

2024

SCHOOL OF ENGINEERING

#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 CHANGER


School of Engineering (SEG)

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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 SEG?

We believe in empowering you with passion to fuel ingenuity. We prepare you for the future by promoting innovation and creating opportunities for you to achieve your aspirations.



Look forward to...



BUILDING YOUR SKILLS

Pit your skills against the rest of the world in global competitions such as WorldSkills and the Microsoft Imagine Cup.



SEEING THE WORLD

Take advantage of NYP's strong links with over 250 companies and organisations across 15 countries in Asia, Europe, North America and Oceania.



SOLVING PROBLEMS

We have over 200 collaboration programmes and projects with companies and organisations.



UNCOVERING YOUR POTENTIAL

Discover what truly sets you apart through innovation-themed competitions, fun-filled learning and co-curricular activities.

Industry Partners

Learn from the following renowned companies:



- Alcon Singapore
- Cisco
- Festo Singapore
- Kajima Corporation
- KK Women's and Children's Hospital

- LAPP Asia Pacific
- Microchip Technology
- Micron Technology
- Microsoft
- SIA Engineering Company

- Siemens Singapore
- Smith+Nephew
- StarHub
- SwiftX
- Tan Tock Seng Hospital



JAE CODE C42

Common
Engineering
Programme

JAE CODE C42

Common Engineering Programme

This is for you if you want to explore the breadth of engineering disciplines before choosing your field of specialisation.

The Common Engineering Programme enables you to enjoy the vibrant learning environment while familiarising yourself with the various engineering disciplines.

Take a year to immerse yourself in the world of engineering and uncover your interests before picking from 10 engineering specialisations.

This programme lets you...

- Develop essential skills such as problem-solving, critical thinking, collaboration, communication and creativity through project-based learning.
- Go on exciting field trips and inspiring learning journeys that will broaden your exposure to engineering while you explore your area of interest.
- Look forward to getting the course of your choice after exploring all options.

Course Curriculum

YEAR 1, SEMESTER 1

- Algebra
- Effective Communication Skills
- Electrical Principles
- Fundamentals of Mechanics
- Introduction to Engineering
- Programming

YEAR 1, SEMESTER 2

1. Electronic-Aerospace-Computer Engineering Track

- Calculus
- Digital Electronics
- Electronic Devices & Applications
- Engineering Exploration Project
- Fundamentals of Innovation & Enterprise
- Internet & Web Development
- Workplace Digital Skills

2. Mechanical-Aerospace-Biomedical Engineering Track

- Calculus
- Engineering Drawing & Modelling
- Engineering Exploration Project
- Fundamentals of Innovation & Enterprise
- Materials Technology
- Thermofluids
- Workplace Digital Skills

YEAR 2 ONWARDS

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

1. Electronic-Aerospace-Computer Engineering Track

- Diploma in Aerospace Systems & Management
- Diploma in AI & Data Engineering
- Diploma in Electronic & Computer Engineering
- Diploma in Engineering with Business
- Diploma in Infocomm & Media Engineering

2. Mechanical-Aerospace-Biomedical Engineering Track

- Diploma in Advanced & Digital Manufacturing
- Diploma in Aeronautical & Aerospace Technology
- Diploma in AI & Data Engineering
- Diploma in Biomedical Engineering
- Diploma in Engineering with Business
- Diploma in Nanotechnology & Materials Science
- Diploma in Robotics & Mechatronics

GENERAL STUDIES MODULES

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



JAE CODE C62

Diploma in
Advanced
& Digital
Manufacturing

JAE CODE C62

Diploma in Advanced & Digital Manufacturing

This is for you if you want to acquire precision engineering and digital manufacturing skills.

Manufacturing is changing rapidly and it is important to equip engineers with the necessary skills to solve everyday problems and transform the environment.

Learn about additive, biomedical and advanced manufacturing to create medical devices and aircraft components.

Look forward to rewarding career opportunities in the industry or pursue further education at prestigious universities worldwide.

This diploma lets you...

- Develop a combination of core skills in precision engineering and digital manufacturing.
- Acquire and apply knowledge in programming, data analytics, automation and artificial intelligence through project-based learning.
- Gain exclusive overseas internship experiences at advanced manufacturing companies in Germany.
- Pursue careers in additive, aerospace, biomedical and advanced precision manufacturing industries.

