

CubeSat Project: Lesson 1

The miniaturisation of satellites such as CubeSat provides new access to space technologies for a wide range of applications at a significantly reduced cost.

Goal

Satellites are used for a range of functions such as monitoring land use, and can carry a range of payloads including cameras and GPS and how it can help our lives and the community. Miniaturized satellites for space research, such as CubeSats, are of small size and mass and use commercial off-the-shelf components for its electronics and sensors.

Access Prior Knowledge (5 mins)

Look at provided images of sputnik, modern satellite and Hubble. Which one(s) of these are satellites?

Students should recognise that all are satellites as should give a good indication of students understanding what a satellite is. The Landsat 8 image has been chosen to be less obvious as a satellite, but the image on page 2 puts it in context.

New Information Presented

Outline of program including balloon launch

Uses of satellites in particular Australia – remote sensing

CubeSat Specifications

Information Sources

Introductory Power point presentation – click enable content (note: internet connection required for embedded Youtube videos. If your school normally blocks Youtube, then either ask for a temporary unblock or yoyo link:

<https://www.youtube.com/watch?v=I3qYjzmgOdY> , space chair link:

https://www.youtube.com/watch?v=k6PSbUI_68k)

CubeSat Specifications Sheet

Application Task

Activity

View presentation, preferable in groups or 3 to 4 students, and complete question sheet in relation to presentation (20 mins)

As a group look at the CubeSat specifications sheet and identify the actual components and answer questions re the specifications. (15 min)

Goal Revisited

One or more groups could present findings about the payloads aboard the CubeSat and what information they can provide – photos, GPS location, and using atmospheric pressure to calculate altitude. (10 min)