Cultivation & Control
- Nutrition Interpretation
- Sensory Evaluation
- Unit Operations

YEAR 2

- Diagnostics in Food Microbiology
- Food Ingredient Applications
- Food Packaging
- Food Regulation Management
- Food Safety Analysis Project (WIU)
- Food Safety Management System
- Food Service Technology
- Food Technology
- Micronutrients & Trace Elements Analysis
- Nutrition Planning
- Therapeutic Diet Design Project (WIU)
- Therapeutic Nutrition

YEAR 3

- Final Year Project (WIU)
- Food Business & Marketing
- Food Product Innovation
- Food Security & Sustainability
- Internship Programme (WIU)
- Nutrition Service & Applications
- Product Concept & Development Project (WIU)

JAE CODE C69

Our Industry Partners



LIM KIAT

MANAGER (PROGRAMMES)/SENIOR NUTRITIONIST, SINGAPORE HEART FOUNDATION

Good nutrition is critical in preventing and fighting against cardiovascular diseases, among others. With a national move to focus more on preventive care, nutrition graduates will have a larger role in Singapore's healthcare sector. The Singapore Heart Foundation is pleased to support NYP in their Professional Competency Model (PCM) as a mentor for the Diploma in Food Science & Nutrition students, equipping them with industry-relevant skills and knowledge essential for the healthcare sector and in building a healthier Singapore. The holistic teaching approach will see graduates emerge even stronger in their professional competency and better equipped to serve our community.



ANDREW KEONG AUN YIP

NEW PRODUCT DEVELOPMENT (NPD) HEAD FOR FUTURE FOOD, MONDE NISSIN

Monde Nissin is supportive of the new PCM. It is a dynamic curriculum model that supports industrial changes. We look forward to collaborative works with NYP under this new curriculum model.



MIHIR PERSHAD

FOUNDER & CEO, UMAMI MEATS

This is a timely transition for NYP to move into the PCM which strongly supports skills development in the curriculum with very close partnerships with the industry. This will undoubtedly enhance the student experience, helping them to integrate what they have learnt across multiple disciplines and translate their learning into industry-ready skills.

Umami Meats, which was established in 2020, believes deeply in creating a healthier and more sustainable future for everyone. We hope to spread and share this passion with our future generations. We are delighted to come alongside NYP in the collaboration of co-mentoring learners in the Diploma in Food Science & Nutrition to prepare them for the industry and their careers ahead. Learners will certainly gain invaluable insight working on real-life issues that the world is facing in this industry-relevant curriculum.



JAE CODE C65

Diploma in Pharmaceutical Science

JAE CODE C65



Diploma in Pharmaceutical Science

This is for you if you want to improve lives through safe and effective medication.

Discover how medicines work and how our bodies respond to them. Build a solid foundation in pharmaceutical science and related areas, such as management of clinical trials and medical dispensaries.

Acquire imperative training with know-hows in the wider aspects of the industry, which enables you to become an impactful healthcare provider.

This diploma lets you...

- Experience the only full-time diploma in Singapore that offers comprehensive training in both pharmacy practice and clinical trials.
- Be mentored by licensed pharmacists, toxicologists, and sales and marketing practitioners in the pharmaceutical industry.
- Find career opportunities in the front line of major pharmacies in Singapore.

Career Paths

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

Benefits

- Learn to provide high-quality healthcare to patients.
- Get hands-on experience at clinical and retail pharmacies.
- Explore internship programme opportunities in clinical research departments of major hospitals and leading pharmaceutical companies.
- Acquire a vast range of skills that will help you excel in pharmaceutical science and related fields.

Course Structure

The NYP-PCM for Diploma in Pharmaceutical Science consists of:

• 26 Competency Units

Within each Competency Unit, the skills and knowledge of different disciplines are integrated and taught holistically. This enables you to fulfil specific work tasks upon completion.

• 5 Course Competencies

Each Course Competency consists of a collection of Competency Units that develops specific learning outcomes and competencies.

• 4 Competency Canvases

Each Competency Canvas consists of a collection of Competency Units and a Work-Integration Unit (WIU), which is a workplace-contextualised project. Competency Canvases help you develop and demonstrate your abilities to perform work tasks at a higher proficiency.

• 1 Final Year Project

• 1 Internship Programme

• 11 General Studies Modules

These modules allow you to explore other areas of interest beyond your chosen area of specialisation.

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Competency Canvases

These consist of Competency Units and workplace-contextualised projects known as Work-Integration Units (WIUs).

1. Applied Science in Action

- Applied Science Project (WIU)
- Biochemical Analysis
- Chemical Laboratory Skills
- Data & Statistical Methods
- Instruments & Measurements

2. Drug Development

- Disease Process & Immunology
- Drug Delivery Systems
- Drug Development Project (WIU)
- Drug Discovery & Development Process
- Structure & Function of the Human Body

3. Clinical Trials Operations

- Clinical Trials Operations Project (WIU)
- Drug Discovery & Development Process
- Good Clinical Practice
- Research Ethics

4. Pharmacy Operations

- Good Dispensing Practice
- Pharmaceutical Compounding
- Pharmacy Operations Project (WIU)
- Pharmacy Practice in Common Ailments
- Pharmacy Practice in Personal Care

Course Competencies

Completing the required Competency Units will equip you with five Course Competencies:

1. Clinical Trials Operations
2. Dispensing of Medications
3. Optimal Use of Drugs
4. Patient Care
5. Pharmaceutical Compounding

