

SCIENCE PROGRAM TERM 4 2023

The Science Program planned for term 4 does not require any previous knowledge of science. It will alternate practical sessions with presentations on a week on week off basis. The practical sessions are designed to be fun activities which explore the underlying science concepts and applications in the real world. They will not require any particular skill in science knowledge and will hopefully be practical and rewarding tasks.

The presentations will take the usual 2-hour format, with some expert input from other U3A members as well as a guest or two. The introduction of hands-on activities will add a new dimension to our format.

Week 1 Magnetism and Electricity.

Exploring how magnetism works and its relationship with electricity. We will look at the properties of magnets, electrical circuits, conductors and insulators and direct current electric motors. Most of this session will be hands on and working in groups encouraging discussion and interaction.

Week 2 Looking at Earth Systems.

Our planet operates in the space and is subject to a range of factors and forces such as gravity. Angular precession and our bond with the sun. These, in turn power systems that operate within the Earth such as weather, climate, seasons and day and night. We also impact on the moon, and it impacts on the earth. These systems create a rich tapestry that allows life to thrive on the Earth. We will also have a look at the internal structure of the earth and vulcanology.

Week 3 – Gears, Levers and Pulleys.

A practical exploration of the physics of gears, levers and pulleys and the laws that determine their use. This will be a mainly practical session that will provide a great deal of fun and discussion!

Week 4 – Time, Latitude and Longitude.

This will, hopefully, be a fascinating exploration of time with day and night, latitude, and longitude, laced with how we learned to measure time and some interesting difference between our time and geological time. We will also look at the development of clocks and the standardization of time.

Week 5 - Light

An exploration of light, the properties of light and how we use the properties in real life situations. We will explore reflection and refraction and the bending of light rays to magnify images. The application of these concepts includes the wonderful skills of surveying.

Week 6 – Large systems that influence the Earth.

This picks up week 2's theme and looks at Astronomy, the stars, planets of the solar systems and the impact of gravity. We will also delve into vulcanology in a more specific way, looking at types of volcanoes and the relationship between people and volcanoes over time.

Week 7 -Strength of shapes.

We play a little bit with material science and, in particular, how the shape of materials determines their strength. This will involve practical exploration of various shapes such as arches, corrugations, triangular shapes and how they make materials stronger. We will make and test structures which will expand our understanding of the materials that we see every day.

Week 8 - Exploring Energy

Looking at where energy comes from, laws relating to energy, how we use it and phases of matter. Related concepts will also be explored such as momentum and ways in which we harness energy and its impact on the planet.

Week 9 and 10 Bridges

This will cover 2 weeks and will look at the history of bridges, types of bridges, famous bridges and why bridges in particular locations have their shape. This will involve each group building a particular type of bridge in the final Bridge Building Challenge. People will need to interact; problem solve and generally have fun.