SCHOOL OF MECHANICAL & MANUFACTURING ENGINEERING

Aeronautical Engineering
Bioengineering
Mechanical Engineering
Mechatronics
Resort Facilities Services & Management

www.sp.edu.sg
Graduates who are well recognised nationally and internationally

Academic Excellence that is World Recognised

The School of Mechanical & Manufacturing Engineering is one of the most established schools in the Singapore Polytechnic with a long history of academic excellence. Our graduates are well recognised nationally and internationally. They have played a key role throughout Singapore’s industrialisation and globalisation programmes and thus very much in great demand by all sectors of industry.

Engineers make tremendous impact on people’s lives affecting nearly everything we see, hear, touch, wear and eat in our daily lives. Engineering is thus a very exciting field of study.

We train our engineering students to design, create and modify. The School constantly strives to upgrade its courses and facilities to meet the ever changing needs of the industry as well as the aspirations of students.

We offer a vibrant, impactful and high quality curriculum that encourages a multi-disciplinary environment for you to work in.

Well-rounded Education

We have introduced several Diploma-Plus programmes over the years to further challenge our promising students to strive harder by offering them the opportunity to graduate with another qualification in addition to their diplomas. We are also very proud of our laboratories and workshops. And to this end, we invest heavily each year to maintain them at the cutting edge of technology.

All courses provide a broad-based education in engineering and technology. The First Year of study is a foundation year with common modules for all five courses offered by the School. We also offer institutional as well as general elective modules to provide you with a well-rounded education.

The institutional modules ensure that Singapore Polytechnic graduates undergo similar training in key areas to develop life skills. These modules comprise character development, critical reasoning skills, innovation, design & enterprise in action (IDEA) and industrial training programme.

In addition to the core engineering modules, General Elective Modules or GEMs are offered through all three years of study. These aim to broaden the educational experience of students by exposing them to subject areas outside their field of study and thus are organised into three clusters, namely: Science & Technology, Humanities & Social Sciences and Business & Management. All students offer at least four GEMs in order to graduate.

Course-specific modules ensure graduates have the necessary knowledge and skills to perform competently in his or her field of study.
We offer five 3-year full-time diploma courses:

- Diploma in Aeronautical Engineering
- Diploma in Bioengineering
- Diploma in Mechanical Engineering
- Diploma in Mechatronics
- Diploma in Resort Facilities Services and Management

Many Career and Further Education Options

This broad-based engineering education allows for greater flexibility to diversify into areas such as information technology, marketing, management and even research & development (R&D). The solid foundation in engineering fully prepares you for further studies.

Our graduates are given advanced standing in both NUS and NTU and may gain direct entry into the Second Year of study. They are also eligible for admission to the business / accountancy courses in NUS, NTU and SMU.

Our diploma courses are well recognised worldwide and our graduates have consistently excelled at universities in the United States, United Kingdom, Australia, Hong Kong, New Zealand, Canada and other countries.

Entry Requirements

Admission to diploma courses is based on the ELR2B2 aggregate score for the GCE ‘O’ Level examination. You need the following minimum results from not more than two sittings of the GCE ‘O’ Level examination to be eligible to apply:

<table>
<thead>
<tr>
<th>GCE ‘O’ Level</th>
<th>Aeronautical Engineering</th>
<th>Bioengineering</th>
<th>Mechanical Engineering</th>
<th>Mechatronics</th>
<th>Resort Facilities Services &amp; Management</th>
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<tbody>
<tr>
<td>English</td>
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<td>Mathematics (Elementary / Additional)</td>
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<td>And</td>
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<td>And ONE of the following relevant subjects:</td>
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<tr>
<td>Physical Science</td>
<td>1-6 in one of these sciences</td>
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<td>Science (Physics, Chemistry)</td>
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<td>Science (Physics, Chemistry, Biology)</td>
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<td>Integrated Science</td>
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<td>Additional Combined Science</td>
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<td>Combined Science</td>
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<td>Physics</td>
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<td>Biology</td>
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<td>Physics</td>
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<td>Chemistry</td>
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<td>And 1-6 in two other subjects excluding CCA</td>
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*Notes:
In order to be eligible for admission, you must also have sat for one of these subjects:

- Additional Combined Science
- Biology
- Combined Science
- Integrated Science
- Physics
- Science (Physics, Biology)
- Science (Physics, Chemistry, Biology)

- Additional Science
- Chemistry
- Design & Technology
- Physical Science
- Science (Chemistry, Biology)
- Science (Physics, Chemistry)
ITE Qualification – Higher NITEC or ITC
All eligible Higher NITEC/ ITC/CBS holders must have a minimum GPA 2.0.

