# STARS RESOURCES

## Teacher notes

# Photographing the Moon

## ACTIVITY

Photograph the Moon through a telescope to identify its various geological features.

Students will:

- take photographs of the Moon using a telescope and a smartphone camera adapter.
- use the photos of the Moon to identify its geological features.

This activity is aimed at students in upper primary and lower secondary school.

Use this astrophotography activity in conjunction with:

- 'Observing the Moon Teacher Notes,' ASTRO 3D website, https://astro3d.org.au/wp-content/uploads/2022/03/STARS-Observing-the-Moon-Student-workbook.pdf
- 'Observing the Moon Student Workbook', ASTRO 3D website, https://astro3d.org.au/wp-content/uploads/2022/03/STARS-Observing-the-Moon-Teacher-notes.pdf

## CURRICULUM LINKS

YEAR 7 SCIENCE – EARTH AND SPACE SCIENCES V.9

**Science Understanding**

model cyclic changes in the relative positions of the Earth, sun and moon and explain how these cycles cause eclipses and influence predictable phenomena on Earth, including seasons and tides (AC9S7U03)

**Science as a Human Endeavour**

explain how new evidence or different perspectives can lead to changes in scientific knowledge AC9S7H01

**Science Inquiry**

select and use equipment to generate and record data with precision, using digital tools as appropriate AC9S7I03

select and construct appropriate representations, including tables, graphs, models and mathematical relationships, to organise and process data and information AC9S7I04

## CURRICULUM LINKS cont'd

analyse data and information to describe patterns, trends and relationships and identify anomalies AC9S7I05

analyse methods, conclusions and claims for assumptions, possible sources of error, conflicting evidence and unanswered questions AC9S7I06

construct evidence-based arguments to support conclusions or evaluate claims and consider any ethical issues and cultural protocols associated with using or citing secondary data or information AC9S7I07

## PLANNING AHEAD

1. Read the Astrophotography Teacher Notes regarding planning for the best observing conditions and setting up the equipment.

2. **The Moon's brightness and using a neutral density filter** (included with the Bintel 8" Dobsonian given to schools)

- Observing the full Moon: The full Moon is very bright and it shouldn't be observed directly through the eyepiece. Whilst it should not damage your eyes, it will be very uncomfortable for them, you won't really be able to see much and such bright light may even destroy your smartphone's camera. Using the neutral density filter gives an 87% reduction in light. It usually screws in between the eyepiece and the body of the telescope.
- Observing a quarter Moon: you may not need the neutral density filter.

## OBSERVATION NIGHT

1. Set up the telescope, smartphone camera adapter with smartphone attached.

2. Ensure the image of the Moon is in the middle of the screen.

3. Adjust the image until you can see clearer edges around the Moon and it appears grey rather than washed-out white.

4. Zoom in as far as you can. You may find that mid-range zoom is better for your particular smartphone's camera.

5. Using automatic mode on your camera, take your photo!

**POST OBSERVATION**

Students can use their photos to identify the various geological features on the Moon by completing the Observing the Moon Student Workbook.

(All websites accessed April 2023)