

## ASTR 1020

Look Over: Chapter 1  
Our Place in the Universe

---

---

---

---

---

---

---

---

### Things You Should Get to Know

- |  |   |
|--|---|
| <ul style="list-style-type: none"><li>• Light years</li><li>• Astronomical Unit</li><li>• Scientific Notation</li><li>• Astronomy</li><li>• Universe</li></ul> | <ul style="list-style-type: none"><li>• Galaxies</li><li>• The Earth's Rotation</li><li>• The Earth's Revolution</li><li>• The Ecliptic plane</li></ul> |
|--|---|

---

---

---

---

---

---

---

---

### Astronomy

Astronomy is the science of celestial objects and phenomena that originate outside the Earth's atmosphere.

---

---

---

---

---

---

---

---

## Astrology

Astrology is the study of the positions and aspects of celestial bodies in the belief that they have an influence on the course of natural earthly occurrences and human affairs.

---

---

---

---

---

---

---

---

## What is The Universe

The Universe is the total amount of matter and radiation that exists and the space occupied by the same and in between.

---

---

---

---

---

---

---

---

## Units

The system of units we will be using is the Metric system.

There are 3 main units we will be using:

To measure distance we will use the Meter (*m*).

To measure mass we will use the Kilogram (*kg*).

To measure time we will use Seconds (*s*).

---

---

---

---

---

---

---

---

## Astronomical Unit

An **Astronomical Unit** (AU) is defined as the average distance from the Earth to the Sun.

$$1\text{AU} = 1.5 \times 10^{11}\text{m}$$

---

---

---

---

---

---

---

---

## The Light Year

A **Light-year** (ly) is defined as the distance light travels in one year.  $1\text{ly} = 9.46 \times 10^{15}\text{m}$

---

---

---

---

---

---

---

---

## The Sun

The Sun is a star, a glowing ball of gas held together by its own gravity and powered by nuclear fusion at its center.

---

---

---

---

---

---

---

---

## Galaxies

Galaxies- Any of numerous large-scale collections of stars, gas, and dust that make up the visible universe.

---

---

---

---

---

---

---

---

## The Milky Way

Our Sun lies in a part of the Milky Way Galaxy that is an immense circular, flat region.

---

---

---

---

---

---

---

---

## Local Group

Andromeda Galaxy, the Milky Way and about 30 other objects are bound together in a configuration known as the Local Group of Galaxies.

---

---

---

---

---

---

---

---

## The Local Super Cluster

The Local Super Cluster is a collection of over 10,000 galaxies bound together by gravity.



The Milky Way is far away from the center of the Local Super Cluster.

---

---

---

---

---

---

---

---

## The Great Wall

Galaxies appear to be arranged in a network of strings surrounding large empty regions of space like gigantic soap bubbles.

---

---

---

---

---

---

---

---

## The Universe

The Universe was born out of an "explosion" about 14 billion years ago.

The Universe has been expanding ever since.

---

---

---

---

---

---

---

---

## The Earth's Rotation

The Earth rotates on its axis once each day.

---

---

---

---

---

---

---

---

## The Earth's Orbit

The Earth like the other planets also revolves around the Sun once a year, following an orbit that is not quite circular.

---

---

---

---

---

---

---

---

## The Ecliptic Plane

The axis that the earth spins about makes an angle of  $23.5^\circ$  with the plane made by the Earth's orbit around the Sun (called the Ecliptic Plane)

---

---

---

---

---

---

---

---

## The Sun's Orbit

While the Earth orbits the Sun the Sun in turn orbits the center of the Milky Way like a horse on a merry-go-round. Completing one orbit every 230 million years.

---

---

---

---

---

---

---

---

## The Ever Expanding Universe

Due to the Universe expanding (due to the Big Bang) the Milky Way Galaxy and all other galaxies are moving away from each other.

---

---

---

---

---

---

---

---