<table>
<thead>
<tr>
<th>Relevant Higher NITEC or ITC</th>
<th>Aeronautical Engineering</th>
<th>Bioengineering</th>
<th>Mechanical Engineering</th>
<th>Mechatronics</th>
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<tbody>
<tr>
<td>GPA ≥ 3.5</td>
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ITE Qualification – NITEC or NTC2
ITE graduates of the following NITEC / NTC2 qualifications with minimum GPA 3.5 (must possess at least GCE ‘N’ Level qualification) will also be considered for admission to the following diploma courses:

<table>
<thead>
<tr>
<th>Relevant NITEC or NTC 2</th>
<th>Aeronautical Engineering</th>
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</thead>
<tbody>
<tr>
<td>Aerospace Technology</td>
<td>Electrical Technology (Power &amp; Machines) / Electrical Power &amp; Machines</td>
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<tr>
<td>Air-Conditioning &amp; Refrigeration Technology</td>
<td>Electronics / Electronics Servicing</td>
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<tr>
<td>Aircraft Maintenance (Mechanical)</td>
<td>Marine Mechanics</td>
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<tr>
<td>Automotive Mechanics (Construction Equipment)</td>
<td>Mechanical-Electrical Drafting</td>
</tr>
<tr>
<td>Automotive Technology (Light Vehicles)</td>
<td>Mechanical Technology / Maintenance Fitting / Mechanical Servicing</td>
</tr>
<tr>
<td>Building Drafting (Civil &amp; Structural)</td>
<td>Port Equipment Technology</td>
</tr>
<tr>
<td>Building Services Technology (Air-Conditioning &amp; Refrigeration)</td>
<td>Precision Engineering (Injection Mould or Press Tool) / Precision Tooling</td>
</tr>
<tr>
<td>Building Services Technology (Mechanical &amp; Electrical Services) / Building Services Technology / Building Servicing</td>
<td>Precision Engineering (Machining) / Precision Machining Tooling / Tool &amp; Diemaking</td>
</tr>
<tr>
<td>Electrical Technology / Electrical Technology (Installation &amp; Servicing) / Electrical Installation &amp; Servicing / Electrical Fitting &amp; Installation</td>
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</table>

“A scientist can discover a new star, but he cannot make one. He would ask an engineer to do that.”

Gordon L Glegg
Author, American Engineer

“The well being of the world largely depends upon the work of the engineer. There is a great future and unlimited scope for the profession; new works of all kinds are and will be required in every country, and for a young man of imagination and keenness I cannot conceive a more attractive profession. Imagination is necessary as well as scientific knowledge.”

Sir William Halcrow
Consulting Engineer
(Johore Causeway, 1919)

A Clear Advantage from Year One
The School of Mechanical & Manufacturing Engineering firmly believe in the importance of nurturing. We are fully aware of the differing academic backgrounds of our students and we "walk that extra mile" to provide our students with a solid broad-based engineering foundation.

Course modules cover a wide spectrum of subjects:
- Character Development
- Computer-Aided Drafting
- Computer Programming
- Critical Reasoning Skills
- Electrical Technology
- Electronics
- Engineering Materials
- Innovation, Design & Enterprise in Action (IDEA)
- General Elective Modules (GEMs)
- Mechanics
- Mathematics
- Thermofluids
- Oral Communication
- Introduction to Engineering

To provide our graduates with a broader education in life skills, a basket of General Elective Modules (GEMs) are offered to the first-year cohort in Semester II. Students are required to offer at least four GEMs in their three years of study.

