



JAE CODE C49

Diploma in Biologics & Process Technology

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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.

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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. 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.