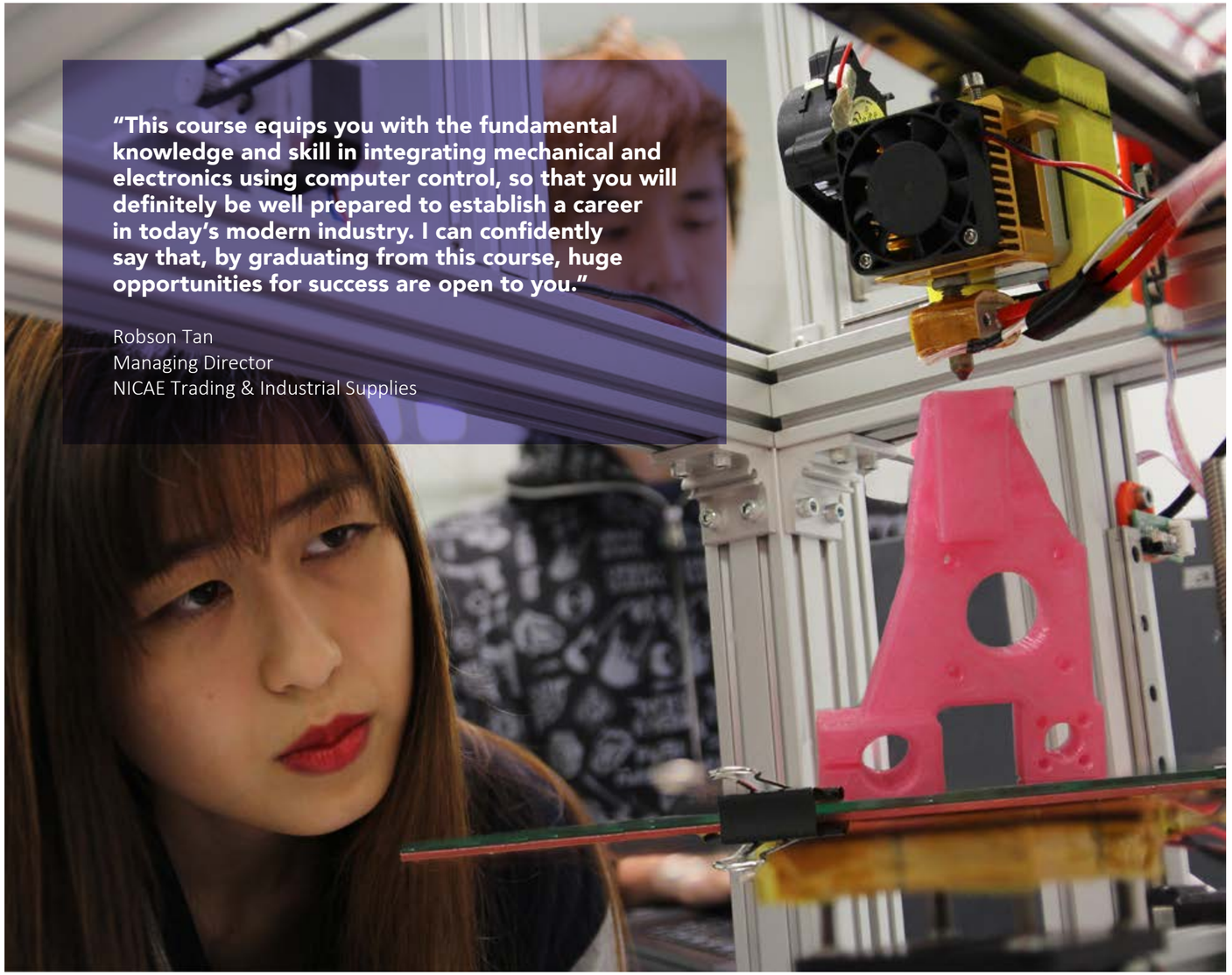
Mechatronics



"This course equips you with the fundamental knowledge and skill in integrating mechanical and electronics using computer control, so that you will definitely be well prepared to establish a career in today's modern industry. I can confidently say that, by graduating from this course, huge opportunities for success are open to you."

Robson Tan
Managing Director
NICAE Trading & Industrial Supplies

In an era that increasingly values productivity, engineering employers favour graduates with knowledge of both mechanical engineering and electronics, and their ability to integrate them with intelligent control systems. This is exactly the versatility that you will get from this course.

Mechatronics is the only discipline of engineering that gives you such versatility. This course begins by giving you a solid foundation in fundamental engineering knowledge and skills, which will then expand into areas such as automation, robotics, mechatronics design, programmable logic controllers, electromechanical, pneumatics, vision systems, sensors integration, microcontroller programming, control engineering and aerospace engineering.

In your final year, you are offered a wide choice of elective subjects. The subjects are categorised into four elective clusters involving key areas of technology: Aerospace Systems, Process Control & Automation, Robotics & Automation, and Semiconductor Technology. By applying these knowledge and skills in product design and automation processes, Mechatronics gives you the flexibility to work in a wide range of high-value industries such as aerospace, automation, clean room, manufacturing, medical, robotics, R&D support and wafer fabrication.