Innovation, Design & Enterprise in Action (IDEA) is a module taught to all first-year students in the SP. The main objective of this module is to develop in students a mindset for basic creativity, design literacy, innovation and enterprise, through an understanding of the design process.
DIPLOMA-PLUS PROGRAMMES

Diploma + Certificate in Business Course

This course is specially designed and offered only to students of the School of Mechanical & Manufacturing Engineering. It aims to provide engineering students with opportunities to understand and appreciate marketing and business concepts.

The course will provide a head-start for promising engineering students to understand the business environment and work effectively when they graduate from their full-time diploma course.

Besides the engineering knowledge and skills that they learn from the diploma courses, these students will also be equipped with basic business knowledge to contribute to the various business and marketing functions of an organisation.

Entry Requirements
Students who obtain at least a GPA of at least 3.2 in the first semester of their diploma course of study and also posses a minimum of grade C6 for GCE ‘O’ Level English.

Course Modules
The course comprises five modules taught over four semesters starting with the second semester of Year One:

- Basic Financial Management
- Marketing Mix Management
- Introduction to Accounting
- Fundamentals of Economics
- Introduction to Marketing

Diploma + Certificate in Software Programming and Applications Course

This course is designed to provide engineering and business students with higher level skills in computer programming and software applications. This will help students handle final-year projects with substantial computer and programming requirements. It will also stand them in good stead when they pursue further studies, undertake R&D work or embark on their careers.

Entry Requirements
Current first-year students with good GPA scores may be admitted to the course. The selection process is administered by the Mathematics & Science Department.

Course Modules
- C# Programming
- Database Management
- Object-Oriented Development
- Net Application
- Spreadsheet with Programming

Diploma + Certificate in Engineering Mathematics Course

This course is offered to more academically able students with good aptitude for mathematics. The programme covers the curricula of both the existing engineering course mathematics and the modules in the Certificate in Engineering Mathematics course. In the latter course, engineering mathematics is taught in greater breadth and depth with the aim to prepare students for further studies.

Entry Requirements
Students with good GCE ‘O’ Level results (aggregate of 12 or less) and good grades in both elementary and additional mathematics may be admitted to the course. The selection process is administered by the Mathematics & Science Department.

Course Modules
The five modules in the course are taught over five semesters:

- Calculus I & II
- Differential Equations
- Linear Algebra & Vectors
- Probability & Statistics

Diploma + Specialist Diploma in CNC Applications Course

This course is specially designed and offered only to students in the Diploma in Mechanical Engineering course. Students will be taught skills which include computer-aided design and computer-aided manufacturing applications, mould development and design, precision engineering applications, and advanced inspection.

Entry Requirements
An aggregate score of 18 points (L1R2B2) or less for GCE ‘O’ Level examinations, not less than 70% overall course average for the first year of study with at least grade B for both Computer-Aided Drafting and Introduction to Engineering modules.

Course Modules
- Advanced Machining
- Mould Development
- CAD / CAM Applications
- CAE in Injection Moulding
- Basic Mould Design
- Processes Development
- Precision Part
- Computer Numerical Control (Turning)
- Computer Numerical Control (Milling)
Are you fascinated by the awesome technological breakthroughs in aviation and want to be part of it? If yes, then you must enrol in our very popular Diploma in Aeronautical Engineering course and launch yourself into a life-long, exciting career in the world of aerospace.

The course will arm you with a broad-based engineering foundation to support a wide spectrum of activities in the aerospace industry, including aircraft maintenance, repair and overhaul. In other words, you keep the magnificent flying machines up in the air.

**Rewarding Future**

Singapore has a booming aerospace industry that registers record outputs year after year. 2006 was another great year with an output of around S$6.3 billion, a whopping 21 per cent increase over 2005. Aerospace engineering activity is thus a key component of the engineering industry’s contribution to Singapore’s economy.

There are currently over 100 aerospace companies in Singapore engaged in servicing, manufacturing, maintenance, repair and overhaul of aircraft and components serving the 83 international airlines linking Singapore to over 180 cities worldwide. The Aerospace industry here is also climbing the value chain with many multi-national companies establishing R & D facilities in Singapore.

Seletar Airport and its surrounding area of over 140 hectares have been earmarked to host a new integrated aerospace industry cluster. The development of the new aerospace park is geared to deliver additional space for industry expansion, and complement existing aerospace activities at Changi, Loyang and other areas of Singapore.

