# Space Settlements

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**Introduction**

By now, you have already learned that it would be very difficult for human life to exist on other planets. But, what about a human space colony floating in outer space? In this exercise you will examine the wealth of up to date information on the Internet. You will be looking at several of the latest designs. The end result is for you and a team of two to three other people to design your very own space colony. You may work individually if you choose.

**The** **Task(s) (Inquiry base learning)**

You and two or three other students (design engineers) have been assigned the task of designing a space colony. In order to understand all of the challenges involved with designing a space colony, you will need to divide the work into manageable chunks. You will be asked to complete all of the following:

1. Answer a series of questions based on your world wide web research

(See section 2 of the “process”) **This section will not be marked!**

The questions here are to assist you with the written report in number

4 below.

1. A sketch of your space colony design
2. A 3-D model of your own space colony

4. Written Report that supports your Design (Describe each room of

your colony)

**Images and Tutorials**

* [Space Colonization](http://en.wikipedia.org/wiki/Space_colonization) from Wikipedia.
* [Mars/Lunar Image Gallery](http://www.spaceflight.nasa.gov/gallery/images/mars/)
* Space settlements (Google search – to see images/examples)
* [Space Future](http://www.spacefuture.com/) (Learn about space habitats, vehicles, tourism…)
* [Artificial Gravity](http://www.daviddarling.info/encyclopedia/A/artgrav.html) (An extensive Astrobiology Encyclopedia and latest news)
* [Space hotels](http://www.spacefuture.com/tourism/hotels.shtml) (Great examples of space colonies)

### The Process

In order to design and build a space colony, you as the designer will need to know quite a bit about the state of current thinking and technology in space station and space colony design. You will be asked a series of questions to guide you through the learning process. There is an enormous amount of information available to you and it will benefit you to divide up the initial research phase among your group members as well as the individual projects. Each set of questions will be answered using the web resource listed. So you won't have to look far to get the information, however it may take some digging.

The Space Settlement pages below will familiarize your team with these basic questions about space settlements.

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**Section 1.**  **(This section will not be marked)**

**Go to** the [Stanford Design Study](http://settlement.arc.nasa.gov/75SummerStudy/Table_of_Contents1.html) to complete the following. (OPTIONAL)

This site is very complex… Only refer to the site to help you answer the following questions on the next page.

Remember, the questions on the next page will not be marked, but by answering them, it will assist you with your design and room descriptions.

##### How many people live in the space colony discussed in chapter one? (CH 1).

##### What is sunshine used for in the space colony? (CH 1)

##### How is the space colony constructed? (CH 1)

##### Describe how you would travel to the space habitat. (CH 5)

##### Why does the space habitat rotate? (CH 5)

##### Describe a residential housing unit. (CH 5)

##### Where is it located in the space colony, and how is housing set up? (CH 5)

##### What are the physiological effects of weightlessness? (CH 3)

##### How much space is needed for each person to reside in the space habitat? (CH 4)

**Rasmussen’s Advice**

Because of the enormous amount of information that needs to be gathered, it is very important to organize your products. Organize your report by sections. In a separate notebook or file. Draw and label your favorite design for a space colony. Provide reasoning for your choice. Use all of this information as a basis for your own design.

**Evaluation**

You will be evaluated as a group. As long as all of the elements of this project are complete and accurate you will have accomplished the task. You will present your final design and accompanying model, display and illustrations to the class in a presentation. You may use a display board or other resources in the class.

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**Conclusion**

By the end of this project you will have learned the engineering concepts behind space settlements.

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