

Mechatronics

Overview

Industry 4.0 is transforming the modern workplace. From the basic tenets of engineering to cutting-edge technology, this course prepares you for the new era of advanced manufacturing where humans, machines, and systems communicate and collaborate safely in real time.

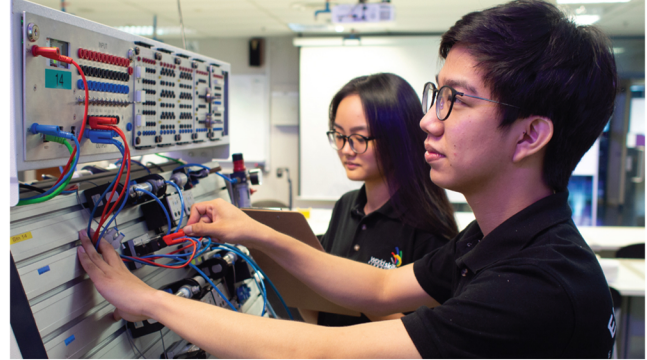
With increasing consumer demand for personalised products and smart digital services in growth areas such as advanced manufacturing, aerospace, robotics, artificial intelligence, precision engineering and pharmaceutical manufacturing, the specialised skills you will acquire in these areas will provide you an advantage in virtually any engineering sector!

Career Opportunities

This course is well positioned and recognised in multiple sectors under the SkillsFuture industry framework. You can excel in diverse advanced manufacturing sectors ranging from precision engineering and integrated circuit manufacturing, to semiconductor fabrication and pharmaceutical processing.

Exciting jobs await you as:

- Aerospace Technologists
- Associate / Application Engineers
- Equipment / Maintenance Engineers
- Process Control Engineers
- Research & Development Specialists
- Robot Coordinators



Entry Requirements

5 GCE 'O' Level subjects comprising:

| | |
|-------------------------------------|--------------|
| English Language (EL1) | (Grades 1-7) |
| Mathematics (E or A Maths) | (Grades 1-6) |
| One of the following subjects* | (Grades 1-6) |
| Any two other subjects (except CCA) | -- |

* *Biology, Biotechnology, Chemistry, Combined Science, Computing / Computer Studies, Design & Technology, Electronics / Fundamentals of Electronics, Physics / Engineering Science, Science (Chemistry, Biology), Science (Physics, Biology), Science (Physics, Chemistry) / Physical Science.*

Note: Applicants should not be suffering from severe colour vision deficiency, uncontrolled epilepsy, profound hearing loss or severe vision impairment.

Diploma Core Subjects

Year 1:

- Circuit Analysis
- Computer Programming for Problem Solving
- Digital Fundamentals 1 & 2
- Electronic Devices & Circuits
- Electronic Prototyping
- Engineering Mathematics 1 & 2
- Engineering Physics

Year 2:

- Data Visualisation & Analytics
- Engineering Drawing
- Engineering Mathematics 3
- Integrated Project

- Introduction to Smart Automation
- Machining Technology
- Principles of Dynamics
- Robotics & Automation
- Static & Strength of Materials

Year 3:

- Major Project

Cluster Electives:

- 3D Printing
- Advanced Engineering Skills
- Advanced Manufacturing
- Intralogistics & Cybersecurity
- Semiconductor Technology
- TP-SUTD University Pathway Programme

Further Studies

You can gain admission into a wide range of degree programmes at local and overseas universities such as those in USA, UK, Australia and New Zealand. Advance standing for specific modules or up to 2 years exemption may be given depending on the relevance of the degree programme.

You can also join the University Pathway Programme which allows you to take university modules in your final year of this course, and get a one-year exemption for selected degree courses at local universities.

Success Stories

Shell Eco Marathon Race Champion!



A team of Mechatronics students designed and fabricated their own hydrogen fuel-cell powered car, then raced it at the Shell Eco Marathon Race held in Lombok, Indonesia, in October 2022. Their car, named “TP Eco Flash”, won the Gold award by achieving 137km/m³ of hydrogen, beating the next most efficient car from NTU (only 99km/m³). This is the third consecutive time that TP has won this race, after also emerging champion in 2018 and 2019 (there was no physical competition in 2020 and 2021 due to Covid-19.) This testifies to the high technical competency of our Mechatronics students and their ability to apply their skill-sets effectively.

Smart Management System for Aquaculture



Mechatronics student **Eldrick Chia** won the top prize in the Industrial Innovation Challenge 2021, with his project, “Smart Management System for Aquaculture”, beating more than 20 entries from educational institutions and the industry. His project improves productivity in fish farming by automating the fish feeding process, the monitoring of water quality, as well as the amount of food to be fed to the fishes based on their species, size and growth stage, leveraging on IoT and the Aveva platform.

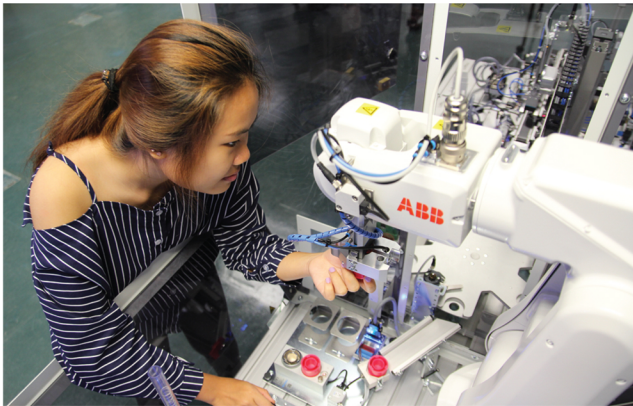
Submitting the same project for the Aquaculture Ideation Innovation Challenge in 2022, Eldrick again struck gold in the competition which was organised by the World Aquaculture Society-Asian Pacific Chapter and the Aquaculture Innovation Centre.

Attributing his success to the technical skills he had gained during his internship at the TP Advanced Manufacturing Centre (TP-AMC), Eldrick said: “TP-AMC helped me to cultivate my engineering skills through hands-on projects related to the latest automation technologies which are part of the Industry 4.0 revolution.”

Core Strengths

This Mechatronics diploma is one of our pioneer courses and enjoys a strong reputation as one of the best and most established among similar courses offered by local polytechnics. As a Mechatronics student, you will have the chance to work with reputable industry partners to develop smart devices and automated systems that integrate electronics, mechanics, and computer technologies, raising the bar in your pursuit of technical excellence.

You will also benefit from our latest state-of-the-art facilities such as the TP Advanced Manufacturing Centre, the Robotics & Automation Centre, and the Digital Fabrication & Additive Manufacturing Centre. These Centres will provide you with an authentic learning experience and give you the opportunity to work with our partners who are industry leaders and experts in their respective fields.



Student Life & Facilities

Your life on campus will be varied and vibrant. Sporting competitions, artistic pursuits, adventure learning programmes, team building games, student club gatherings, as well as the annual Campus Care Network Day carnival when students and staff join forces to raise funds, are some of the many colourful and exciting activities that will pepper your life as a student.

Located in a picturesque environment that is close to nature, the campus provides you with the ideal setting for work, play and recreation.



Always at the forefront of technology, the School emphasises innovation, creativity, problem-based learning and a practical, hands-on approach. With a wide range of modern and well-equipped facilities, and a rigorous and industry-relevant curriculum, we are well positioned to prepare you for a bright future.

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#TPEngine

School of Engineering

*The information in this brochure is accurate at the time of printing
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