The development of Singapore into an aviation and air logistics hub will provide many challenging job opportunities in the rapidly growing aerospace industry.

The main employers of our graduates include the major airlines, air transport operators, the aerospace industry sector, and of course the Republic of Singapore Air Force.

By virtue of their training, aeronautical engineering technologists can expect to be employed in the areas of aircraft maintenance, design and development for aircraft modification, prototype and production testing, material requirements planning or the supervision of workers.

The Diploma in Aeronautical course is accredited by the Civil Aviation Authority of Singapore. Aeronautical engineering technologists qualify for credit towards 11 Aircraft Maintenance Engineer basic examination subjects under section 7 of the Singapore Airworthiness Requirements. The course management team is in negotiation with CAAS for similar recognition under SAR 66 that supersedes SAR 7 over the next few years.

**Realistic Training on Fighter Jet**

With two aircraft (A4-SU Super Skyhawk fighter jet and Cessna 310 twin engine) on campus, students receive realistic training on aircraft. They will be able to learn all about the workings of both jet and piston engine aircraft.
Course Modules

<table>
<thead>
<tr>
<th>Second Year</th>
<th>Third Year</th>
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<tbody>
<tr>
<td>• Aircraft Electrical &amp; Instrument Systems</td>
<td>• Aerospace Materials</td>
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<tr>
<td>• Aircraft Maintenance Practices</td>
<td>• Aircraft Power Plants</td>
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<tr>
<td>• Aircraft Power Plants</td>
<td>• Aircraft Systems</td>
</tr>
<tr>
<td>• Aircraft Structure &amp; Repairs</td>
<td>• Airframe Systems</td>
</tr>
<tr>
<td>• Computer-Aided Design (DARE)</td>
<td>• Avionic Systems</td>
</tr>
<tr>
<td>• Computer-Aided Machining &amp; Metrology</td>
<td>• Communications Skills for Work</td>
</tr>
<tr>
<td>• Engineering Design</td>
<td>• General Elective Modules (GEMs)</td>
</tr>
<tr>
<td>• Engineering Materials</td>
<td>• Human Factors</td>
</tr>
<tr>
<td>• Engineering Mathematics</td>
<td>• Mechanics</td>
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<tr>
<td>• Fundamentals of Flight</td>
<td>• Organisational Management</td>
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<tr>
<td>• General Elective Modules (GEMs)</td>
<td>• Project</td>
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<tr>
<td>• Mechanics</td>
<td>• Quality Engineering &amp; Management</td>
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<tr>
<td>• Report Writing &amp; Presentation</td>
<td>• Statistics</td>
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</table>

In addition to GEMs, students also offer one of the following technical electives:
- Higher Mathematics
- Machine Dynamics
- Product Design
- Simulation

Up-to-Date, Relevant Training

“Whether you plan to start work after attaining your Diploma, or continue to go for a Degree, the DARE course has much to offer in preparing you for your future career and studies. The dedicated staff teaching the course will always challenge what you think, make you question your most basic of assumptions and ensure that you have an adequate grasp of the subject matter before moving on. This coupled with advanced training aids make the DARE course one which covers both the theoretical as well as practical aspects of aviation technology. This hands-on approach also helps students comprehend the lectures at a deeper level, and allows them to get familiarised and acquainted with current aircraft maintenance tools and equipment.”

Nathaneal Xie Wenyao
2007 Aeronautical Engineering Graduate Diploma with Merit
Recipient of Singapore Technologies, Aerospace Merit Award & winner of Defence Science Technology Agency (DSTA) Overseas Scholarship
Bioengineering is the study of engineering as applied to the medical, biological and healthcare industries. Bioengineers play an important role in the bio-manufacturing sectors by ensuring that the pharmaceutical, medical and vision industries meet with strict manufacturing processes. Bioengineers can also contribute to the sports and rehabilitation industries by learning to assess human performance and designing and developing equipment to enhance human performance in sports or developing and maintaining medical devices to enhance the quality of life for the growing aged and disabled community.

The Diploma in Bioengineering course, launched in 2006, is offered as a three-year full time course. Starting AY2008/2009, the course offers two options for the student to specialise in either bio-manufacturing or in sports and rehabilitation engineering.

