

# What is Astronomy?

The dictionary defines astronomy as the science that deals with the material universe beyond the Earth's atmosphere.

**Astronomy** is the study of the cosmos, at all levels. It is the investigation of life on Mars; using large telescopes to peer back in time to see galaxies merging; figuring out what Jupiter is made out of; finding planets around other stars by observing the change in the star's spectrum as the planets orbit around it; and much, much more.

Astronomy is an attempt to understand the make-up and the history of the universe. It covers a near-unlimited number of fields. Basically, if its off this planet its a study of some realm of astronomy. As one might imagine that covers an awful lot of subjects, even more than we know right now. A short list of subjects include:

- Stars
- Nebula
- Planets
- Sol (The Sun)
- Star clusters
- Galaxies
- Galaxy clusters
- Dark matter
- Black holes

Each of those topics breaks in multiple topics and fields of study. When you throw in the fact that research is done in the entire electromagnetic spectrum, including visible, x-ray, ultraviolet and infrared, you can imagine how many areas of research can be undertaken. Have you looked up at the night sky and wondered about what's out there? Are there other life forms? Are we the only ones in this big universe? Is the Moon made out of cheese? OK, you might not have wondered about that last one. Astronomy is a wondrous "spectator sport". You'll find that it provides a sense of awe, and can certainly be a humbling experience as you realize the immense space and distances involved and the sheer size of objects that are thousands (or many more) light-years away and are big enough to shine their photons on your eyeballs.

*-from Roger Herzler*



**Astronomy** is the study of the universe beyond the Earth's atmosphere. The science does not claim to predict your future or lend credence to the practices of Astrology. Rather through the use of Physics principles, Astronomy explains the evolution of the universe and through sound mathematical simulations forecasts its development. Although Astronomy has been around for thousands of years and is perhaps the oldest science, it is only in the last century and particularly the last few decades that we have developed the technology to study the universe in greater detail. Every day we are gathering new data on everything from galaxy formation to black holes to the big bang itself using a staggering array of multi-wavelength telescopes on the ground and in space. We continue to answer one of humankind's most burning questions: "What is out there?" but perhaps more impressive is the great progress that has been made in answering the question "How does it all work?"

*-from Vene Muskett*

**What** else is astronomy?

1. Astronomy is a scientific explanation of how the universe works.
2. It is a scientific explanation of where we come from and where we're going.
3. It is one of the sciences that will allow us to leave Earth when the human race can no longer inhabit this planet.
4. It is the end of trial and error and the beginning of a systematic way of acquiring knowledge.
5. It is the ability to "see" into other times and places, like the center of the Sun, the creation of the solar system, or the creation of the universe.
6. It is unfinished, there will always be something new to learn.
7. Astronomers are motivated by a faith in the order of the universe.
8. Astronomy is power (e.g., we can establish colonies outside Earth or we can annihilate all life on Earth).
9. It is hard and many times counterintuitive.

What are the goals of the astronomy course?

- Know what science is and all the implications of the definition.
- Learn about the history of astronomy, and about the physicists and astronomers who contributed to our present knowledge.
- Understand the forces of nature that make the universe work.
- Understand what it means to say that something "is described by an equation."
- Use critical thinking when evaluating information about astronomy from the news media.
- Understand how astronomy is based on physics and mathematics.
- Understand how astronomy overlaps with history, chemistry, biology (astrobiology) and philosophy.

*- from Ana Dodgen*

**And** now a conclusion. This course, if successful, will mean that the sky, Sun, the Moon, the planets, stars, and the galaxies will no longer be strangers to you – still mysterious perhaps, but not strangers. We're still in the early ages of science – tapping at the sky with a stick. If our species survives, then one day some of your descendants will be making voyages to worlds you have studied. We grow as a species as we grow as individuals; and we weed out errors and falsehoods in our theories and beliefs through time and patience. In the total scheme of the universe, anything is possible.



*- from Jeffrey Hopkins*