Career Paths

- Additive Manufacturing Engineer
- Aerospace Manufacturing Engineer
- Assistant Manufacturing Engineer
- Assistant Software Engineer
- Automation Test Engineer
- Biomedical Manufacturing Engineer
- Data Analyst
- IoT Assistant Engineer
- Manufacturing IT Engineer
- Mechanical Engineer
- Precision Engineering Machinist
- Product Engineer/Designer
- Quality Assurance Technician/Engineer
- Quality Control Inspector

Course Curriculum

YEAR 1

- Algebra
- Calculus
- Effective Communication Skills
- Electrical Principles
- Engineering Drawing & Modelling
- Engineering Exploration Project
- Fundamentals of Innovation & Enterprise
- Fundamentals of Mechanics
- Introduction to Engineering
- Materials Technology
- Programming
- Thermofluids
- Workplace Digital Skills

YEAR 2

- Communication & Personal Branding
- Differential Equations & Series
- Engineering Mechanics
- Integrated Development Project 1
- Integrated Development Project 2
- Integrated Product Life-Cycle Management
- Manufacturing Information System
- Manufacturing Technologies
- Probability & Statistics
- Product Innovation with Design Thinking
- Quality Assurance
- Smart Manufacturing Technology

YEAR 3

- Advanced Metrology & Quality Management
- Data Science, Analytics & Artificial Intelligence
- Integrated Development Project 3

ELECTIVE PROGRAMMES (CHOOSE ONE)

1. Additive Manufacturing Specialisation

- Additive Manufacturing Specialisation Project
- Additive Manufacturing Technology
- Design for Additive Manufacturing

2. Aerospace Manufacturing Specialisation

- Aerospace Manufacturing Processes
- Aerospace Manufacturing Specialisation Project
- Aerospace Material & Non-Destructive Testing Technology

3. Biomedical Manufacturing Specialisation

- Biomedical Device Design
- Biomedical Manufacturing Specialisation Project
- Biomedical Manufacturing Technology

4. Advanced Precision Manufacturing Specialisation

- Advanced Precision Machining
- Automation & Robotics in Advanced Manufacturing
- Precision Manufacturing Specialisation Project

In the final year, you will have the opportunity to undertake a full-time project and a local or overseas internship programme for one semester. We have strong partnerships with precision engineering industries such as aerospace component manufacturing, precision mould and tool, machinery manufacturing and system integration.

GENERAL STUDIES MODULES

You will complete a total of nine General Studies modules. Explore other areas of interest beyond your chosen area of specialisation.



JAE CODE C51

Diploma in
Aeronautical
& Aerospace
Technology

JAE CODE C51

Diploma in Aeronautical & Aerospace Technology

This is for you if you want to take flight in the aerospace industry and establish a career in aircraft maintenance.

Fascinated by how airplanes fly? Wonder how a jet engine works and what propels a plane to supersonic speed?

Build a strong foundation in engineering fundamentals and gain knowledge of aircraft systems in this course. You will also learn best practices in maintenance, repair and overhaul (MRO), and the aerospace manufacturing industry.

Look forward to rewarding career opportunities in the industry or pursue further education at prestigious universities worldwide.

This diploma lets you...

- Gain skills in MRO of aircraft and engines, as well as designing and manufacturing aircraft components.
- Benefit from practical, hands-on training and theoretical modules that will prepare you for university.
- Gain exclusive overseas internship experiences at advanced manufacturing companies in Germany.
- Pursue careers in sectors such as aviation, MRO and precision aerospace manufacturing.

Career Paths

- Aircraft Maintenance Engineer
- Airline Fleet Engineer
- Component Repair & Overhaul Engineer
- Defect Analysis Engineer
- Engineering Service Engineer
- Maintenance Controller
- Manufacturing/Production Engineer
- Planning Executive
- Quality Engineer
- Repair Process Engineer
- Structure/Stress Engineer

Course Curriculum

YEAR 1

- Algebra
- Calculus
- Effective Communication Skills
- Electrical Principles
- Engineering Drawing & Modelling
- Engineering Exploration Project
- Fundamentals of Innovation & Enterprise
- Fundamentals of Mechanics
- Introduction to Engineering
- Materials Technology
- Programming
- Thermofluids
- Workplace Digital Skills

YEAR 2

- Aerodynamics
- Aero-Structures
- Aero-Systems
- Aircraft Propulsion Systems
- Analogue & Digital Electronics
- Aviation Legislation & Human Factors
- Computer-Aided Manufacturing
- Differential Equation & Series
- Mechanical Design
- Mechanics-Dynamics
- Metrology & Quality Control
- Probability & Statistics

YEAR 3

ELECTIVE PROGRAMMES (CHOOSE ONE)

1. Aerospace Systems & Testing

- Aero Maintenance Practices & Projects
- Communication & Personal Branding
- Design for Additive Manufacturing
- Failure Analysis
- Non-Destructive Testing

ELECTIVE MODULES

- Computational Analysis & Simulation
- Smart Manufacturing Technology
- Unmanned Aerial Systems

2. Aerospace Manufacturing

- Advanced Metrology & Quality Management
- Aero Maintenance Practices & Projects
- Communication & Personal Branding
- Failure Analysis
- Non-Destructive Testing

ELECTIVE MODULES

- Advanced Machining Technology
- Aero Manufacturing Systems
- Smart Manufacturing Technology

In the final year, you will have the opportunity to undertake a full-time project and a local or overseas internship programme for one semester.