**Rewarding Future**

Bioengineering technologists can look forward to a wide range of employment opportunities that include bio-manufacturing companies, healthcare organisations, biomedical engineering companies, sports related industries, hospitals and rehabilitation centres.

Students can choose to work in the bio-manufacturing sector that serves the growing pharmaceutical, medical and vision industry in Singapore. They can also choose to work in the sports and rehabilitation sector that would meet the growing emphasis by the government to enhance human performance in sports as well as to serve the growing aged and disabled community. You will learn to apply engineering principles and methods to solve problems in the medical, sports and rehabilitation fields as well as provide engineering support to the bio-manufacturing activities in biomedical sciences sector.
## Course Modules

### Bio-manufacturing Option

<table>
<thead>
<tr>
<th>Second Year</th>
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<tbody>
<tr>
<td>• Computer-Aided Design</td>
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<tr>
<td>• Design of Biomedical Devices</td>
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<tr>
<td>• Engineering Design</td>
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<td>• Engineering Materials</td>
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<td>• Engineering Mathematics</td>
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<tr>
<td>• General Elective Modules (GEMs)</td>
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<tr>
<td>• General Biochemistry</td>
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<td>• Introductory Anatomy &amp; Physiology</td>
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<td>• Introductory Microbiology &amp; Immunology</td>
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<td>• Introduction to Optics</td>
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<td>• Mechanics</td>
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<td>• Pharmaceutical Process Control</td>
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<td>• Report Writing &amp; Presentation</td>
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<td>• Thermofluids</td>
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<table>
<thead>
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<th>Third Year</th>
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<td>• Basic Pharmacology of the Eye</td>
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<td>• Biofluids</td>
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<td>• Biomaterials</td>
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<td>• Biomechanics</td>
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<td>• Biostatistics</td>
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<td>• Contamination Control &amp; Cleanroom Technology</td>
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<td>• Communication Skills for Work</td>
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<td>• General Elective Modules (GEMs)</td>
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<tr>
<td>• Introductory Ophthalmic Optics</td>
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<tr>
<td>• Pharmaceutical Packaging</td>
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<td>• Pharmaceutical Primary &amp; Secondary Operations</td>
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<tr>
<td>• Rapid Prototyping for Biomedical Applications</td>
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<td>• Organisational Management</td>
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<td>• Project</td>
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<td>• Regulatory Issues &amp; current Good Manufacturing Practice (cGMP)</td>
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### Sports and Rehabilitation Option

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<th>Second Year</th>
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<tr>
<td>• Assistive Technology &amp; Rehabilitation Engineering</td>
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<tr>
<td>• Computer-Aided Design</td>
<td></td>
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<tr>
<td>• Design of Biomedical Devices</td>
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<tr>
<td>• Engineering Design</td>
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<tr>
<td>• Engineering Materials</td>
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<tr>
<td>• Engineering Mathematics</td>
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<tr>
<td>• General Elective Modules (GEMs)</td>
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<tr>
<td>• General Biochemistry</td>
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<td>• Human Factors Engineering</td>
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<td>• Introductory Anatomy &amp; Physiology</td>
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<td>• Mechanics</td>
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<tr>
<td>• Prosthetics &amp; Orthotics</td>
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<tr>
<td>• Report Writing &amp; Presentation</td>
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<td>• Thermofluids</td>
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<thead>
<tr>
<th>Third Year</th>
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<tbody>
<tr>
<td>• Bioinstrumentation</td>
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<td>• Biofluids</td>
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<td>• Biomaterials</td>
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<td>• Biomechanics</td>
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<td>• Biostatistics</td>
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<td>• Communication Skills for Work</td>
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<td>• Exercise Physiology</td>
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<td>• General Elective Modules (GEMs)</td>
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<td>• Management of Sports Facilities</td>
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<td>• Marketing for Sports and Leisure</td>
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<td>• Mechanics</td>
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<td>• Physiotherapy &amp; Occupational Therapy</td>
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<td>• Project</td>
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<td>• Sports Injury Management</td>
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<td>• Sports Psychology</td>
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Mechanical engineers are involved in creating the future. They are essentially inventors who make an impact on people’s lives. By dreaming up ideas and turning them into a reality they push technology to its limits.

