



### **MSA AMEC student competitions**

#### **Primary- (For WA students only) Design a Mars Base competition.**

This could be in the form of a poster, or a diorama or even a model. Please remember that it must be in a suitable format to be displayed in public.

Humans are all about exploring, now it is time for the ultimate exploration... the red planet. Your task is to design and create a suitable Mars Base.

Wow, this is huge-where do you start?

MSA and NASA would like to see that you have looked at the obvious scientific limitations and conditions of Mars, things like the atmosphere and temperature.

You are designing your Mars Base (sometimes called a habitat or a 'hab') for 4-6 permanent occupants. Some of the areas that may need to be considered;

- 1) The living quarters and general use of space (washing, cleaning, preparing meals, entertainment, etc)
- 2) Energy requirements-what sources of energy will be used by the Mars explorers.
- 3) Growing and cultivating food
- 4) An area to conduct scientific experiments
- 5) Heating and cooling the centre
- 6) Communication (from inside to outside the habitat and back to Earth)
- 7) Protecting the habitat and its occupants from the elements
- 8) Sleeping and crew rest area
- 9) Areas for rovers and robots
- 10) Dietary and fitness requirements for Martian explorers

We recommend that you check some reliable websites and books that show possible structures for living in space or on Mars as a guide. You may also wish to consider, who else lives and works in extreme conditions here on Earth?

How are these structures designed, what could you modify for Mars?

The aim of this competition is to be creative, but keep your Mars habitat realistic. The structure needs to use practical science and engineering to maintain a liveable area for your 'new Martians', the Mars explorers.

The responsibility of transporting, setting-up and dismantling the display will be the responsibility of the entrant and/or the entrant's family.

Winning entries may be placed on display in a public area for an extended period of time, this will be discussed with the individual winners and their parents.

***Please fill in all the details below***

Please fill in the relevant details (all personal details will remain private and will not be supplied to outside parties without prior consent from applicants and their parent/s) and email this with your paper

First Name \_\_\_\_\_

Last Name \_\_\_\_\_

Date of Birth \_\_\_\_\_

Year \_\_\_\_\_

School Name \_\_\_\_\_

School Address \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

School Telephone \_\_\_\_\_

School Fax \_\_\_\_\_

Teacher Contact (Name) \_\_\_\_\_

Teacher email \_\_\_\_\_

Principal Name \_\_\_\_\_

Please ensure you adhere to the 1500 word limit, all diagrams, charts, pictures need to be referenced and referred to and all materials and websites used are acknowledged, all work must be yours. An essay submission must not be greater in size than 3 MB.

Check the website (<http://www.marssociety.org.au>) for further information.

To register your intention to enter please email the MSA Education Officer at; [education@marssociety.org.au](mailto:education@marssociety.org.au).

All registered students and their teachers will be provided with details about the format of the display that will occur at this year's Australian Mars Exploration Conference.

***Registrations by- Friday 20<sup>th</sup> of May 2011***





## ***Secondary-Spaceward Bound Australia Expedition Patch design competition***

### **Who can enter?**

Any Australian secondary school student

#### Your mission

To design an expedition patch for Spaceward Bound Australia 2011. This is your opportunity to let the creative juices flow, demonstrate your knowledge of space science and be permanently immortalised in the form of the expedition patch.

If selected, your design will be the expedition patch for NASA Spaceward Bound Australia 2011.

### **So what is an expedition patch?**

An expedition patch is a cloth badge that can be worn by members of this specific expedition and other people linked to the Spaceward Bound project. A new patch is used for each expedition, depending on its aims, objectives and location, making each patch unique and collectable, especially when they are produced in limited quantities.

NASA has been using patches since at least 1965 and patches are used in many other organisations and clubs to represent membership and completion of courses and activities. Wearing a patch means that you are proudly displaying that you have achieved something special. Having a patch means that you are recognising those people's achievements and designing a patch means that your creativity is there forever.

For some examples of patches used for space missions and expeditions, please check the following websites;

<https://monroe.vianet.net.au/~mhchost/Patches.html>

[http://history.nasa.gov/mission\\_patches.html](http://history.nasa.gov/mission_patches.html)

<http://www.thespacestore.com/otherpatches.html>

### **What is happening on this expedition?**

Scientists, Engineers and Teachers from Australia and the US will be;

- 1) Examining examples of early forms of microbial life, such as stromatolites-living and fossilised at locations including the Pilbara and Shark Bay,
- 2) Test appropriate field gear, scientific techniques and robotic equipment that could be used on future space missions,
- 3) Creating a catalogue of sites of geological or astrobiological interest,
- 4) Comparing the types of microbes found in various locations through remote WA with each other and to alternative locations globally.

### **How can I find out more about these aims?**

Check out the following websites for information about the organisations involved;

NASA Spaceward Bound; <http://quest.nasa.gov/projects/spacewardbound/>

Mars Society Australia; <http://www.marssociety.org.au/>

Use available resources, such as reliable internet sites, to find out more about stromatolites, cyanobacteria, early life on Earth, Australia's unique geology.

### Guidelines

- 1) You are required to have the lettering NASA and CSIRO on the outer edge of the patch (**Not** their logo or emblem),
- 2) You must have Mars Society Australia written in full on the patch,
- 3) The patch must be circular and be between a diameter of 8 to 10 cm,
- 4) The patch must have a total of a **maximum of no more than 4 colours**,
- 5) Imagery or symbols relating to the aim of this expedition must be visible and represent the scientific and/or educational objectives of this expedition,
- 6) Any images or symbols used must be original and not copied from other sources or patches,
- 7) Provide a paragraph (100-250 words), explaining your patch design highlighting why you have used particular emblems, symbols, images and colours.
- 8) You may use any design software, but the final submission must be in JPEG format.

By looking at the expedition patch, people should see who is involved, what they are doing and how it all the science fits together. It is important to recognise the work that is being done to understand our early solar system, and the links that Mars and the Earth share-past, present and future.

***Competitions close on Friday 29<sup>th</sup> of April 2011***



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School Telephone \_\_\_\_\_

School Fax \_\_\_\_\_

Teacher Contact (Name) \_\_\_\_\_

Teacher email \_\_\_\_\_

Principal Name \_\_\_\_\_

Please ensure you adhere to the 250 word limit, all diagrams, charts, pictures need to be referenced and referred to and all materials and websites used are acknowledged, all work must be yours. Your submission must not be greater in size than 3 MB.

Check the website (<http://www.marssociety.org.au>) for further information.

All enquiries and submissions to the MSA Education Officer at; [education@marssociety.org.au](mailto:education@marssociety.org.au).

**Entries must be received by email, no later than Friday 29<sup>th</sup> of April, 2011.**