GENERAL STUDIES MODULES

You will complete a total of nine General Studies modules. Explore other areas of interest beyond your chosen area of specialisation.



JAE CODE C52

Diploma in
Aerospace
Systems &
Management

JAE CODE C52

Diploma in Aerospace Systems & Management

This is for you if you are curious about aircraft and flight systems.

Be amazed by the advanced systems in a modern airplane — from cockpit avionics to in-flight entertainment. Besides learning about state-of-the-art aerospace systems, you will also study how world-class airports are run and gain valuable experience through internships at well-known aerospace companies.

Look forward to rewarding career opportunities in the industry or pursue further education at prestigious universities worldwide.

This diploma lets you...

- Build expertise in aerospace avionics systems with aviation management knowledge.
- Get an enhanced learning experience with our latest state-of-the-art aerospace training systems and facilities, including the Airbus and Boeing flight simulators.
- Gain internship experiences at leading aerospace and aviation companies including Airbus, Bombardier, Changi Airport Group, ST Engineering and Thales.

Career Paths

- Air Force Engineer
- Airline Executive
- Airport Duty Terminal Manager
- Avionics Development Engineer
- Avionics System Specialist
- Avionics Test Engineer
- Avionics Workshop Engineer
- Licensed Aircraft Engineer
- Planning Executive
- Unmanned Aerial Vehicle (UAV) Application Engineer

Course Curriculum

YEAR 1

- Algebra
- Calculus
- Digital Electronics
- Effective Communication Skills
- Electrical Principles
- Electronic Devices & Applications
- Engineering Exploration Project
- Fundamentals of Innovation & Enterprise
- Fundamentals of Mechanics
- Internet & Web Development
- Introduction to Engineering
- Programming
- Workplace Digital Skills

YEAR 2

- Aircraft Electrical Systems
- Aircraft Materials & Structures
- Airport Operations
- Avionics Systems Project
- Communication & Personal Branding
- Communication & Workplace Success
- Circuit Analysis
- Differential Equations & Series
- Fundamentals of Flight
- Introduction to Operations Management
- Microcontroller Applications
- Probability & Statistics
- Radio Communications

YEAR 3

- Aero Maintenance Practices & Projects
- Aircraft Communication & Navigation Systems
- Aircraft Instrument Systems
- Aviation Management
- Human Factors

ELECTIVE MODULES (CHOOSE ONE)

- Aerospace Supply Chain Management
- Aircraft Cabin & Information Systems
- Unmanned Aerial Systems

In the final year, you will have the opportunity to undertake a full-time project and a local or overseas internship programme for one semester.

GENERAL STUDIES MODULES

You will complete a total of nine General Studies modules. Explore other areas of interest beyond your chosen area of specialisation.



JAE CODE C31

Diploma in AI & Data Engineering

JAE CODE C31



Diploma in AI & Data Engineering

This is for you if you want to acquire skills in applying AI to help make decisions, and automate and optimise processes.

This is the first engineering diploma to integrate the development of engineering, AI and data skills.

Learn how to design and develop AI solutions in areas such as electronics, robotics, manufacturing and infocomm engineering.

Look forward to rewarding career opportunities in the industry or pursue further education at prestigious universities worldwide.

This diploma lets you...

- Gain industry relevance. Co-developed by industry leaders such as Microsoft, AI Singapore, OMRON and NVIDIA, the course is informed by real industry intelligence and needs.
- Be equipped with the latest skills and knowledge — the curriculum reacts dynamically and quickly to industry changes.
- Benefit from the expertise of industry professionals, including guest lecturers from Microsoft, AI Singapore and OMRON.
- Earn industry certifications from our partners like Microsoft, NVIDIA and AI Professionals Association in addition to your diploma.

Career Paths

- AI Application Developer
- AI Infrastructure Administrator/Technician
- AI Product Developer
- AI Sales/Presales Engineer
- AI Technical Support Engineer
- Assistant AI Engineer
- Data Engineer/Technician

Benefits

- Learn all about how engineering, AI and data skills are applied across engineering verticals.
- Acquire skills in data analytics and AI.
- Develop highly sought-after skills and learn how AI and automation can help improve business operations.
- Gain crucial skills for the modern workplace to kick-start an exciting career.

Course Structure

In year 1, you will be studying the same modules with all the other engineering students as part of the Common Engineering Programme.

From year 2, the NYP-PCM for the Diploma in AI & Data Engineering consists of:

• 22 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.

