

# The **BRAINWAVES** Club

**Term 2 2021: SciSpies Club – Years 1 and 2**

**Venue: Forest Hill College**

**Term Fee: \$285**

**1 May**

**Meeting 5: Bionic Olympics: Exploring Exoskeletons**

**Focus: Materials Science**

The Olympics are a display of human athleticism and endurance at its absolute best, however, *The Bionic Olympics* would allow everyone to step up onto the podium. It redefines the limits of human ability and strength and showcases the true potential of engineering. We will analyse the science behind making an exoskeleton to maximise strength and durability, and use Lego Wedo to create our own 'Eggs-o-skeleton'... provided we don't crack under the pressure!

**15 May**

**Meeting 6: Bionic Eyes: The 'Eyes' Have It!**

**Focus: Light, Optics**

What if bionic upgrades could give us our own 'superpowers'? Would the worlds of Marvel and DC become our 'everyday' lives? We will look at some of the powers that superheroes have and see the science behind their 'real-life' application. For example, could our understanding of polymer chains eventually lead us to creating webs like Spiderman? Will we be able to catch thieves just like flies? Look out!

**29 May**

**Meeting 7: Bionic Superpowers – Spiderman Webs**

**Focus: Polymers**

Did you know that there is no such thing as cold – only an absence of heat? Melbourne can have either, and often both on the same day! Wouldn't it be nice to work out a way to stay comfortable through our inclement temperatures? In this session we'll be investigating the fundamental principles behind thermodynamics, including how insulation, heat transfer and thermal sensation work. We'll finish up by testing out our hypotheses related to these concepts in a delicious experiment!

**19 June**

**Meeting 8: Bionic Limbs – How Prosthetics Can Change Tomorrow.**

**Focus: Engineering**

Bionic Engineering is already having a massive influence on people who have lost limbs, mobility or motor skills. By studying the human body, bionic engineers are able to simulate the motions, fine moments and dexterity of body parts such as hands and legs. Rather than just an exoskeleton, these prosthetics are becoming more and more sophisticated in the way that they are controlled and manipulated to create 'life-like' movements. Using cardboard, string and straws, we will create our own 'bionic' hand and see what is going on 'under the skin'.

**What to bring**

Each week please bring a well-stocked pencil case (including scissors, good textas and coloured pencils, pens and/or writing pencils, sticky tape or a glue stick) and an A4 notebook.

**Club Leader: Liam Mackay**

For **Liam**, teaching is all about relationships – both with understanding his students and in the relationship they have with the content of their learning. Currently the recipient of an internship at Belgrave Heights Christian School, Liam is enjoying seeing the theory of his studies being put into practice.