What is STEM?
STEM is an acronym for Science, Technology, Engineering and Mathematics practice and education.

Why STEM?
In the move towards a knowledge-based economy, a workforce of scientifically and technologically literate people is key.

In 2011-12, approximately 10.5% of the Australian workforce were directly employed in STEM-related occupations while 75% of the fastest growing occupations require STEM skills and knowledge.

“A renewed national focus on STEM is critical to ensuring that young Australians are equipped with the necessary STEM skills and knowledge that they will need to succeed”.

STEM Horizons
Our passion is to provide extraordinary STEM experiences for students through a range of diverse unique opportunities. The STEM Horizons program for high achieving Year 7 students is the perfect opportunity to further enhance their knowledge and extend science learning beyond the classroom. During the course of a school semester, students will complete 4 days of specialist activities at a range of locations including the Princess Alexandra Hospital, Griffith University and the waters of Moreton Bay. Activities are designed to be ‘hands on’ and provide opportunities to actively engage in higher order thinking and problem solving. Links to authentic ‘real world’ science further enhance engagement and connection with possible future careers.

Students will be working in small groups alongside peers from other schools with similar demonstrated interests and abilities in STEM subjects. A culminating event will afford an additional opportunity to hear from eminent leaders in the field and allow students to continue their STEM experience.

Schools are able to nominate identified students through an online registration process. For further information, please contact Mark Granrose on 0468 953 385 or email mgran66@eq.edu.au.

Details of individual activities are provided in the pages that follow.
One of the main services provided to urban residents is a clean, safe water supply. Water needs to be stored, treated and supplied to consumers and then the wastewater must be collected, treated and returned to the water cycle.

This activity at the Brisbane Urban Environmental Education Centre will explore some of the processes used to provide clean, safe drinking water at both the large scale utilities level and the smaller family or personal water supply.

Science often involves working in extreme situations – and requires extremely NEW ways of thinking and problem solving to navigate your way to ‘AN’ answer.

Science is all around us and helps us solve problems. Effective reasoning and problem solving skills are very important for working out the best possible solutions.

In this workshop year 7 students use chemistry to isolate the DNA from a sample of each fruit, and use electrophoresis and genetics/biology to find ‘THE’ answer to: Who killed Stan the Strawberry? Was it mafia leader Barry “The Boss” Banana; Stan’s long suffering side-kick, Lenny “The Lookout” Lemon; the secretary, Wilma “Watchyagonnadoaboutit” Watermelon, or his lady-friend, Penelope “Pins” Papaya?
Seagrass has been identified as a significant source of carbon storage (blue carbon), which continues to be of major scientific interest.

The vessel *Inspiration* will be the classroom on Moreton Bay for students to conduct seagrass surveys using underwater video gliders, investigating the seagrass meadows that are an integral part of the Bay.

Baited Remote Underwater Video (BRUVs) will be deployed to record the presence of larger species that inhabit the Bay. The links between water quality, seagrass beds and fish, sharks and crabs will be investigated. Students will have unique opportunities to engage in authentic science alongside scientists and post graduate students from the University of Queensland.

Declining water quality continues to be a global concern as the human population grows, industrial and agricultural activities expand, and climate change threatens to cause major alterations to the hydrological cycle (UNDESA).

Freshwater CSI presents students with a wonderful opportunity to explore the exciting world that exists in our creeks and streams. Dr Adam Kerezsy, fisheries ecologist, will guide students through the collection of primary data from 2 sites. Sampling techniques will cover biotic data collection, including aquatic macroinvertebrates and fish species, both native and introduced. Data loggers will be used to collect a range of abiotic data (e.g. dissolved oxygen, turbidity, salinity etc.), with the aim of interpreting and comparing with secondary data sources to establish trends.

Students will also gain first hand exposure to researchers who are tasked with studying our waterways, and finding solutions to some of the challenges confronting our freshwater environments.

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About Moreton Bay Environmental Education Centre

Moreton Bay EEC’s vision is ‘Inspiring Champions for the Bay’ which is achieved through the provision of unique education experiences. The Centre’s 12 metre catamaran *Inspiration* enables students to experience the bay and venture to nearby surrounding islands to engage in authentic learning journeys using state-of-the-art scientific equipment.

Moreton Bay is recognised as wetlands of international significance under the Ramsar Wetland Convention. The Centre is a Department of Education and Training (DET) facility located in Manly and is pleased to offer this range of experiences to students.

About Griffith University

Since opening its doors in 1975, Griffith University has grown to become Australia’s ninth largest higher education provider, offering more than 300 degrees to in excess of 43,000 students from 131 countries. More specifically, the Nathan Campus is nestled among the natural backdrop of Toohey Forest.

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