

## iSTEM

iSTEM is a NSW Department of Education Approved Elective Course

Course details are not included on RoSA

Course details are included on School Report

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STEM education is the learning of science, technology, engineering and mathematics (STEM) in an interdisciplinary or integrated approach. Students gain and apply knowledge, deepen their understanding and develop creative and critical thinking skills within an authentic real-world context. The iSTEM NSW DoE Approved Elective Course covers a number of STEM based fields, including STEM Fundamentals, Aerodynamics, Motion, Mechatronics, Surveying, Aerospace, Statistics, CAD/CAM and Biotechnology.

Individual modules provide specific content related to CNC, computer-controlled machining, computer integrated manufacture, 3D printing, product modelling and testing which will be developed in the key areas of; Skills, Technologies, Engineering Principles and Processes and Mechanics. It may include inquiry, problem and project-based learning.

The iSTEM course utilises a practical integrated approach with engineering and technology being used to drive engagement in science and mathematics, through the development of technical skills and mechanical engineering knowledge. Its main purpose is to increase student STEM ability, engagement, participation and aspiration. This will lead to an increase in the number of students studying STEM based subjects in the senior years and ultimately the number of student matriculating to tertiary study in STEM and eventually STEM and Non-STEM based employment.

Class members have the option to participate in a variety of competitions and STEM based intervention programs during the course. Students will also study a variety of themed units of work focusing on the application of science, technology, engineering and mathematics to real life, through inquiry-based learning techniques.

STEM activities may include

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|---------------------------------------|---------------------------|
| ▪ Science and Engineering Challenge   | ▪ 4x4 in schools          |
| ▪ F1 in Schools                       | ▪ Challenge days          |
| ▪ Excursions e.g. CSIRO, UOW etc      | ▪ Major Research Projects |
| ▪ RoboCUP and Robotics Challenge days | ▪ FIRST Tech Challenge    |
| ▪ Aeronautical Challenge              | ▪ Velocity Challenge      |

This course aims to increase the number of students studying physics, chemistry, engineering studies, design and technology, computing and the higher levels of mathematics at the upper secondary school level. This is to be achieved through an integrative technology and engineering course structure, which gives practical relevance to scientific and mathematical concepts.

**Subject Assessment:** Students are evaluated on their class projects, tests and theoretical records.

**Enclosed leather shoes** are required to be worn for all iSTEM classes.

**Course Adviser:** Mr M Macdonell