• 9 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

• 9 General Studies Modules

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

JAE CODE C31

Competency Canvases

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

1. Certificate in Data Engineering

- Cloud Computing & Platforms
- Data Engineering Project (WIU)
- Data Preparation & Visualisation
- Data Security
- Intelligent Control Systems
- Sensor Data Collection & Analysis

2. Certificate in AI Solution Architect

- AI Privacy, Security & Ethics
- AI Solution Architect Project (WIU)
- AI-Enabled Business Models
- Automation & Robotics Technology
- Machine Learning
- Production System Management

3. Certificate in AI Engineering

- AI Engineering Project (WIU)
- Applied Deep Learning
- Computer Vision
- Data Management
- Engineering Product Life-Cycle Management
- Natural Language Processing

4. Certificate in AI Solution Development

- AI Application Development
- AI Solution Development Project (WIU)
- Applied Deep Learning
- Big Data Processing Platforms & Applications
- Internet of Things Application

Course Competencies

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

1. AI Modelling & Applications
2. AI System Design & Development
3. Data Processing
4. Data Security & Governance
5. Engineering Business & Operations
6. Engineering Product Management
7. IoT Management
8. Production Management
9. Robotic & Automation Technology Applications

Course Curriculum

YEAR 1

- Algebra
- Calculus
- Effective Communication Skills
- Electrical Principles
- Engineering Drawing & Modelling
- Engineering Exploration Project
- Fundamentals of Innovation & Enterprise
- Fundamentals of Mechanics
- Internet & Web Development
- Introduction to Engineering
- Materials Technology
- Programming
- Workplace Digital Skills

YEAR 2

COMPETENCY UNITS

- AI Engineering Project (WIU)
- Applied Deep Learning
- Cloud Computing & Platforms
- Computer Vision
- Data Engineering Project (WIU)
- Data Management
- Data Preparation & Visualisation
- Data Security
- Engineering Design
- Engineering Product Life-Cycle Management
- Intelligent Control Systems
- Internet of Things Application
- Machine Learning
- Natural Language Processing
- Operation Management
- Production Technologies
- Sensor Data Collection & Analysis

YEAR 3

COMPETENCY UNITS

- AI Application Development
- AI Privacy, Security & Ethics
- AI Solution Architect Project (WIU)
- AI Solution Development Project (WIU)
- AI-Enabled Business Models
- Automation & Robotics Technology
- Big Data Processing Platforms & Applications
- Final Year Project (WIU)
- Internship Programme (WIU)
- Production System Management
- Supply Chain Management

JAE CODE C31

Our Industry Partners



LAURENCE LIEW

DIRECTOR OF AI INNOVATION, AI SINGAPORE

AI Singapore is excited to co-develop this diploma with NYP. We are glad to partner NYP to co-develop the comprehensive and practice-oriented curriculum. This will equip learners with the necessary skills to become all-rounded AI professionals who can develop and deploy AI models, before leveraging data to solve real-world engineering problems. We are confident the diploma will sufficiently prepare learners to be competent AI practitioners in the industry, and that these graduates will support Singapore's vision to be a leader in AI.



KOO PING SHUNG

PRESIDENT, AI PROFESSIONALS ASSOCIATION

AI Professionals Association (AIP) believes that AI is a tool that can help humankind to thrive. For AI to work effectively, great talents are needed, especially for Singapore, which is looking to build a better society and provide job opportunities through AI. This is why AIP is very excited to work with NYP and put more qualified talents on the Singapore map and beyond, so we can build a better global society through AI.



DENNIS ANG

SENIOR DIRECTOR, ENTERPRISE BUSINESS — ASEAN & ANZ REGION, NVIDIA

We're glad to collaborate with NYP and contribute to the industry-relevant curriculum via NVIDIA's Deep Learning Institute Ambassador Program. By bringing together practical applications of data and AI in an engineering course, learners will be equipped with the knowledge and skills to apply AI in the engineering domain. We believe that the highly practical Professional Competency Model approach will help prepare learners for careers in Data Science and AI, or even cross-sectoral work within the engineering industry.



LARRY NELSON

EDUCATION — ASIA REGIONAL GENERAL MANAGER, MICROSOFT

Data plays an essential role in powering analytics, machine learning and AI solutions. It is also a key focus area for enterprises when they embark on or enhance digital transformation. We are happy to partner NYP to equip learners with in-demand skills in data analytics and AI. This is also in line with Microsoft's ongoing efforts to enable more enterprises to adopt AI solutions, and prepare learners to be industry-ready graduates skilled to meet the demands of the workforce.



LIEU YEW FATT

MANAGING DIRECTOR, OMRON ELECTRONICS

OMRON is glad to support NYP's Diploma in AI & Data Engineering with our industry insights to enhance the curriculum and ensure its industry relevance. Through co-development and co-teaching with industry partners, learners will acquire a diverse set of skills in Data, AI, Automation & Robotics and the Internet of Things. They will also be taught how these different skills are relevant to a range of industrial applications in engineering. We believe graduates of this diploma course will strengthen Singapore's move towards advanced manufacturing and Industry 4.0-enabled "Smart Factories".