Mechanical Engineering touches all aspects of life. Every product from mobile phones to medical imaging products requires inputs from the mechanical engineers, from design to its usage. They are also the driving force behind many of our technologies and each new technology that spawns an industry, from chemical to biomedical, generates a demand for Mechanical Engineers to help transform technology into useful products.

The course offers a wide choice of options extending across many interdisciplinary interdependent specialties.

**Rewarding Future**

Students become well prepared for employment in a wide range of exciting industries including aerospace, offshore oil & gas, chemical, computers, electronics, manufacturing, pharmaceuticals, robotics and all fields of technology. They could work in many of these industries either in the private or public sector and their work varies by industry and function.

The various statutory boards, armed services, servicing and manufacturing, shipbuilding, power generation, petrochemical, refrigeration, air-conditioning, plant operation, maintenance management, materials engineering and logistics management sectors of the industry are major employers of our graduates.

**Broad-based Education**

Harsono, who hails from Indonesia, graduated with a diploma with merit in Mechanical engineering in 2004. He topped his class and was awarded the Singapore Airlines Mechanical Engineering Gold Medal, Institution of Engineers, Singapore Book Prize and GlaxoSmithKline Merit Award.

“I joined the Nanyang Technological University directly as a second year undergraduate to pursue a bachelor’s degree in Mechanical engineering. I managed to digest the academic workloads in the university and to relate them in the actual applications, thanks to the foundation laid down during my polytechnic days. The combination of these two elements enabled me to perform consistently well during my undergraduate days.

The academic and industrial exposure I had during my studies in the School of Mechanical and Manufacturing (MM) was invaluable to me. It provided me with numerous opportunities to hone my problem solving skills through various projects and competitions, such as Product and Process Research & Development, Pro/E Design Competition and of course, the Final Year Project. The knowledge and skills laid the foundation to pursue my further education.”

**Harsono**

Course Modules

Second Year

• Advanced Machining & Inspection
• Computer-Aided Design
• Computer-Aided Machining
• Engineering Design
• Engineering Materials
• Engineering Mathematics
• General Elective Modules (GEMs)
• Industrial Automation
• Thermofluids
• Mechanics
• Report Writing & Presentation
• Industrial Engineering

Third Year

• Communications Skills for Work
• Engineering Thermodynamics
• Fluid Mechanics
• General Elective Modules (GEMs)
• Mechanics
• Organisational Management
• Project
• Quality Engineering & Management
• Statistics

The specialisation subjects are listed below for each Option.

1. Energy Systems Option
   - Cleanroom Technology
   - Instrumentation & Control
   - Plant Maintenance Engineering
   - Refrigeration & Air-conditioning

2. Materials Option
   - Aerospace Materials
   - Display Technology & Nanoscience
   - Instrumentation & Control
   - Microdevices & Materials

3. Pharmaceuticals Option
   - Contamination Control & Cleanroom Technology
   - Overview of Pharmaceutical Manufacturing & cGMP (current Good Manufacturing Practice)
   - Pharmaceutical Packaging
   - Pharmaceutical Primary & Secondary Operations
   - Pharmaceutical Process Control

In addition to the subjects listed, all students except those in the Pharmaceuticals Option are also offered the following technical electives in their final year of study:

• CAD / CAE for Injection Moulding
• Cleanroom Technology
• Higher Mathematics
• Machine Dynamics
• Product Design
• Stamping/Die Design

Creativity, Innovation and Enterprise (CIE) Option
(Only applicable to students electing this option at the end of Year 1)

Second Year

• Business Planning for New Ventures
• Computer-Aided Design
• Computer-Aided Machining
• Design Technique & Skills
• Engineering Design
• Engineering Materials
• Engineering Mathematics
• General Elective Modules (GEMs)
• Mechanics
• Product Design & Development
• Thermofluids
• The Art & Science of Colours
• Writing Skills for Entrepreneurs

Third Year

• Communication Skills for Entrepreneurs
• Engineering Thermodynamics
• Fluid Mechanics
• General Elective Modules (GEMs)
• Industrial Automation
• Mechanics
• Organisational Management
• Project (Industry based)
• Quality for Product Realisation
• Statistics
Rewarding Future

Mechatronics technologists are employed in a wide range of highly automated industries. Increasingly, more companies in the electronics and pharmaceutical industries are employing complex automation systems for greater productivity. Therefore, demand for Mechatronics technologists with their knowledge and skills in areas encompassing the electronics, mechanical and manufacturing disciplines is likely to increase in tandem.

