

# MECHANICAL ENGINEERING

## DME – S91

Empower your future with the most broad-based Engineering Course that remains Evergreen, always relevant, and consistently in demand across ALL sectors

Gear up for an exhilarating journey with the Diploma in Mechanical Engineering (DME) at SP! Since its inception in 1958, the DME has been the go-to choice for aspiring engineers like you.

Elevate your journey in Mechanical Engineering with our curriculum, seamlessly integrating AI advancements and sustainability principles. Beyond mastering the fundamentals, our program aligns with global trends, providing a robust foundation in mechanical engineering complemented by essential interdisciplinary skills in Business and Humanities. We champion a hands-on learning approach, immersing you in industry-focused opportunities that not only enhance your knowledge and competencies but also instill a strong sense of responsibility towards sustainability. Experience the transformative power of advancement of technology in shaping a better future through our partnerships with renowned organisations such as:

- A\*STAR
- Dassault Systèmes
- Panasonic
- SBS Transit
- Siemens
- Sivantos
- SMRT

These industry partners provide opportunities for our students to build a network of connections while working on ground-breaking projects — opening doors to unparalleled career opportunities!

### CAREER OPTIONS

- Assistant Automation Engineer
- Assistant Engineering Services Engineer
- Assistant Facility Engineer
- Assistant HVAC (Heating, Ventilation & Air-Conditioning) Engineer
- Assistant Machine & Product Design Engineer
- Assistant Medical Device/Equipment Application Engineer
- Assistant Medical Device Design Engineer



### WHAT YOU CAN EXPECT

- Gain practical industry experience that will prepare you to be future-ready.
- Be exposed to the latest advanced manufacturing technologies at our high-tech learning space.
- Check out the multiple pathways to established local and overseas universities.
- Choose from diverse career options available in emerging fields such as advance manufacturing, automation, biomedical, composites, energy, materials, product design, robotics and more.
- Choose 1 of 6 specialisations in:
  - Automation & Robotics
  - Biomedical
  - Energy & Facilities Management
  - Engineering Design & Simulation
  - Precision Engineering
  - Rapid Transit Technology

### FURTHER STUDIES

You can gain an advanced standing of up to two years in and relevant engineering degree courses at local and international universities, such as:

- Nanyang Technological University (NTU)
- National University of Singapore (NUS)
- Singapore University of Technology & Design (SUTD)
- Singapore Institute of Technology (SIT) (University of Glasgow and Newcastle University)
- Singapore University of Social Sciences (SUSS)
- Imperial College London
- University of Manchester
- University of Birmingham
- University of New South Wales
- Royal Melbourne Institute of Technology University

- Assistant Project Engineer
- Assistant Quality Control/Assurance Engineer
- Assistant Rapid Transit Engineer
- Assistant R&D (Research & Development) Engineer
- Assistant Tooling Engineer
- Bioengineering Technologist
- Medical Equipment Technologist
- Regulatory Affairs Specialist

### ENTRY REQUIREMENTS

Range of Net 2023 JAE ELR2B2: 6 – 19  
Aggregate Type: ELR2B2-C

SUBJECT	GRADE
English Language	1 – 7
Mathematics (Elementary/Additional)	1 – 6
Any one of the following subjects:	1 – 6
<ul style="list-style-type: none"> <li>• Biology</li> <li>• Biotechnology</li> <li>• Chemistry</li> <li>• Computing/Computer Studies</li> <li>• Design &amp; Technology</li> <li>• Electronics/Fundamentals of Electronics</li> <li>• Physics</li> <li>• Science (Chemistry, Biology)</li> <li>• Science (Physics, Biology)</li> <li>• Science (Physics, Chemistry)</li> </ul>	

Applicants should not be suffering from severe vision deficiency, acute hearing impairment or uncontrolled epilepsy. Interested applicants with any of these conditions are advised to contact Singapore Polytechnic for more information.