JAE CODE C71

Diploma in
Biomedical
Engineering

JAE CODE C71

Diploma in Biomedical Engineering

This is for you if you have the passion for creating innovative biomedical devices.

Make a difference in the medical and healthcare industry as you learn to design and create healthcare devices using the latest technologies.

You can specialise in biomedical devices, regulatory and quality checks or the manufacturing of these devices.

Look forward to rewarding career opportunities in the biomedical and pharmaceutical industries or pursue further education at prestigious universities worldwide.

This diploma lets you...

- Apply your skills in areas such as designing medical devices and innovating smart healthcare solutions.
- Build critical-thinking and problem-solving skills through industrial-inspired projects at our Industry Collaboration Centres.
- Gain overseas internship experiences in countries such as Australia, France and Japan.

Career Paths

- Assistant Field Services Engineer
- Biomedical Engineering Assistant
- Biomedical Engineering Research Assistant
- GMP Production Supervisor
- Laboratory Technologist
- Medical Sales Representative
- Quality Assurance Assistant
- Quality Control Assistant

Course Curriculum

YEAR 1

- Algebra
- Calculus
- Effective Communication Skills
- Electrical Principles
- Engineering Drawing & Modelling
- Engineering Exploration Project
- Fundamentals of Innovation & Enterprise
- Fundamentals of Mechanics
- Introduction to Engineering
- Materials Technology
- Programming
- Thermofluids
- Workplace Digital Skills

YEAR 2

- Anatomy & Physiology
- Biomechanical Engineering Design
- Biomedical Equipment Electronics
- Communication & Personal Branding
- Differential Equations & Series
- Good Manufacturing Practice
- Healthcare Analytics
- Inorganic & Physical Chemistry
- Internet of Medical Things
- Microcontroller Applications

ELECTIVE MODULES (CHOOSE ONE)

- Automatic Control
- Organic Chemistry

YEAR 3

- Biomedical Product Design & Analysis
- Medical Device Regulatory Compliance
- Quality Management System & Tools

ELECTIVE MODULES (CHOOSE TWO)

- Biomedical Device Technology
- Biomedical Manufacturing Technology
- Medical Device Validation
- Medical Imaging
- Robotic Systems & Peripherals

In the final year, you will have the opportunity to undertake a full-time project and a local or overseas internship programme for one semester.

GENERAL STUDIES MODULES

You will complete a total of nine General Studies modules. Explore other areas of interest beyond your chosen area of specialisation.



JAE CODE C89

Diploma in
Electronic
& Computer
Engineering

JAE CODE C89

Diploma in Electronic & Computer Engineering

This is for you if you are interested in developing smart devices, intelligent systems and innovative solutions.

Take the lead as advanced technologies revolutionise our world, connecting people through powerful devices. Be part of this exciting and dynamic field where you can shape the way people live, work and play.

This diploma will arm you with a wide knowledge in the theory and practical aspects of electronics and computing. You will get the opportunities to thrive in high-growth industries and sectors such as electronics, infocomm, semiconductor, telecommunications and the Internet of Things (IoT).

Look forward to rewarding career opportunities in the industry or pursue further education at prestigious universities worldwide.

This diploma lets you...

- Learn about software computing, analytics, artificial intelligence, autonomous systems and the IoT.
- Specialise in computer engineering, IoT, business operations or microelectronics, and get your foot in the door to job domains spanning from technology management to R&D.
- Pursue internships at top universities in countries such as France.

Career Paths

- Application Engineer
- Business Development Executive
- Data Engineer
- Process Engineer
- Product Design Engineer
- Project Engineer
- Research & Development Engineer
- Software Engineer
- System & Test Engineer
- Technical Sales Engineer
- Technical Solution Architect

Course Curriculum

YEAR 1

- Algebra
- Calculus
- Digital Electronics
- Effective Communication Skills
- Electrical Principles
- Electronic Devices & Applications
- Engineering Exploration Project
- Fundamentals of Innovation & Enterprise
- Fundamentals of Mechanics
- Internet & Web Application
- Introduction to Engineering
- Programming
- Workplace Digital Skills

YEAR 2

- Application Programming
- Communication & Personal Branding
- Computing Networking
- Connected System Design Project
- Differential Equation & Series
- Electric Circuit Analysis
- Electronic Communication Systems
- Electronic System Design Project
- Microcontroller Applications
- Statistical Analysis

YEAR 3

ELECTIVE PROGRAMMES (CHOOSE ONE)

1. Computer Engineering

- Application Development & Cloud Services
- Communication & Workplace Success
- Database Design & Applications
- Mobile Computing Project

2. Internet of Things

- Communication & Workplace Success
- Embedded System Design & Technology
- IoT System Project
- Wireless Communications & Networks

3. Business Operations

- Communication & Workplace Success
- Data Visualisation in Business Applications
- Principles of Marketing & Sales
- Supply Chain Management

4. Microelectronics

- Communication & Workplace Success
- Integrated Circuit Design & Test Project
- Semiconductor Technology
- Wafer Fabrication Processes

ELECTIVE MODULES (CHOOSE TWO)

- Automation Systems & Control
- Autonomous Mobile Robotics
- Data Analytics & Machine Learning
- IoT System Architecture & Technology
- Smart Healthcare Applications
- Sustainable Building Management System

In the final year, you will have the opportunity to undertake a full-time project and a local or overseas internship programme for one semester.