Career Opportunities

The opportunities and benefits to be gained from designing smart products and automated systems are huge, and will continue to grow rapidly in the coming years. You will excel in a wide spectrum of industries as diverse as electronics, manufacturing, food processing, pharmaceuticals, chemicals and aerospace. You may also choose to do R&D work, equipment design and development, planning, project management, as well as technical sales and marketing, qualifying you to work in high-tech manufacturing environments and the growing petrochemical industry. Your diploma will also enable you to take up local and overseas degree programmes in electronic, mechanical, aerospace or computer engineering.

Graduation Requirements

Cumulative Grade Point Average : min 1.0
TP Fundamentals Subjects : 36 credit units
Diploma Core Subjects : 83 credit units
Diploma Cluster Elective Subjects : min 7 credit units
Total Credit Units Completed : min 126 credit units

Application

Apply during the Joint Admissions Exercise following the release of the GCE O Level results. For other categories of local applicants, please refer to the section on “Admission and Requirements”. For international students, please refer to the section on “Information for International Students”.

Entry Requirements for Singapore-Cambridge GCE O Level Qualification Holders

To be eligible for consideration for admission, applicants must obtain 26 points or better for the net ELR2B2 aggregate score (i.e. English Language, 2 relevant subjects and best 2 other subjects, including CCA Bonus Points) and meet the minimum entry requirements of this course. CCA cannot be used to meet the minimum entry requirements.

For details on GCE O Level Minimum Entry Requirements, refer to page 125.

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

Course Structure

TP FUNDAMENTALS (TPFun) SUBJECTS			
SUBJECT CODE	SUBJECT	LEVEL	CREDIT UNITS
ECS1005	Communication & Information Literacy	1	2
ECS1006	Workplace Communication	1	2
ECS1007	Persuasive Communication	1	2
EGS1002	Global Studies	1	3
EGS1003	Managing Diversity at Work*	1	3
EGS1004	Global Citizenship & Community Development*	1	3
EGS1005	Expressions of Culture*	1	3
EIN1001	Innovation & Entrepreneurship	1	2
GCC1001	Current Issues & Critical Thinking	1	2
LEA1011	Leadership: Essential Attributes & Practice 1	1	1
LEA1012	Leadership: Essential Attributes & Practice 2	1	1
LEA1013	Leadership: Essential Attributes & Practice 3	1	1
LSW1002	Sports & Wellness	1	2
MCR1001	Career Readiness 1	1	1
MCR1002	Career Readiness 2	1	1
MCR1003	Career Readiness 3	1	1
TGL1001	Guided Learning	1	3
ESI3001	Student Internship Programme	3	12

** Students must choose one of these three subjects or TGL1001 Guided Learning.*

DIPLOMA SUBJECTS – CORE SUBJECTS

SUBJECT CODE	SUBJECT	LEVEL	CREDIT UNITS
EDR1003	Engineering Drawing	1	4
EED1001	Electronic Prototyping	1	3
EEE1001	Circuit Analysis	1	6
EEE1002	Electronic Devices & Circuits	1	6
EEE1003	Digital Fundamentals 1	1	5
EEE1004	Digital Fundamentals 2	1	5
EMA1002	Engineering Mathematics 2	1	4
EMA1003	Engineering Mathematics 1	1	4
EME1002	Statics & Strength of Materials	1	4
ESC1004	Engineering Physics	1	3
ESE1006	Computer Programming for Problem Solving	1	4
ESE1007	Engineering Analytics	1	3
EED2007	Mechatronics Design Project	2	4
EMA2003	Engineering Mathematics 3	2	4
EME2004	Programmable Automation	2	4
EME2007	Machining Technology	2	4
EME2008	Principles of Dynamics	2	5
EME2011	Engineering Design	2	3
EMP3002	Major Project	3	8

DIPLOMA SUBJECTS - CLUSTER ELECTIVES

SUBJECT CODE	SUBJECT	LEVEL	CREDIT UNITS
Advanced Engineering Skills			
EED3014	Advanced Skills Practices	3	8
Aerospace Systems			
EME2009	Thermodynamics	2	3
EAE3008	Gas Turbine Engine	3	4
Process Control & Automation			
ECT2004	Instrumentation & Computer Control	2	4
EMF3004	Automation & Machine Vision	3	4
Robotics & Automation			
ECT3002	Analytical Robotics	3	4
EMF3004	Automation & Machine Vision	3	4
Semiconductor Technology			
EMI2008	IC Process Integration	2	4
EMI3005	Cleanroom Equipment & Technology	3	4

DIPLOMA SUBJECTS – SPECIAL ELECTIVES

You can opt to take Special Electives when offered. These optional subjects, taken in addition to the diploma cluster electives, will stretch your potential and help you to meet your aspirations.

SUBJECT CODE	SUBJECT	LEVEL	CREDIT UNITS
EED3009	Special Project 1	3	2
EED3010	Special Project 2	3	2
EED3011	Higher Engineering Skills 1	3	2
EED3012	Higher Engineering Skills 2	3	2
EMA3001	Higher Engineering Mathematics	3	4