Versatility

This multi-disciplinary course allows our graduates greater choice in their field of studies. They may easily enrol to read Aeronautical, Electronics, Electrical, Mechanical, Manufacturing Engineering or Mechatronics with exemptions in both local and overseas universities.

“Though my polytechnic days seem so long ago, the valuable skills and knowledge gained are still with me. SP trained me to be more independent all around.

The skills and knowledge gained from SP were very useful when I read for my degree. Compared to my peers from junior colleges, I had a clear advantage in both theory and practical skills. I was able to tackle academic problems more easily in view of my understanding of basic concepts obtained while at SP. SP, unlike a university, has more laboratory and practical sessions. SP students are therefore more flexible and technically inclined. This is very important in this rapidly changing society as many employers now require their employees to be very flexible and also have greater abilities.”

Lim Wenbin
Bachelor of Engineering (Mechanical) (First Class Honours) from NTU
Currently pursuing PhD at NTU
Diploma in Mechatronics with Merit, 2002
## Course Modules

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<tr>
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<tbody>
<tr>
<td>• CAD (Electronics)</td>
<td>• Communication Skills for Work</td>
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<tr>
<td>• Circuit Theory</td>
<td>• Electromechanical Devices</td>
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<tr>
<td>• Design &amp; Fabrication Project</td>
<td>• General Elective Module (GEMs)</td>
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<tr>
<td>• Electronic Devices</td>
<td>• Manufacturing Engineering Technology</td>
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<tr>
<td>• Engineering Mathematics</td>
<td>• Organisational Management</td>
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<tr>
<td>• General Elective Modules (GEMs)</td>
<td>• Project</td>
</tr>
<tr>
<td>• Industrial Automation</td>
<td>• Programmable Logic Controllers</td>
</tr>
<tr>
<td>• Industrial Engineering</td>
<td>• Power Electronics &amp; Drives</td>
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<tr>
<td>• Mechanics</td>
<td>• Statistics</td>
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<tr>
<td>• Micro-controller for Mechatronic Systems</td>
<td>• Systems &amp; Control</td>
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<tr>
<td>• Report Writing &amp; Presentation</td>
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In addition to GEMs, students also take two of the following technical electives:
- Biomedical Electronics
- Higher Mathematics
- Instrumentation & Control
- Machine Dynamics
- Micro-devices & Materials
- Product Design
- Quality Engineering & Measurement
- Simulation

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*Dancing robots win Gold at Singapore Robotics Games 2007 for Singapore Polytechnic.*
DIPLOMA IN RESORT FACILITIES SERVICES AND MANAGEMENT ($49) NEW

This new Diploma in Resort Facilities Services & Management trains technologists to meet the needs of the mechanical, electrical and building services for integrated resorts, amusement parks and attractions in Singapore and other large buildings like airport terminals, hotels, hospitals, shopping malls and multi-storey offices.

The course provides you with a balanced grounding in several fields: Mechanical Engineering; Electrical Power Engineering, Building Maintenance and Management Services, Project management; Space & Event management; Resort Risk Management & Safety and Fire Engineering & Management.

The training enables you to apply engineering and management principles and methods to handle projects and to trouble-shoot problems in resort facilities and services as well as to support the operations and maintenance of buildings and other engineering assets.

Rewarding Future

Graduates from this Diploma can look forward to a wide range of employment opportunities which include the handling of on-going projects, liaising with contractors on the installation and integration of resort facilities; design and operation of rides, operation and maintenance of resort and theme park facilities; conducting risk assessment on resort facilities and energy control of resort facilities.

These job scopes can also be extended to hotel, hospitals and complex industrial buildings facilities.