GENERAL STUDIES MODULES

You will complete a total of nine General Studies modules. Explore other areas of interest beyond your chosen area of specialisation.



JAE CODE C41

Diploma in
Engineering
with Business

JAE CODE C41

Diploma in Engineering with Business

This is for you if you want the best of both worlds: engineering and business operations.

Are you tech-savvy? Do you have good business acumen? This diploma marries engineering and business concepts through a wide range of subjects, such as engineering technology, business analytics and planning, and project and operations management.

You will also work with leading tech companies via internships locally and in countries like China, Korea and Japan.

Look forward to rewarding career opportunities in the industry or pursue further education at prestigious universities worldwide.

This diploma lets you...

- Be competent and confident in both engineering and business operations sectors.
- Discover the complete product development process, from the ideation of solutions and drafting business plans to constructing prototypes.
- Embark on attachments with major financial institutions and gain overseas internship experiences at universities in Germany and Japan.

Career Paths

- Business Analyst
- Business Planning & Development Executive
- Entrepreneur
- Product Design Engineer
- Project Development Officer
- Project Engineer
- Project Financing Executive

Course Curriculum

YEAR 1

- Algebra
- Calculus
- Effective Communication Skills
- Electrical Principles
- Engineering Drawing & Modelling
- Engineering Exploration Project
- Fundamentals of Innovation & Enterprise
- Fundamentals of Mechanics
- Introduction to Engineering
- Materials Technology
- Programming
- Thermofluids
- Workplace Digital Skills

YEAR 2

- Analogue & Digital Electronics
- Business Management
- Communication & Personal Branding
- Differential Equations & Series
- Digital Marketing Principles
- Engineering Economics
- Enterprise Resource Planning
- Financial & Management Accounting
- Integrated Project — Ideation
- Integrated Project — Realisation
- Mechanical Design
- Mechanics — Dynamics
- Statistics & Data Analytics

YEAR 3

- Artificial Intelligence in Business
- Integrated Project — Entrepreneurship
- Operations Management
- Project Engineering & Management

ELECTIVE MODULES (CHOOSE TWO)

- Business Process Optimisation & Analytics
- Global Supply Chain Management
- Product Design & Evaluation
- Product Life-Cycle Management

In the final year, you will have the opportunity to undertake a full-time project and a local or overseas internship programme for one semester.

GENERAL STUDIES MODULES

You will complete a total of nine General Studies modules. Explore other areas of interest beyond your chosen area of specialisation.



JAE CODE C75

Diploma in Infocomm & Media Engineering

JAE CODE C75

Diploma in Infocomm & Media Engineering

This is for you if you want to dive into infocomm and media, and make a mark in the digital space.

Be part of Singapore's vision of transforming into a Smart Nation. With new-generation Web applications and digital infotainment, infocomm and media are fast transforming the nation.

Learn to develop UX-centric apps, generate creative media designs and deploy critical apps on cloud infrastructures.

Look forward to rewarding career opportunities in the industry or pursue further education at prestigious universities worldwide.

This diploma lets you...

- Build your fundamental infocomm and media expertise by customising your study programme to suit your interests.
- Choose from four specialisations: software development, user experience design, cloud-based networking and media engineering.
- Work closely with industry partners on real-world projects.
- Gain internship experiences at renowned companies in the infocomm sector, including GovTech, Cisco and HUAWEI.

Career Paths

- Audio Visual Engineer
- Cloud Engineer
- Data Centre Engineer
- Front-End Web Designer
- Media Technology & Operations Professional
- Mobile App Developer
- Network Security Administrator
- Server Administrator
- Software Test Engineer
- UI Designer
- UX Designer
- Web App Developer

Course Curriculum

YEAR 1

- Algebra
- Computer System Essentials
- Data Communications & Networking
- Database Fundamentals
- Digital Media & Design
- Effective Communication Skills
- Electrical & Electronics Fundamentals
- Fundamentals of Innovation & Enterprise
- Object-Oriented Programming
- Programming Methodologies & Practices
- UI/UX Design
- Web Development

YEAR 2

- Communication & Personal Branding
- Cybersecurity Essentials
- IoT System Development
- Open Source Web Solutions Development
- Server Administration
- Web Design & Development
- Workplace Digital Skills

In the final year, you will have the opportunity to undertake a full-time project and a local or overseas internship programme for one semester.