Competency Units

YEAR 1

- Applied Calculus in Scientific Processes
- Applied Clinical Microbiology
- Applied Science Project (WIU)
- Biochemical Analysis
- Biochemistry in Practice
- Chemical Laboratory Skills
- Data & Statistical Methods
- Drug Discovery & Development Process
- Good Dispensing Practice
- Instruments & Measurements
- Reactions of Organic Compounds
- Structure & Function of the Human Body

YEAR 2

- Anti-Infectives & Medication Therapy in ENT & Musculoskeletal Disorders
- Disease Processes & Immunology
- Drug Delivery Systems
- Drug Development Project (WIU)
- Good Clinical Practice
- Medication Therapy in Endocrine, Respiratory & Gastrointestinal Disorders
- Non-Invasive Patient Care Skills
- Pharmaceutical Chemistry & Analysis
- Pharmaceutical Manufacturing Technology
- Pharmacy Practice in Common Ailments
- Pharmacy Practice in Personal Care
- Research Ethics

YEAR 3

- Clinical Trials Operations Project (WIU)
- Final Year Project (WIU)
- Healthcare Ethics
- Internship Programme (WIU)
- Invasive Patient Care Skills
- Medication Therapy in Cardiovascular & Neurologic Disorders
- Pharmaceutical Compounding
- Pharmacy Operations Project (WIU)

JAE CODE C65

Our Industry Partners



Serve all with Love

GANESWARI APPAROW

PHARMACY MANAGER, MOUNT ALVERNIA HOSPITAL

The Professional Competency Model (PCM) adopted by NYP will enable learners to apply the knowledge and skills they have learned in the classroom to real-world practice. It is a good move to expose learners with the enhanced pedagogy and help them build a solid foundation to contribute to pharmacy support when they graduate. We are confident of our partnership with NYP to mentor and coach our future Pharmacy workforce.

LILY WONG

NURSE MANAGER/RESEARCH MANAGER, DIVISION OF NEUROLOGY, DEPARTMENT OF MEDICINE, NATIONAL UNIVERSITY HOSPITAL

The PCM is a new model transforming teaching and learning from a subject-based to a competency-based curriculum. It is a bold step to revolutionise the traditional concept of classroom teaching and learning to industry-based needs. The pharmaceutical industry is fast advancing and learners are required to learn and adapt to the changes quickly and efficiently. The new learning model will help to equip learners with industry-relevant competencies. We are confident in the course curriculum and our collaboration, which will nurture and mentor the learners to be future-ready.



TEH EE MEI

SENIOR LEAD CLINICAL RESEARCH COORDINATOR, CLINICAL TRIALS & RESEARCH CENTRE, SINGAPORE GENERAL HOSPITAL

We are happy to see that NYP is enhancing teaching and learning by developing the PCM. The course structure and competencies students will learn in the new curriculum are comprehensive and carefully planned in alignment with the industry needs. We are confident that the NYP-PCM will enable learners to develop core competencies that are required by the industry and broaden their career options upon graduation.

The SAS Experience



Braedon Tay

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

HE WINS FIRST CHEMICAL LAB TECHNOLOGY MEDAL FOR SINGAPORE

After bagging Gold for NYP at WorldSkills Singapore 2021, Braedon went on to represent Singapore at WorldSkills Competition 2022 Special Edition and did the nation proud at the international level in Austria.

The Silver, which Braedon won with his outstanding chemical lab skills, was Singapore's first medal in the Chemical Laboratory Technology trade.

"Taking part in the WorldSkills Competition in the International leg was a stressful yet exciting experience for me," says Braedon,

who also impressed the judges with his critical thinking and problem-solving skills at the competition.

"Together with my strong theoretical knowledge and comprehensive training in skills by my coaches, I was able to perform well during the competition.

"I am proud to have brought back the first medal for Singapore in the Chemical Laboratory Technology category.

"I am thrilled to have met up to my own expectations as well as bring glory to NYP!"



Shahreyll Khairoullah

DIPLOMA IN BIOLOGICS & PROCESS TECHNOLOGY

GRANDMA'S ILLNESS MOTIVATES HIM TO TAKE UP BIOLOGICS

As a child, Shahreyll saw his grandma struggle with diabetes and it sparked his burning desire to help others and save lives. So, he enrolled in NYP's Diploma in Biologics & Process Technology course to learn about modern-day medicines like vaccines and cancer drugs.

At NYP, his flair for leadership led him to helm the Aikido Club as president and the Martial Arts Club as vice-president. He also guided his team to clinch the Best Showcase Award at the NYP-DBS Innovation Challenge.

Shahreyll performed so well during his internship at Amgen that the international biopharmaceutical firm offered him a full-time position just five months into his stint.

The Lee Kuan Yew Award recipient attributes his success to NYP's support.

"The lessons I've learnt here have opened doors to my future, and I'm grateful that NYP gave me this chance to pursue my passion."



Cheah Kah Wei

DIPLOMA IN PHARMACEUTICAL SCIENCE

STAR STUDENT INSPIRED TO BECOME STUDENT MENTOR

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 National Youth Achievement Award gold, 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 science, and aspires to work in the healthcare industry, so that he can make a difference in the lives of the sick and needy.

Minimum Entry Requirements

Wondering about the minimum entry requirements and aggregate scores for our courses?
Here's everything you need to know.

GCE O LEVELS

Apply through the EAE, JAE or DAE.
Scan to find out more.



GCE N LEVELS

Apply through the PFP.
Scan to find out more.



EVERYTHING ELSE

Not sitting the O or N Levels?
Scan to find out how to apply to NYP.





Scan for more information on the
School of Applied Science
and its courses