

# Syllabus

## Introduction to Astronomy

### Course Overview

This one-semester course is intended to introduce you to the concepts of astronomy. This course has 17 lessons and 6 Course Activities. Each lesson contains one or more Lesson Activities.

In Introduction to Astronomy, you will learn about the history of astronomy from ancient times to modern times. You will identify the movements of the Sun, Moon, planets, and stars across the sky. You will describe the formation of the solar system, and the role of the Sun and Moon in the solar system. You will describe the causes of seasons on Earth and the reasons for life on Earth. You will learn about stars, galaxies, and the Milky Way. You will explain various theories of cosmology, and advantages and disadvantages of space exploration.

Your teacher will grade your work on the Course Activities, and you will grade your work on the Lesson Activities by comparing them with the given sample responses. The Course Activities (submitted to the teacher) and the Lesson Activities (self-checked) are major components of this course. There are other assessment components, namely the mastery test questions that feature along with the lesson; and an end-of-semester test. All of these tests are a combination of simple multiple-choice questions and technology-enhanced (TE) questions.

### Course Goals

This course will help you meet the following goals:

- Describe the history of astronomy and contributions of famous scientists from ancient to modern times.
- Describe and identify the movements of the Sun, Moon, planets, and stars across the sky.
- Describe the formation of inner rocky planets and outer gas giant planets, and their unique features.
- Explain Kepler's laws of planetary motion and Newton's law of universal gravitation.
- Describe the properties of the Sun and the importance of sunspots.
- Describe and observe lunar phases.
- Describe the composition of Earth and the causes of seasons on Earth.
- Identify different types tools used in astronomy, such as telescopes, observatories, electromagnetic spectrum, and astronomical spectroscopy.
- Describe the properties of stars and measure their distances using the parallax method.
- Describe the formation, components, and characteristics of the Milky Way.
- Describe the usefulness of studying space and the advantages of various manned and unmanned missions to space.

## Prerequisite Skills

Introduction to Astronomy is a beginner's course and does not have specific prerequisites. Nevertheless, these fundamental skills will be helpful:

- basic math knowledge
- basic computer skills
- ability to understand basic science
- ability to observe celestial objects in the sky

## General Skills

To participate in this course, you should be able to do the following:

- Perform basic operations with word processing software, such as Microsoft Word.
- Perform online research using various search engines and library databases.
- Communicate through email and participate in discussion boards.

*For a complete list of general skills that are required for participation in online courses, refer to the Prerequisites section of the Plato Student Orientation document, found at the beginning of this course.*

## Credit Value

Introduction to Astronomy is a 0.5-credit course.

## Course Materials

- Notebook
- Computer with Internet connection and speakers or headphones
- Microsoft Word or equivalent
- Binoculars or small telescope

## Course Components and Grading Rubric

The table gives a breakdown of the weight for each component in the course. Weight represents the percentage of the total score coming from each activity.

Course Components	Count	Weight
<b>Module.</b> <i>Each module in this course contains an interactive tutorial and an associated mastery test. Tutorials may include one or more Lesson Activities that constitute tasks associated with the tutorial. The module score comes from a student's score on the mastery test.</i>	17	30%
<b>Discussion.</b> <i>Online discussions allow for higher-order thinking about terminal objectives. An online threaded discussion mirrors the educational experience of a classroom discussion. Teachers can initiate a discussion by asking a complex, open-ended question. Students can engage in the discussion by responding both to the question and to the thoughts of others. Each unit in a course has one predefined discussion topic; teachers may add more discussion topics.</i>	5	20%
<b>Course Activity.</b> <i>Course Activities are similar to Unit Activities in scope but may be found at any point in the course, either to prepare the student for new learning or to act as a performance-based activity required for a learning objective. Like Unit Activities, Course Activities include simple rubrics, and sample answers are available for teachers. Course Activities are teacher graded.</i>	6	30%
<b>End of Semester Test.</b> <i>The end of semester test (EOS) appears at the end of the course. Students are delivered a few items from every tutorial in the course in order to assess the major course objectives.</i>	1	20%
<b>Total</b>	<b>29</b>	<b>100%</b>

\*Teachers may manually adjust these weights if desired, per district grading requirements.

## Course Pacing Guide

This course description and pacing guide is intended to help you stay on schedule with your work. Note that your course teacher may modify the schedule to meet the specific needs of your class.