I interned at SIMTech (Singapore Institute of Manufacturing Technology), A\*STAR, as part of my scholarship. I realised the significance of coding in Industry 4.0, despite it not being my favourite. The experience honed my skills in technical drawings, 3D modelling and 3D printing. I even got some of my designs fabricated by CNC machining! In research engineering and manufacturing, precision is vital, requiring many trial-and-error tests with 3D printed parts.

#### Kelly Tay Keli

DME Gold Medallist  
Internship at Singapore Institute of Manufacturing Technology



# WHAT YOU'LL STUDY

The Diploma in Mechanical Engineering is a three-year full-time programme.



## FIRST YEAR

- Basic Mathematics
- Computer Aided Drafting
- Common Core Modules
- Computer Programming
- Digital Electronics 1
- Engineering Materials 1
- Engineering Mathematics 1
- Introduction to Engineering
- Mechanics 1
- Principles of Electrical & Electronic Engineering 1
- Thermofluids 1

## SECOND YEAR

- Computer-Aided Machining
- Common Core Modules
- Design and Build
- Engineering Materials 2
- Engineering Mathematics 2
- Elective 1
- Elective 2
- Industrial Automation
- Mechanics 2
- Statistics and Analytics for Engineers
- Thermofluids 2
- + Specialisation Modules (Choose One)**
  - + Automation & Robotics**
    - Smart Solution Development
  - + Energy & Facilities Management**
    - Building Information Modelling for MEP Services
  - + Biomedical**
    - Biomedical Equipment & Practices
- + Engineering Design & Simulation**
  - Manufacturing Processes with Design for Manufacturing
- + Rapid Transit Technology**
  - Railway Systems
- + Precision Engineering**
  - Digital Fabrication and Metrology

## THIRD YEAR

- Elective 3
- Engineering Thermodynamics
- Internship Programme/ Internship Equivalent - FYP
- + Common To All Specialisations Except Biomedical Specialisation**
  - Fluid Mechanics
  - Mechanics 3
  - Workplace Safety & Health Management
- + Specialisation Modules (Choose One)**
  - + Automation & Robotics**
    - Programmable Logic Controllers
    - Robotics for Advanced Manufacturing
  - + Energy & Facilities Management**
    - Refrigeration & Air-conditioning
    - Renewable Energy & Applications
  - + Biomedical**
    - Assistive Technology & Rehabilitation Engineering
    - Biofluids
    - Biomechanics
    - cGMP & Medical Device Validation
    - Contamination Controls & Clean Room
- + Engineering Design & Simulation**
  - Mechanical Assembly Design in CAD
  - Engineering Simulations
- + Rapid Transit Technology**
  - Rolling Stock Design & Maintenance
  - Railway Infrastructures Design & Maintenance
- + Precision Engineering**
  - Multi-Axis Machining Applications
  - Tooling Engineering

## ELECTIVES

The SP elective framework offers students options to pursue their passion and / or meet different career needs, and is an integral part of the holistic education we seek to provide to our students. The learning experiences of this elective framework help students in their development as self-directed, versatile, life-long learners, which are essential in today's volatile and changing societal as well as occupational landscape.

Students who are interested to explore additional new skills and abilities will have the opportunity to take up to five electives. Certificates and minors will be awarded when students complete a suite of related elective modules. Please visit <https://www.sp.edu.sg/sp/education/elective-modules> for details of this elective scheme and the full list of electives.

## COMMON CORE CURRICULUM

The Common Core Curriculum is designed to prepare students for a disruptive world that is ever-changing. Comprising critical human and emerging digital skills, the common core modules offer students an integral and inter-disciplinary learning experience to address the wicked problems of the world (framed by the United Nations' Sustainable Development Goals).

Through the Common Core modules, students will think critically about real-world problems, empathise with local and global communities and be challenged to effect change. For more information on the Common Core Curriculum, please visit <https://www.sp.edu.sg/sp/education/common-core-curriculum>.

All full-time diploma students are required to take a compulsory Education and Career Guidance module in SP. Students will take Education and Career Guidance – Personal Development (30 hours) in their first year.

All students are required to take one compulsory Wellness for Life (WFL) module for one semester in their first year in SP. In their second and third year, students may sign up for WFL module as an optional module.