



iSTEM  
(TAS)



# iSTEM

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Combines Science, Technology, Engineering and Mathematics skills to learn about aerodynamics, motion, robotics, mechatronics, 3D design and 3D Printing to gives students the skills they will need for our future.

## **Current projects include:**

- Solar powered boats
- Formula 1 drag cars
- Mars rover challenge
- Catapults
- 3D printed prosthetic
- Lego robotics

<http://www.meprogram.com.au/stem-careers/>

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# iSTEM film clip

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<https://www.youtube.com/watch?v=2A8Dlag7dxw>

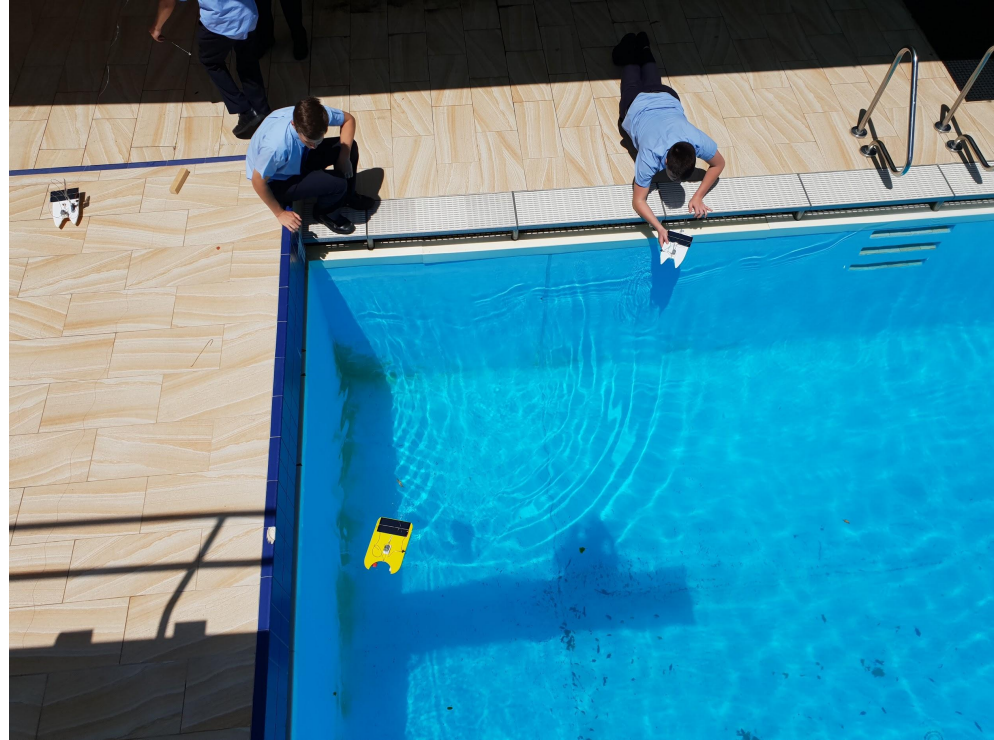




# Solar Boats

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Students learn about sustainable energy sources and gain an understanding of the processes involved in using solar power to run a motor.



<https://www.engineering.unsw.edu.au/energy-engineering/what-we-do/outreach-programs/sunspint-model-solar-challenge>

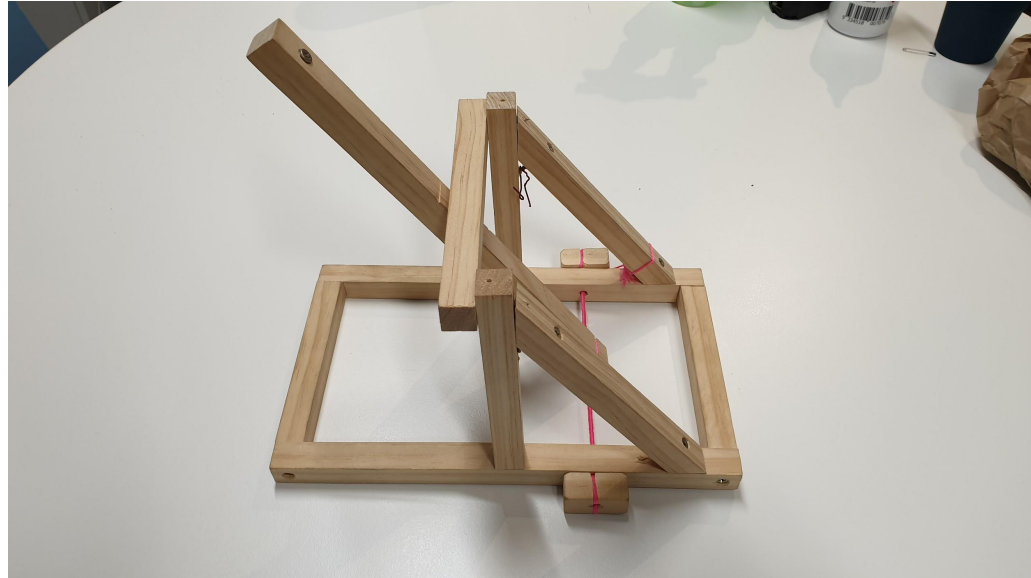
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# Catapult