Day	Activity / Plato Objective	Type
1 day:	<b>Course Orientation</b> <i>Review the Plato Student Orientation and Course Syllabus at the beginning of this course.</i>	

Day	Activity / Plato Objective	Type
4 days: 2-5	<b>History of Astronomy</b> <i>Describe the history of astronomy from ancient times to modern times.</i>	Lesson
3 days: 6-8	<b>Cycles of the Sky</b> <i>Describe and identify the movements of the Sun, Moon, planets, stars, and constellations.</i>	Lesson
3 days: 9-11	<b>Formation of the Solar System</b> <i>Describe the formation of the solar system.</i>	Lesson
1 day: 12	<b>Rotation of the Moon</b>	Course Discussion
1 day: 13	<b>Para Jumble</b>	Activity
5 days: 14-18	<b>Modeling the Solar System and Eratosthenes' Experiment</b>	Course Activity
3 days: 19-21	<b>Kepler's and Newton's Laws</b> <i>Explain Kepler's laws of planetary motion and Newton's law of universal gravitation.</i>	Lesson
3 days: 22-24	<b>The Sun</b> <i>Describe the role of the Sun in the solar system.</i>	Lesson
4 days: 25-28	<b>11 Year Solar Maximum Cycle and Valuable Isotope He3</b>	Course Activity
3 days: 29-31	<b>The Moon</b> <i>Describe the formation of the Moon, lunar phases, and lunar eclipses.</i>	Lesson
5 days: 32-36	<b>Observing Moon Phases and Surface</b> <b>Note:</b> Begin this course activity at the same time as you begin the lesson tutorial <i>The Moon</i> , listed above.	Course Activity
3 days: 37-39	<b>The Earth and the Seasons</b> <i>Describe Earth's composition and the causes of seasons on the Earth.</i>	Lesson
1 day: 40	<b>Space Jumble</b>	Activity
3 days: 41-43	<b>Life on Earth</b> <i>Describe the reasons for life on Earth.</i>	Lesson

Day	Activity / Plato Objective	Type
1 day: 44	<b>Size of the Sun</b>	Course Discussion
3 days: 45-47	<b>Asteroids, Comets, and Meteors</b> <i>Describe asteroids, comets, meteors, and the Kuiper belt and Oort cloud.</i>	Lesson
3 days: 48-50	<b>Earth and Impacts on Earth</b>	Course Activity
3 days: 51-53	<b>Tools Used in Astronomy</b> <i>Describe how astronomers collect data from distant objects in the cosmos.</i>	Lesson
4 days: 54-57	<b>Properties of Stars</b> <i>Describe the properties of stars and measure their distances using the parallax method.</i>	Lesson
3 days: 58-60	<b>Evolution of Stars</b> <i>Describe the life cycle of stars.</i>	Lesson
1 day: 61	<b>Para Jumble</b>	Activity
3 days: 62-64	<b>Stars</b>	Course Activity
1 day: 65	<b>Stellar Distance Measurement</b>	Course Discussion
3 days: 66-68	<b>The Milky Way</b> <i>Describe the formation and characteristics of the Milky Way.</i>	Lesson
3 days: 69-71	<b>Galaxies</b> <i>Describe the types of galaxies and their characteristics.</i>	Lesson
1 day: 72	<b>Space Jumble</b>	Activity
1 day: 73	<b>Theories of the Formation of Galaxies</b>	Course Discussion
3 days: 74-76	<b>Cosmology</b> <i>Explain various theories of cosmology.</i>	Lesson
4 days: 77-80	<b>Space Exploration</b> <i>Describe the advantages and disadvantages of space exploration and the search for extraterrestrials.</i>	Lesson

Day	Activity / Plato Objective	Type
3 days: 81-83	<b>Modern Astronomy</b> <i>Describe the benefits of modern astronomy.</i>	Lesson
1 day: 84	<b>Search for Extraterrestrial Intelligence</b>	Course Discussion
1 day: 85	<b>Para Jumble</b>	Activity
3 days: 86-88	<b>Expanding Universe, Escape and Orbital Velocities</b>	Course Activity
1 day: 89	<b>Course Review</b>	
1 day: 90	<b>End of Course Test</b>	Assessment

## Course Map

You will achieve course level objectives by completing each lesson's instruction, assignments, and assessments. For a detailed look at how the materials meet these objectives, review the [course map](#).