



**The Gravity Discovery Centre grew out of the search for gravitational waves. It capitalises the scientific endeavour in Western Australia and the spectacular and unique biodiversity on the Wallingup Plain, which is one of the 12 biodiversity hotspots in the world.**

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#### **Purpose of the Excursion**

The Gravity Discovery Centre is a unique and innovative educational facility which engages visitors in the big questions posed by life and the Universe.

Linked to current pioneering research into Gravity Waves, the Gravity Discovery Centre is the throbbing focal point where public and frontier science meets.

The aim is to increase students' awareness of and affinity with the unchanging laws of physics and reveal the dovetailing of everyday science with the technology of the future.

The GDC hopes to encourage students to consider career path options in the sciences; considering the possibility of WA hosting the Square Kilometer Array and the fact that physicists are confident that gravitational waves will be detected on earth within the next decade.

#### **Environment**

The GDC is set on approximately 10 hectares of pristine bushland on the Wallingup Plain – one of the 12 biodiversity hotspots on Earth.

The main areas include:

- **Lotterywest Discovery Gallery:** Representations of themes of Einstein's Universe and the forces of the Universe and the history of the universe are represented through various murals, artworks and interactive exhibits.
- **Westfarmers Innovation Gallery:** Presents West Australian innovations including gravitational wave spin-off technology.
- **Biodiversity Gallery:** Exhibits a collection of flora and fauna. Students can look through the microscopes at insects and creatures collected in the native bushland. Students can learn how to gauge the age of trees using cross sections of tree trunks.
- **Theatre:** Initial presentations and an introductory DVD are conducted in our indoor theatre. The theatre is also used to present low-light exhibits such as relativistic distortion of

rapidly moving objects.

- **Leaning Tower of Gingin:** This 180 tonne structure is the world's most leaning tower. Students can replicate Galileo's famous gravity experiments in Pisa, Italy, and conduct studies of impact craters. A climb up our tower is often the highlight of the day.
- **Cosmology Gallery:** This Gallery is dedicated to telling the story of the Universe through art, narrative and the world's most up-to-date timeline. This is where visiting groups can develop a cultural and scientific understanding of the origins of the universe.
- **Solar System Walk:** A 1.1km scale model of the Solar System showing the planets with their moons along the way. Students experience the Solar System to a scale of 1 to 8 billion. Each step represents 4 million km.
- **Biodiversity Walk:** The outdoor area around the GDC building, hosting a myriad of rare flora and fauna. The Wallingup Plain is located on one of the 12 biodiversity hotspots on earth. A guided walk will highlight and identify species in this bushland.
- **Western Power Pendulum Tower:** A three-storey high structure housing a Foucault Pendulum, a coupled pendulum, a parametric pendulum and a spring pendulum. Depending on the level of the student group, these are used to prove the earth rotates or to show a concrete example of energy efficiency. Teachers are welcome to lead experiments to measure the mass of the earth.
- **Time Coil:** The 1.1km coil is used to illustrate the concept that telescopes are time machines that look into the past.
- **GDC Shop:** The GDC has a shop inside the venue which has a variety of toys, telescopes, gadgets, books and postcards.
- **The Gingin Observatory:** The largest public astronomy facility in Australia can be opened especially for school day viewing.

Except for the Leaning Tower, all areas of the GDC are wheelchair accessible and a toilet for people with disabilities is available.

### **Accommodation Options**

If required, there are various accommodation options available for an overnight stay near the Gravity Discovery. Further information is provided in the school pack.

### **Transport**

Transport is to be arranged by the school. There is ample free parking available on the grounds.

### **Students' Capacity**

A school group visit to the Gravity Discovery is generally about 4 hours long. The Gravity Discovery Centre's school programs have strong curriculum links. Teachers choose a selection from a variety of modules including Society and the Environment, Energy and Change, Earth and Beyond, Life and Living, and Investigating.

