Griffith UNIVERSITY
Queensland, Australia

Year 11 STEM Futures Day

Tuesday 29 October 2019
Nathan campus

In the next decade, 75 per cent of all jobs will need skills in science, technology, engineering and mathematics (STEM).

This doesn't mean that everyone will become a scientist, technologist, engineer or mathematician. However, STEM skills are proving more and more useful for almost every career. As Australia's Chief Scientist, Dr Alan Finkel, says "STEM skills are also needed for traditionally non-STEM jobs".

STEM skills are utilised in positions around the globe within large and small businesses to help manage daily tasks effectively. Whether you enrol to become a neuroscientist or an electrician, studying STEM provides both the technical and problem-solving skillset required to excel.

Students in year 11 are invited to participate in Griffith University's STEM Futures Day. This day will give you the opportunity to select two hands-on STEM workshops, helping you discover where your passions lie.

When: Tuesday 29 October 2019
Where: Griffith University Nathan campus
Time: 9 am – 2.15 pm
Cost: Free, lunch included

How to register

Students: Nominate one session in the morning and one session in the afternoon from the list below.

Teachers: Collate student forms and register final attendance numbers at **griffith.edu.au/stem-futures-day**

Confirmation of sessions will be sent to schools in an email. Workshop numbers are capped and will be closed as they are filled - students may have to attend an alternative workshop if their nominated session is full. Schools will be notified of this in the confirmation email.

Your name: _____ School: _____ Teacher name: _____

ACTIVITY DESCRIPTION	MORNING SESSION	AFTERNOON SESSION
Mammalian skull analysis *Professor Darryl Jones* What can you learn from an animal skull? You will compare and contrast several animal skulls to learn about the animal's evolution and map different stages in animal diversity. The skull and teeth can tell us a lot about the animal's physical and behavioural characteristics. Looking at the teeth can help determine what types of food the animal would typically eat which can help us make predictions about a variety of animal traits. *Like this activity? You may find the Bachelor of Science or Bachelor Environmental Science interesting.*	☐	☐
Butterfly lifecycle *Jacinta Zalucki* You will have the opportunity to follow the life cycle of a few select species of butterflies from egg to adult. Engage in a number of 'hands-on' activities aligned to the various stages of the butterfly lifecycle including: collecting and weighing eggs from a variety of butterfly host plants, incubating eggs in controlled abiotic environments, identifying and recording larvae, matching larvae to suitable host plants and examining time lapse camera footage to identify key activities preparing nectar feed fix. *Like this activity? You may find the Bachelor of Science or Bachelor Environmental Science interesting.*	☐	☐
Basic programming skills for science *Dr Ivonne Guevara Prieto* Learn how to write code to plot a graph in a scientific paper! You will learn about programming languages used in physics through an interactive programming session in Python and/or Matlab. *Like this activity? You may find the Bachelor of Science interesting.*	☐	☐
Atomic spectra *Professor Geoff Pryde/Associate Professor Mirko Lobino* The spectrum of an atom is like its characteristic signature. Using light sources, you will interrogate the atoms, and by looking at the colours they emit you'll discover some of their fundamental properties and identify their species. *Like this activity? You may find the Bachelor of Science (Physics) interesting.*	☐	**No afternoon session**
Physics of waves *Professor Geoff Pryde/Associate Professor Mirko Lobino* Explore the fundamental properties of waves. Learn all about interference and diffraction! *Like this activity? You may find the Bachelor of Science (Physics) interesting.*	☐	**No afternoon session**
Forensic science *Current students* Learn how to solve a hypothetical crime scene. Forensic investigators are skilled, dedicated professionals with the ability to keep an open mind and concentrate on hard evidence. In this activity, you will learn how to apply the theory of forensic science to a hypothetical situation. You'll explore the scientific process of how to solve a fictional crime and follow the evidence. *Like this activity? You may find the Bachelor of Forensic Science interesting.*	☐	**No afternoon session**

ACTIVITY DESCRIPTION	MORNING SESSION	AFTERNOON SESSION
Build your own electronics devices *Dr Stephen So* Learn how to operate a simple analogue circuit and have fun building your own electronic device. Assemble an electronic dice that can be "rolled" by clicking a button. *Like this activity? You may find the Bachelor of Engineering (Electrical and Electronic Engineering) interesting.*	☐	☐
Trebuchet activity *Dr Andrew Busch* A trebuchet, is a machine that uses the mechanical advantage of a lever to throw a projectile. In teams, you will construct trebuchets to determine how far and precise different objects will travel given modified variables (weight, angle and length of the arm), evaluate their results and master their machines for precision to throw a projectile into the target. *Like this activity? You may find the Bachelor of Engineering (Mechanical Engineering) interesting.*	☐	☐
LEGO building activity *Dr Sherif Mostafa* In teams, you will be challenged to build a self-standing tower with a maximum benefit value within 90 minutes using different types of building bricks provided. On completion, the towers will be measured and benefit value calculated based on the number of LEGO bricks used and design concepts applied. *Like this activity? You may find the Bachelor of Construction Management interesting.*	☐	☐
Code the robot to play rock, paper and scissors *TBC* Learn robot concepts through problem-solving and programming with this hands-on workshop. You will work with current IT students to program robots to play the rock, paper and scissors game. *Like this activity? You may find the Bachelor of Information Technology interesting.*	☐	**No afternoon session**
Biotic water sample analysis & live animal presentation *Mr Darren Shepherd* You will enter a microscopic world where you'll discover a range of mysterious creatures that are found in our freshwater creeks, streams and dams. You'll use an app and various guides to identify these live specimens, and learn how the diversity of creatures are used by freshwater ecologists to determine the health of our waterways. Includes a live animal presentation. *Like this activity? You may find the Bachelor of Environment interesting.*	**No morning session**	☐
Geographic information systems *Dr Abraham Leung & PhD Students* It's all spatial! This workshop will demonstrate how spatial information technology is integrated into our day-to-day lives. We almost all carry a GPS receiver in our pocket (our phone) and rely on this technology to navigate our environments and our lives. Learn about how spatial information technology works and how our researchers from the Cities Research Institute use this technology in planning our urban futures. *Like this activity? You may find the Bachelor of Urban and Environmental Planning interesting.*	**No morning session**	☐