



# BALLARAT MUNICIPAL OBSERVATORY & MUSEUM

The Ballarat Observatory offers educational tours for school groups that help explain some of the mysteries of the Universe and offering simplified explanations of the fundamental concepts in astronomy, physics and science in general.

Daytime tours can be booked Monday to Thursday from 10:30 to 15:00 during school terms. Night tours can be booked Monday to Thursday but the time depends on daylight savings. Tours are usually scheduled to begin half an hour before sunset.

Each tour can be tailored to your students' needs and is guided by an experienced astronomy/science educator.

In addition to presentations, we use computer simulations and virtual night sky software to enhance the learning experience, from collisions between galaxies to the formation of star systems.

## **PROGRAM (Daytime)**

- Tour of the observatory's historic telescopes
- Safe Solar viewing (weather permitting)
- 3D Astro Tours
- Optional 30 minute lecture on a particular area of astronomy

## **PROGRAM (Night-time)**

- Tour of the observatory's historic telescopes
- 3D Astro Tours
- Visual guide of the Night Sky and constellations (weather permitting)
- Viewing at the telescopes (weather permitting)
- Optional 30 minute lecture on a particular area of astronomy

The above programs can be suited to cover specific topics if required.

## **TOPICS**

Below is a list of topics that can be covered, this is not an exhaustive list, if you have a particular area that you would like us to focus on, please feel free to let us know.

- Solar System
- Asteroids & Comets
- Seasons and Time
- Constellations and The Night Sky
- Earth and Moon
- Exploration of Mars
- The Gas Giants
- The Sun
- The Physics of Light and the Tools of Astronomy
- Our Radio Universe
- Transits, Eclipses and Occultations
- Scale of things in the Universe
- Exoplanets
- Dwarf Planets
- The Life of Stars
- Space Exploration
- Galaxies & the Milk Way
- Galaxy interaction
- Large scale structures of the Universe
- Black Holes and exotic astrophysical objects
- The very small - an introduction of particle physics
- Cosmology and the Early Universe

## **HANDS ON ACTIVITIES**

The Observatory has put together a few hands-on activities, that allow students to learn some of the practical uses of astronomy and also think about some interesting concepts that arise in astronomy. Some of the activities include

- Make a bush clock
- Make a Sundial
- Using Pipehenge to understand seasons
- Toilet paper Solar System

- First Contact - Alien's say Hello
- Flag for a Planet

### **Years 5 - 8**

Our program for this year level is aimed at giving students a general idea about Astronomy in the broader sense and explaining the basics of the Solar system from the phases of the Moon, the seasons to the planets and other objects that make up our Solar system.

Topics also include robotic space exploration within our Solar system. This gives students an idea about the missions we have sent to the other planets and moons of those planets.

For younger students we can incorporate hands-on activities from the above list that will help make the experience a lot more enjoyable.

### **Years 9 - 12**

Our program for this year level is aimed at the more in-depth topics in Astronomy. We will explore objects and concepts that extend beyond our Solar System from galaxies to the formation of stars.

For older students, the topics can be specific to concepts involving the birth and evolution of stars, the motions and distributions of galaxies, black holes and exotic Astrophysical processes. The advanced concepts will be combined with some of the fundamental concepts in physics that allow the exploration of those topics, for example, the nature of the light and its importance to Astronomy.

### **An example of a program for Year 9 on clear night during winter**

#### **Start at 5pm**

- Tour of the observatory's historic telescopes and how telescopes work
- 3D Astro Tours and presentation about our Galaxy and Black holes
- Q&A session
- Visual guide of the Night Sky, constellations and viewing at the telescopes

#### **End at 7pm**

### **An example of a program for Year 5 on cloudy night during winter**

#### **Start at 5pm**

- Tour of the observatory's historic telescopes and how telescopes work
- Make a bush clock and learn about pipehenge
- 3D Astro Tours
- Q&A session

#### **End at 7pm**

## **An example of a program for Year 7 on cloudy night during spring**

### **Start at 6pm**

- Tour of the observatory's historic telescopes and how telescopes work
- 3D Astro Tours with focus on robotic space exploration
- Q&A session

### **End at 8pm**

## **MEALS**

Learning about the mysteries of the Universe can be exhausting, hence why the Ballarat Observatory, has a café – the 3rd Rock Café – this allows us to provide meals to groups that come from interstate or other regional areas in Victoria. Please visit our website for details on the menu and to make arrangements.

Our meals range from two course dinners, to light lunches and supper.