Experienced GDC presenters lead most of the tours from Year 1 to Year 12. Teacher-led modules include the Free Fall Experiment, Mass of the Earth Investigations and the Solar Walk. Thus, the complexity of the content presented is adjusted to the skill level of the group.

There are many activities for students to get involved in including:

- replicate Galileo's ground-breaking free fall experiment at the Leaning Tower of Pisa, Italy

<ul style="list-style-type: none"> <li>• study laws of planetary motion using our black hole model</li> <li>• explore the interdependence between biotic and abiotic components of the ecosystem</li> <li>• listen to the past and measure the speed of sound using the Time Coil</li> </ul>
<p><b>Supervisor/Supervisory Team</b></p>
<p>The Presenters at the Gravity Discovery are happy to help in the case of an emergency. However, the school group has to be supervised by the teachers and parents of the school group.</p>
<p><b>External Provider Information</b></p>
<p>All Gravity Discovery staff have a current Working With Children Check.  Our public liability insurance is \$20 million and we are insured with Westsure - Westfarmers Insurance.  Policy Number 09 CPL 2316893.  Further information will be provided upon request.</p>
<p><b>Supervision Strategies</b></p>
<p>GDC Presenters provide guided tours and facilitate the learning of the school group using the exhibits.  The Gravity Discovery recommends that teachers utilise the pre-visit Teacher Resources available on the GDC website. When at the GDC, teachers are urged to take active participation in the tour with the guide so that information is geared to the students' prior learning and extend and challenge them.  Our suggested ratios are one adult to ten students; however this is a recommendation only. This will vary according to the needs of your students.  Some of the educational programs involve students taking part in activities that involve heights – please stress the need for students to listen actively to all instructions and to read warning signs.</p>
<p><b>Identification of Excursion Participants</b></p>
<p>Schools are responsible for choosing a suitable method of identifying students and adult leaders.</p>
<p><b>Communication Strategies</b></p>
<p>The Gravity Discovery has normal mobile phone reception.  We recommend that there be a couple of adults with mobile phones during the excursion. In an emergency, schools are welcome to use the landline at the reception desk.</p>
<p><b>Emergency Response Plan</b></p>
<p>The Gravity Discovery has an emergency plan for the whole site. In the event of an emergency it</p>

is important that all visitors take directions from Gravity Discovery staff members. If evacuation is essential, all visitors will be assembled in the theatre which is the designated safe area. Teachers will be required to complete a roll call and must immediately notify Gravity Discovery staff if any students are missing.

Teachers can increase safety by always ensuring that they provide suitable adult-children ratios (1 adult supervisor per 10 students is recommended) and by regularly encouraging students to stay in groups with their adult supervisor.

Teachers need to be aware that if evacuation is required during an emergency, such as bush fire, the school transportation will be required on site to facilitate this. The Gravity Discovery does not have a bus on site for use in such emergencies.

### **Briefing Students and Supervisors**

Before commencing the school program, a GDC presenter will address the whole group to:

- Welcome everyone
- Briefly describe the purpose of the GDC
- Caution those with pacemakers about strong magnetism in the gallery
- Brief everyone present of the Emergency Evacuation Procedures
- Raise awareness of the unlikely possibility of snake bite, ticks or bee stings

Impress upon every one the need to adhere absolutely to the safety precautions regarding the Leaning Tower. Teachers will be required to supervise students and help them follow the procedure of the experiments.

### **Other Relevant Details**

The Gravity Discovery Centre is open to schools and the general public.

Opening hours: Tuesdays to Sunday 9.30am – 5.00pm, and Mondays during school holidays and on Public Holidays.

To make a booking, email [bookings@gdc.asn.au](mailto:bookings@gdc.asn.au) or call 9575 7540 Tuesdays to Fridays to get an Education Kit and booking form.

The postal address is PO Box 313, Gingin WA 6503.

**This information is valid until 31 January 2011**

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