Course Modules

Second Year

- Building Maintenance Technology
- Electrical Installation Design
- Electromechanical Devices
- Engineering Design
- Engineering Materials
- Engineering Mathematics
- Environmental Safety & Health
- General Elective Modules (GEMs)
- Mechanics
- Property Maintenance Management
- Report Writing & Presentation
- Resort Mechanical Facilities & Services
- Thermofluids

Third Year

- Building Automation Systems
- Building Economics
- Communication Skills for Work
- Fire Engineering & Management
- General Elective Modules (GEMs)
- Mechanics
- Power Distribution & Electrical Services
- Project
- Project Management
- Refrigeration & Air Conditioning
- Resort Maintenance Engineering & Services
- Resort Risk Management & Safety
- Space & Event Management
- Statistics
- Thermofluids
BEYOND THE CLASSROOM

Pro / E Design Competition

In October of last year, PTC (Parametric Technology Corporation) invited students from around the world to participate in PTC’s Worldwide Student Design Challenge. Students were challenged to create designs using Pro / ENGINEER and Pro / DESKTOP to answer specific design competition challenge questions. Two of our students won prestigious prizes in the PTC Worldwide Design Challenge 2007.

Winner of the 19 and older category and the ‘Grand Prize’ in Asia Pacific was Diploma in Mechanical Engineering (DME) student, Muhammad Syah Rudin Bin Hussain, with his ‘Curb Climbing Wheelchair’ design. Special winner of the ‘Creative Achievement Award’ was Diploma in Aeronautical Engineering (DARE) student, Bryan Lim Wee Tian, with his ‘The New V-Cutter’ design. These students competed successfully against other submissions from Asia Pacific, including those from the Yan Cheng Institute of Technology (China) and the University of Auckland (Australia).

WorldSkills

This is an annual skills competition where students from the polytechnics and Institute of Technical Education pit their skills in various categories such as computer-aided machining, Mechatronics, mobile robotics, industrial control, etc. Our students have consistently excelled in this competition. 2007 was no different. Muhammad Sofyan b. Zainalabidin won a Gold for Mechanical Engineering Drawing & Design (CADD) while Seah Shun was awarded a Medallion of Excellence in CNC Turning in the WorldSkills Competition 2007, held in Shizuoka, Japan that attracted over 800 participants from 47 countries.

Toy Design Competition

The 2007 Toy Design Competition was sponsored by Mattel, Hewlett-Packard, Autodesk and supported by the Ministry of Education and DesignSingapore Council. This annual event attracted over a hundred entries from some twenty-five schools.

Generation-Y Leadership Camp in Batam

Class representatives from the School of Mechanical & Manufacturing Engineering gathered at a resort in Batam between 04 and 07 September 2007. Students had a wonderful time bonding with fellow student leaders through motivational talks / games and outdoor activities.

REACHING GREATER HEIGHTS

"I joined the Singapore Polytechnic’s diploma in Mechanical Engineering course after completing my GCE ‘O’ levels in Queenstown Secondary School. I had chosen this course as I find a career as an engineer very inspiring and exciting.

During my studies in the polytechnic, I joined Current Affairs and Debating Club where I had lots of fun organising camps and getting to know more friends. I was able to balance my time between my studies and co-curricula activities well and graduated with a certificate of merit for my diploma.

As a diploma holder, I was exempted from taking some of the modules offered in Nanyang Technological University as I have already acquired some of the knowledge from the Polytechnic. The three years in the university was relatively easy for me as I had already acquired some basic foundation for some of the engineering modules through my studies in the polytechnic.

I am pursuing my career in the aerospace industry as a flight test engineer with ST Aerospace.”

Chris Chua
B Eng Degree in Mechanical Engineering (First Class Honours) Nanyang Technological University (Queenstown Secondary School/ Diploma in Mechanical Engineering with Merit, 2001)
Invitation

We invite you to visit us and see for yourself our up-to-date facilities and equipment. Also, come see the A4-SU Super Skyhawk fighter aircraft on display. You may even get a chance to sit in its cockpit.

Our website: www.sp.edu.sg/schools/mm

Or call the following persons if you need more information on our courses:

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Administrative Officer
Tel: (65) 6772-1819
E-mail: Norita@sp.edu.sg

Diploma in Aeronautical Engineering
Mr R Ganesh
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Tel: (65) 6772-1553
E-mail: rganesh@sp.edu.sg

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The Polytechnic reserves the right to alter the information in this publication. Information is correct as at 1 January 2008.