GENERAL STUDIES MODULES

You will complete a total of nine General Studies modules. Explore other areas of interest beyond your chosen area of specialisation.

YEARS 2 & 3

ELECTIVE PROGRAMMES (CHOOSE ONE)

1. Software & Applications

- Cross-Platform Mobile App Development
- Database Modelling & Implementation
- Emerging Trends & Technologies
- Infocomm System Project
- Mobile App Development
- Software Engineering Practices
- Software Security & Testing
- Web API Development

2. Cloud Infrastructure & Services

- Advanced Server Administration & Security
- Cloud App Provisioning & Management
- Cloud Architecture & Services
- Emerging Trends & Technologies
- Infocomm Infrastructure Project
- Network Technology
- Virtualisation & Cloud Computing
- Virtualisation Essentials

3. UX Design & Engineering

- Advanced UI/UX Design
- Animation for Digital Media
- Emerging Trends & Technologies
- Information Design & Visualisation
- Portfolio Design & Development
- UI/UX Design Project 1
- UI/UX Design Project 2

4. Media Technology & Systems

- Acoustics & Audio Systems & Technologies
- Media Solutioning Project 1
- Media Solutioning Project 2
- Media Systems & Programming
- System Design & Project Management
- Video & Projection Systems

ELECTIVE MODULES (CHOOSE TWO)

- 3D Modelling & Technologies
- Advanced UI/UX Design
- Business Process Automation
- Cloud Architecture & Services
- Creative Imaging
- Cybersecurity Operations & Administration
- Data Analysis & Visualisation
- Information Design & Visualisation
- IT Service Operations & Management
- Lighting Technologies & Systems
- Media Production & Streaming Systems
- Multimedia Production
- Network Services Implementation & Management
- Web Application Development Framework



JAE CODE C50

Diploma in Nanotechnology & Materials Science

JAE CODE C50

Diploma in Nanotechnology & Materials Science

This is for you if you want to develop innovative products using nanotechnology — one of the most advanced technologies today.

Nanotechnology creates products that are smaller, faster and stronger. Gain a strong foundation in producing advanced materials, such as polymers and ceramics, to create smart products for an ever-changing world.

This diploma will open doors to opportunities in high-growth sectors such as healthcare and renewable energy. Look forward to rewarding career opportunities in the industry or pursue further education at prestigious universities worldwide.

This diploma lets you...

- Design, synthesise and characterise new materials that are useful in our everyday lives.
- Research infinitesimally small materials to achieve breakthroughs of global significance.
- Gain overseas internship experiences in countries such as Japan and Australia.

Career Paths

- Laboratory Technologist
- Materials Process Engineer
- Materials Technologist
- Process or Equipment Engineer
- Quality Engineer
- R&D Engineer

Course Curriculum

YEAR 1

- Algebra
- Calculus
- Effective Communication Skills
- Electrical Principles
- Engineering Drawing & Modelling
- Engineering Exploration Project
- Fundamentals of Innovation & Enterprise
- Fundamentals of Mechanics
- Introduction to Engineering
- Materials Technology
- Programming
- Thermofluids
- Workplace Digital Skills

YEAR 2

- Communication & Personal Branding
- Differential Equations & Series
- Foundational Materials Science & Application
- Good Laboratory Practices
- Inorganic & Physical Chemistry
- Materials Analysis & Nanocharacterisation
- Mechanics of Materials
- Organic Chemistry
- Polymers & Composites
- Quality Assurance
- Thermodynamics

YEAR 3

- Advanced Crystalline Solids
- Materials Processing & Application
- Solid State Technology

ELECTIVE MODULES (CHOOSE TWO)

- Data Analytics for Materials
- Micro & Nanotechnology
- Nanomaterials Science
- Smart Materials
- Sustainable & Renewable Technology

In the final year, you will have the opportunity to undertake a full-time project and a local or overseas internship programme for one semester.

GENERAL STUDIES MODULES

You will complete a total of nine General Studies modules. Explore other areas of interest beyond your chosen area of specialisation.



JAE CODE C87

Diploma in
Robotics &
Mechatronics

JAE CODE C87

Diploma in Robotics & Mechatronics

This is for you if you are fascinated with robotics and want to deploy them in real-world situations.

This diploma combines mechanical, electronics and computing engineering. Learn to build your own robots and gadgets as you pick up the basics of engineering and programming. You can specialise in areas such as automation and robotics or wafer fabrication.

Look forward to rewarding career opportunities in the industry or pursue further education at prestigious universities worldwide.

This diploma lets you...

- Get solid grounding in mechatronics competencies. You will be sought after in industries that embrace technological innovations in robotics and autonomous systems.
- Receive training from experienced lecturers. Maximise your learning and get opportunities to compete in international and national technological competitions.
- Gain overseas internship experiences and participate in exchange programmes with Japanese, Korean and Taiwanese companies and institutions.

