

Mobile Robotics

MOE-ITE Applied Subject



Why Mobile Robotics?

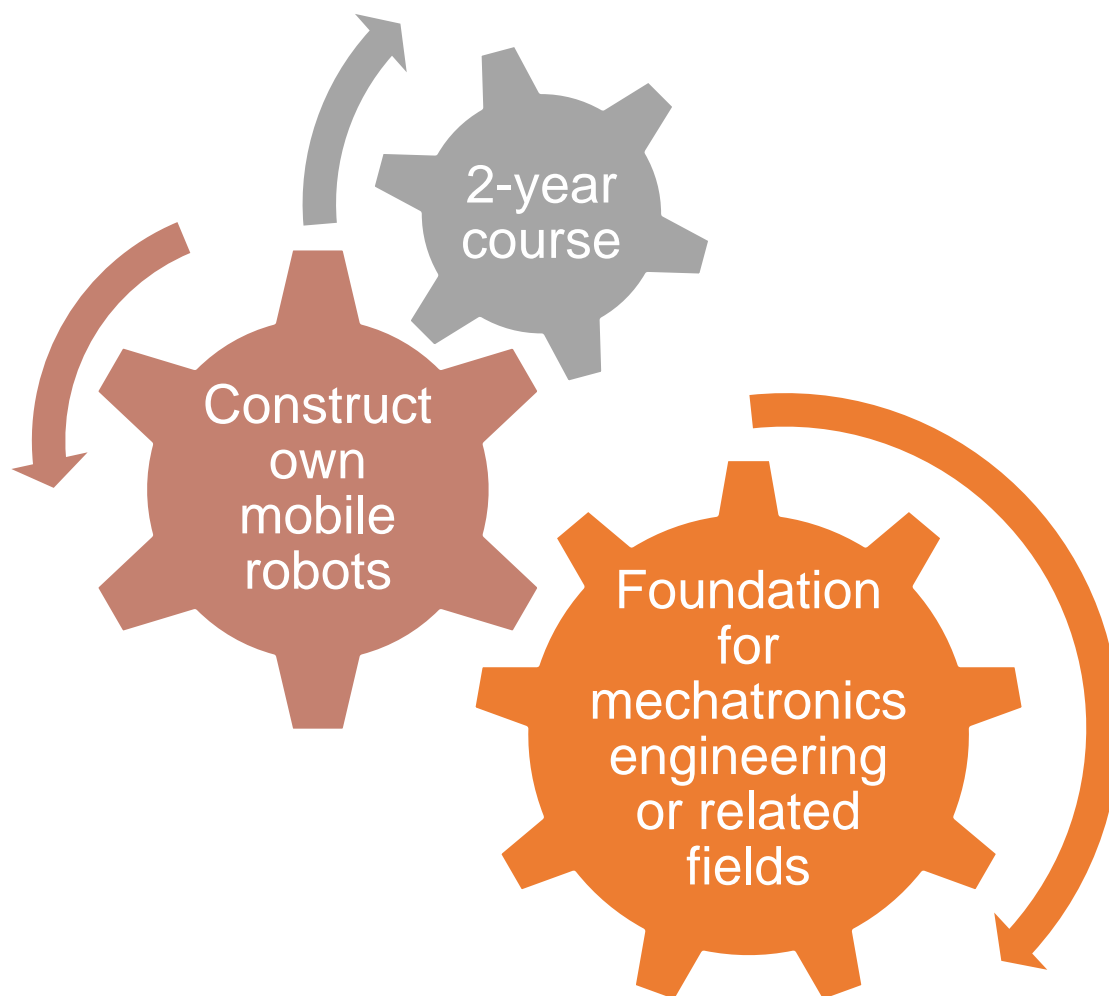
Provides a rich and rewarding educational experience that combines theoretical knowledge with practical skills, fosters creativity and innovation, and prepares students for diverse career opportunities in a rapidly evolving technological landscape.

	Mobile Robotics (MR)
CRITERIA, DESIRED DISPOSITIONS	<p>Student taking MR should have:</p> <ul style="list-style-type: none"> • a passion in automation through robotic systems • a proactive mindset towards problem-solving and finding creative solutions using robotics principles and techniques • the interest in hands-on learning experiences, experimentation, and exploration of robotics concepts through building and programming robots, conducting experiments, and troubleshooting issues.
SKILLS & COMPETENCIES TO BE DEVELOPED <i>(to refer to syllabus document & link to e21CCs)</i>	<p>Through the course of taking Mobile Robotics, students develop important 21st-century skills needed to thrive in an increasingly complex, interconnected, and rapidly changing world. Students will:</p> <ul style="list-style-type: none"> • develop capabilities and skills for problem-solving and critical thinking • illicit curiosity and interest in technology through design and build activities • promote the awareness of the impact of technology and the changing and progressive nature of technology • acquire knowledge and skills to make an informed decision in preparation for post-secondary technical courses
POST-SECONDARY OPPORTUNITIES	<p>Students are provided with a diverse set of skills and competencies that are valuable many fields such as, mechatronic engineering, mass rapid transit technology and electronics.</p>

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Electricity and Electronics

- Basic Electricity
- Basic and Digital Electronics



Related Courses in ITE

- *basic knowledge and skills in electricity, electronics, mechanical design and intelligent control.*
- *apply the technical knowledge and skills to design and build mobile robots to do specific tasks.*
- *use mobile robot kits and logic trainers in the process.*

