

Week	Lesson	Learning Intentions	Learning Activities	Resources
5	1, 2	Space is big	Short videos –star size and mars landing	k/depts/science/2012Year11/B and C/Y11AstronomyInternal
		Day and Night - Earth rotation		See notes in K drive folder above.
6		Moon Phases - Moon orbit		
7		Seasons - Earth orbit		
8		Trial assessment		
		Revision		
After exams		Actual assessment		

Assessment schedule: Science 90954 Sun, Moon, and Earth Cycles

Task	Evidence/Judgements for achievement	Evidence/Judgements for achievement with merit	Evidence/Judgements for achievement with excellence
Report	<p>The student's report shows the processed and interpreted data, images and information plus the conclusions for each activity; and how the conclusions of each activity relates to the effects on Earth of the relevant astronomical cycle(s).</p> <p>It has descriptions of the links between the effects on Earth of the relevant astronomical cycles.</p> <p>For example: <i>The data on sun angles (table included) shows that the heating effect is less when the angle of the Sun is less. This relates to the angle at which the sunlight hits Earth.</i></p>	<p>As for Achievement, plus the student's report includes the reasons for the effects on Earth of the relevant astronomical cycles.</p> <p>For example <i>The angle at which the sun hits Earth is related to the tilt of Earth plus the fact that Earth is a round ball. The tilt of Earth means that the seasons are related to the angle of the sun above the horizon. The tilt of the earth affects its angle and contributes to the 4 seasons seen in new Zealand. It also causes the day light hours between summer and autumn. (Two key links)</i></p>	<p>As for Merit, plus the student's report shows how the conclusions and reasons are linked to convey the interrelationship of different astronomical cycles and their effects on Earth.</p> <p>For example: <i>The angle at which the sun hits Earth is important for the range of temperature during a day and the amount of daylight hours. This range in day light hours is the result of the earth being tilted on its axis at 23.5° to the vertical. This angle is not a constant angle and has changed over geological time. There is evidence that this change of angle contributed to the start of the ice ages.</i></p> <p><i>The angle of the sun also affects the weather patterns of the world. Hurricanes are the result of heating the oceans near the equator to over 250 C and forming the weather cells that give rise to hurricanes. It also explains why hurricanes are seasonal. The intense heating is not a year round event.</i></p> <p>(Here two key related points [seasons and weather] are fully described and linked to the angle of the sun and the tilt of the earth.)</p>

Final grades will be decided using professional judgement based on a holistic examination of the evidence provided against the criteria in the Achievement Standard.

AS90954 – Science 1.15 – 4 credits – Internal assessment – 2012 – MRGS

Demonstrate understanding of the effects of astronomical cycles on planet Earth

- Assessment of this standard could include an open written test, closed written test or report, poster, PowerPoint presentation.
- Templates may be provided.
- Authenticity will also need to be determined by appropriate measures such as reference lists and/or teacher observation.
- Where manageable, one reassessment opportunity may be available.

Three Main Cycles

1. Spin of the Earth

- **Day and night**
- **Changes of temperature during the day and night**
- Formation and direction of winds in the Southern hemisphere - direction of surface ocean current flows in the Pacific Ocean

2. Orbit of Moon around Earth

- **Phases of the Moon**
- **Formation of tides**
- **Neap and Spring tides.**
- Inclusion of eclipses (but not for assessment) – 14th November 2012 Eclipse

3. Orbit of Earth around Sun

- **Effect of the Earth's tilt and the heating effect of the Sun.**
- **Seasons**
- Seasonal changes at the North and South poles, latitude of New Zealand, Tropics of Cancer and Capricorn, and the Equator

Example questions

What are the causes of tides on Earth?

Why are there two high tides a day?

What causes neap and spring tides?

How does Earth's spin affect the direction of the wind and surface ocean currents?

How does the angle of the Sun affect the amount of heat received by an object?

Why is Winter colder than Summer?