Career Paths

- Application Engineer
- Automation Engineer
- Equipment Engineer
- Quality Assurance Engineer
- Research & Development Associate Engineer
- Technical Service Engineer
- Test Engineer

Course Curriculum

YEAR 1

- Algebra
- Calculus
- Effective Communication Skills
- Electrical Principles
- Engineering Drawing & Modelling
- Engineering Exploration Project
- Fundamentals of Innovation & Enterprise
- Fundamentals of Mechanics
- Introduction to Engineering
- Materials Technology
- Programming
- Thermofluids
- Workplace Digital Skills

YEAR 2

- AI Applications
- Analogue & Digital Electronics
- Automatic Control
- Device Interfacing & Programming
- Differential Equations & Series
- Mechanical Design
- Micro-Controller Applications
- Probability & Statistics
- Quality Assurance
- Robotic Systems & Peripherals
- Semestral Projects

YEAR 3

ELECTIVE PROGRAMMES (CHOOSE ONE)

1. Automation & Robotics Technology

- Automation Systems Design
- Communication & Personal Branding
- Motion Control & Drives
- Semestral Project

ELECTIVE MODULES (CHOOSE TWO)

- Communication & Networking
- Intelligent Systems
- Mechanisms Design & Simulation
- Systems & Control
- Wafer Fabrication Processes

2. Wafer Fabrication Technology

- Communication & Personal Branding
- Semestral Project
- Semiconductor Technology
- Wafer Fabrication Processes

ELECTIVE MODULES (CHOOSE TWO)

- Communication & Networking
- Electronic Materials
- Nanomaterials Science
- Systems & Control
- Vacuum Technology & Radio-Frequency Plasma

In the final year, you will have the opportunity to undertake a full-time project and a local or overseas internship programme for one semester.

GENERAL STUDIES MODULES

You will complete a total of nine General Studies modules. Explore other areas of interest beyond your chosen area of specialisation.

The SEG Experience



Tea Pei Qi

DIPLOMA IN MULTIMEDIA & INFOCOMM TECHNOLOGY
(NOW KNOWN AS DIPLOMA IN INFOCOMM & MEDIA ENGINEERING)

ACE STUDENT CHOOSES NYP FOR ALL-ROUND EDUCATION

She could have picked any school with her O-Level score of 3 points but Pei Qi, who describes herself as a hands-on person looking to gain practical skills, chose to enrol in NYP — a decision that initially baffled her parents.

At NYP, Pei Qi made it to the Director's List for all her six semesters and graduated with a perfect GPA score. She bagged multiple awards including the Lee Kuan Yew Award for Mathematics and Science, Cisco Systems (USA) Gold Medal and Medallion for Excellence in Web Technologies.

But her NYP journey was more than just attaining personal academic achievements

and winning competitions for herself.

Propelled by her desire to give back to the community, Pei Qi mentored secondary school students under the Mentoring Club and helped out with engagement activities for senior citizens. She also tutored her peers and coached her juniors who competed in WorldSkills Singapore.

Post-graduation, Pei Qi worked full time at IBM to gain some experience.

She is now pursuing her degree, travelling the world with Minerva University's seven global campuses, on a full scholarship from the Keck Graduate Institute.



Justin Seah

DIPLOMA IN ROBOTICS & MECHATRONICS

PROPELLED TO SUCCESS

His O-Level score might have been in double digits, but with the support of nurturing lecturers, mentors and peers, Justin realised his potential and graduated with a near-perfect GPA.

His outstanding merit even got him an offer to pursue Electrical and Electronic Engineering at Nanyang Technological University. Justin will be continuing his studies under the CN Yang Scholars Programme.

At NYP, Justin thrived not only in the classroom, but also in his internship at Omron Asia Pacific — earning a distinction for the programme, which he extended at the company's request.

And in keeping alive the nurturing spirit at NYP, Justin made time to tutor fellow classmates on top of his heavy involvement in other school activities such as leading projects that integrate the areas of science, technology, engineering and mathematics.



Tang Liew Hang

DIPLOMA IN AERONAUTICAL & AEROSPACE TECHNOLOGY

STAYING AHEAD OF THE GAME

The aerospace and defence industries are hurtling towards 3D printing or Additive Manufacturing. Strong, precision-built parts that are lightweight can be game-changers. They lower costs and increase productivity, Liew Hang explains.

He got into his choice diploma, studying aeronautics — and here at NYP, he was exposed to this trend that is revolutionising the sectors.

Liew Hang said he is grateful that he was given a chance to pick up the skill. But did more than just pick it up — he won the silver medal at the national leg of the WorldSkills Competition.

He also worked alongside NYP staff in finding solutions for ELH Tech — impressing the 3D printing firm so much that it offered him a job before he graduated.

Liew Hang was a recipient of the Lee Kuan Yew Award for Mathematics and Science and the EON Reality Gold Medal.

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 Engineering
and its courses