*Nitec in Mechatronics
(College Central and West)*

*Nitec in Rapid Transit Technology
(College West)*

*Nitec in Mechanical Engineering
(College Central, East and West)*

*Nitec in Electronics (College Central,
East and West)*

Mobile Robotics Curriculum

Chapter	Topics
1	Mobile Robots
2	Basic Electricity
3	Basic Electronics
4	Digital Electronics
5	Design
6	Input and Output Devices
7	Simple Mechanisms
8	Simple Robots
9	Integration

N(T)-Level Mobile Robotics Assessment

Paper	Type of Paper	Duration	Marks	Weighting
1	Written	1h	30	30%
2	*Practical (Connect a control circuit)	1h 30m	42	30%
3	Practical (Integrate & test a mobile robot)	2h	80	40%

*Paper 2 is now assessed in Sec 4 from the 2024 cohort.

The Syllabus document can be downloaded from:

https://www.seab.gov.sg/docs/default-source/national-examinations/syllabus/nlevel/2025/a101_mr-exam-syllabus-2025.pdf?sfvrsn=cabcd40f9_2



Sec 4 Practical Paper 2

Students need to:

1. Interpret a circuit diagram
2. Connect a control circuit on a breadboard

Sec 4 Practical Paper 3

Students need to:

1. Assemble a mobile robot
2. Test the robot to perform a specific set of actions

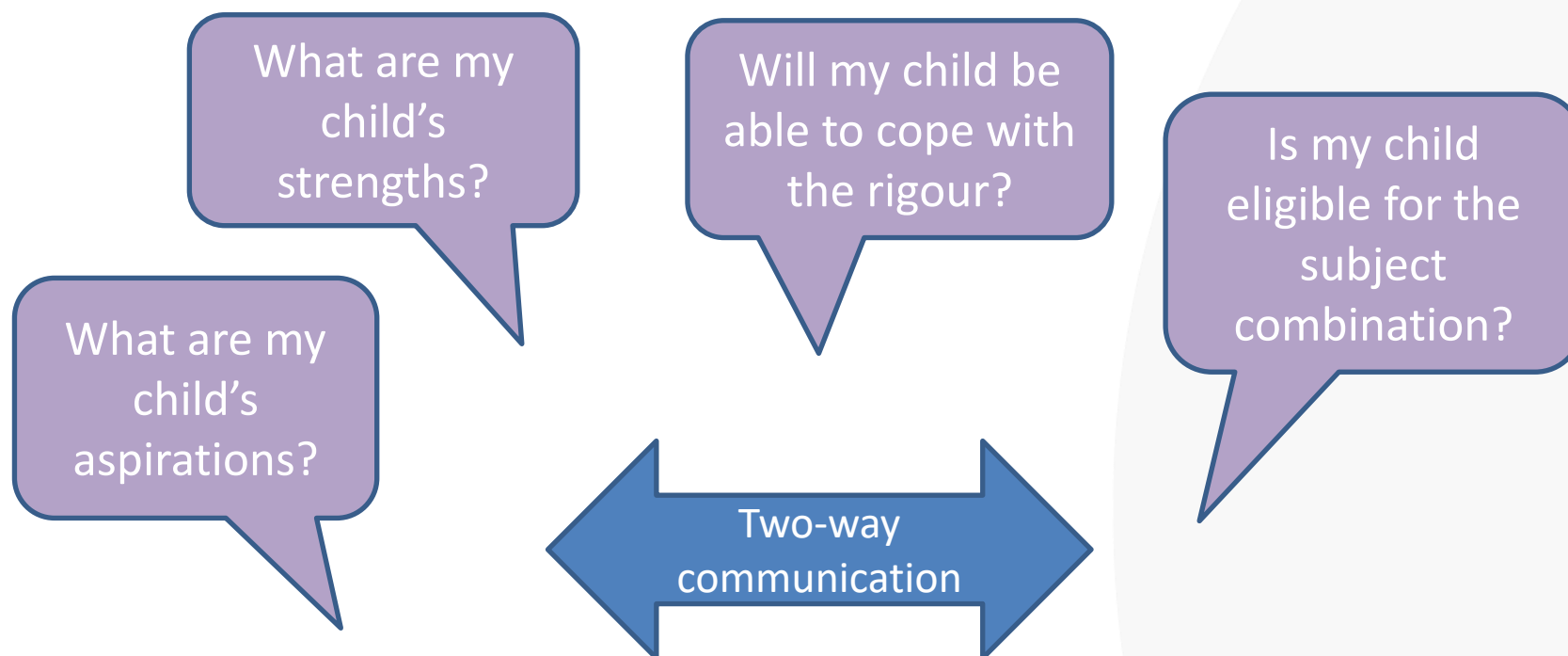
*Learn block coding
but not tested during
the practical exam

Special Note

MR can be used in **lieu of N(T) Maths or Science** for admission into selected *Nitec* courses that require a pre-requisite pass in these subjects

Mobile Robotics **can be offered concurrently** with Design & Technology.

Key Considerations



Making an Informed Decision

- talk to seniors and/or FTs if they require additional clarification
- parents and students should discuss and come to an agreement if both parties have different aspirations
- work towards aspirations and desired subject combinations in Semester 2 (setting up positive routines and developing good habits, the importance of help seeking behaviours, etc)