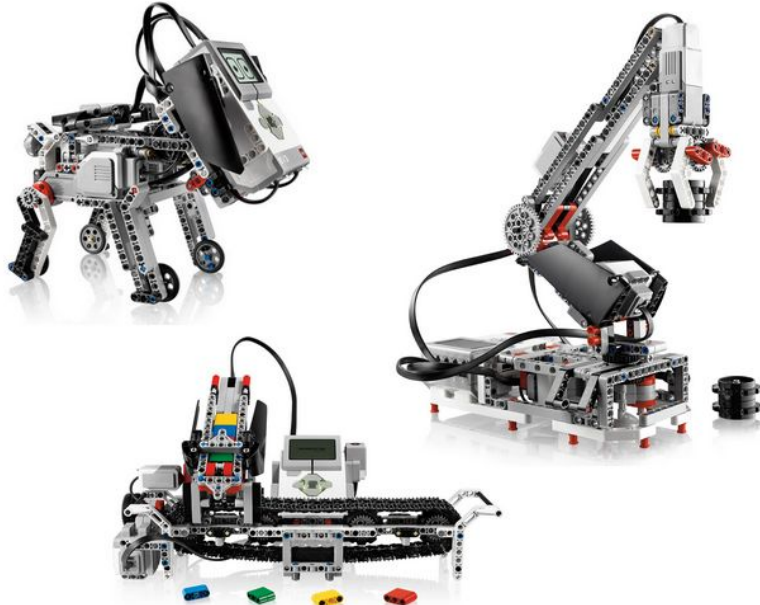
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Students learn about forces and levers to create a mini battle catapult.





# Lego Robotics



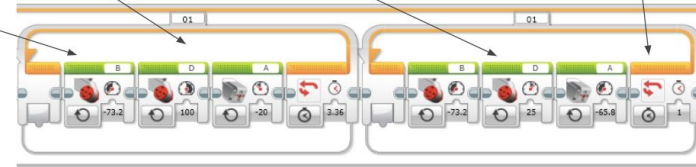
## LEGO Robotics code: Part 3- Rear section climb

Meanwhile, the track and medium rear motor move in a ratio of 10:2, so when the rear section climbs the stair, both the bottom and top part are in sync. This process occurs for 3.36 seconds (halfway up the landing).

Half way up the stairs, the track (D) large motor reduces power by 75%, with the medium motor matching the ratio of the front driving motor. As the robot will fall backwards because of rear weight, the back section must move in a slow fashion.

This takes place for only 1 second, allowing the rear section to reach the top of the landing, connecting the front and rear parts.

Here, the front driving motor is activated at -73.2 power to act as an anchor for the heavier rear that is being lifted up the stair.





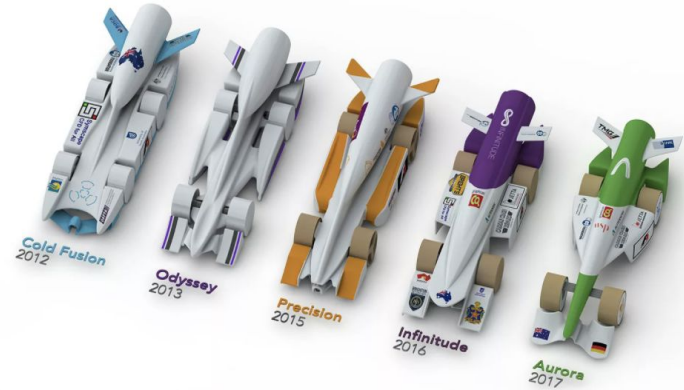
# F1 in Schools

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Mimicking the world of a Formula One team, groups of students have to follow a pathway of engineering and manufacturing disciplines: design, analyse, test, make and race. They are provided with access to real-world technology such as 3D CAD/CAM/CAE engineering design software and soon become proficient in areas such as Coding, Computational Fluid Dynamics, Finite Element Analysis.

<https://rea.org.au/f1-in-schools/>

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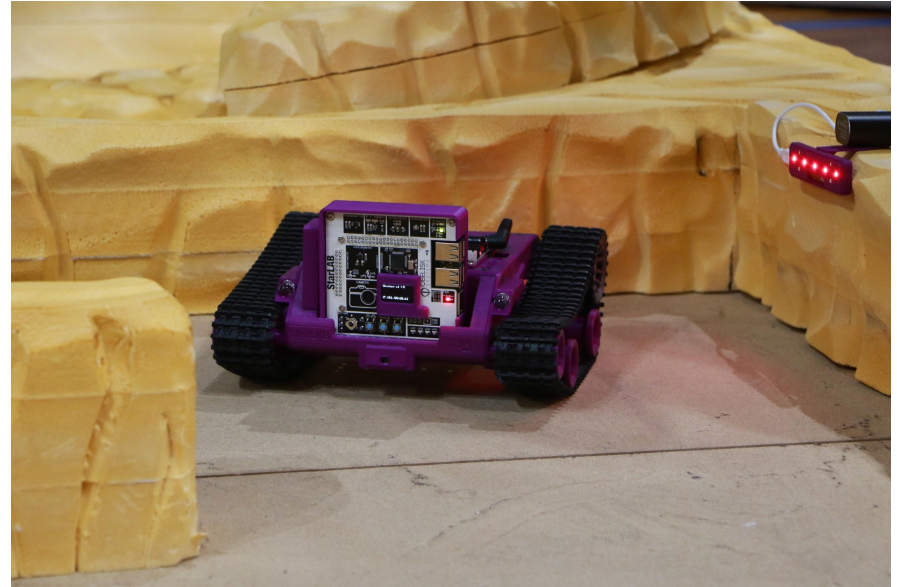
# Mars Rover Challenge

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Students learn to program a Mars Rover using a plethora of sensors in order for its safe navigation of the planet.

Students who excel have the opportunity to compete annually in a statewide competition.

<https://www.abc.net.au/news/2017-11-10/schools-battle-it-out-to-code-the-best-replica-mars-rover/9139584>







# Biomedical Innovation

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Students use CAD software and 3D printers to create prosthetic limbs.

Looking to the future:

<https://www.sydney.edu.au/engineering/schools/school-of-biomedical-engineering.html>



*Students got Robin back on his feet with a new prosthetic*

