GAVILAN COLLEGE
5055 Santa Teresa Blvd
Gilroy, CA 95023

Course Outline

COURSE: ASTR 1 DIVISION: 10 ALSO LISTED AS:

TERM EFFECTIVE: Summer 2020 CURRICULUM APPROVAL DATE: 04/14/2026

SHORT TITLE: INTRO GEN ASTRONOMY

LONG TITLE: Introduction to General Astronomy

Units	Number of Weeks	Type	Contact Hours/Week	Total Contact Hours/Units
3	18	Lecture:	3	54 / 3 Units of Lecture
		Lab:	0	0
		Other:	0	0
		Total:	3	54

Out of Class Hrs:	108.00
Total Learning Hrs:	162.00

COURSE DESCRIPTION:

An introduction to the realm of astronomy and space science. Topics to be covered include the historical development of astronomy, the physics of gravitation and radiation, the solar system, stellar astronomy, galactic and extragalactic astronomy, and cosmology. ADVISORY: Mathematics 430 or skills equivalent to those in an Elementary Algebra course and college level reading and writing skills.

CREDIT STATUS: D - Credit - Degree Applicable

GRADING MODES

L - Standard Letter Grade

REPEATABILITY: N - Course may not be repeated

SCHEDULE TYPES:

02 - Lecture and/or discussion
05 - Hybrid
72 - Dist. Ed Internet Delayed

STUDENT LEARNING OUTCOMES:

By the end of this course, a student should:

1. Describe the basic development of astronomy beginning with astrological foundations of ancient civilizations through modern day theories.
2. Describe the principle motions of the earth, moon, and other solar system members.
3. Describe the basic physics of light, and distinguish between various types of telescopes.
4. Describe the basic composition and construction of the solar system and its origin.
5. Compare and contrast the principle differences between the Terrestrial and Jovian Planets.
6. Describe, compare and contrast the differing properties of stars, and describe accurately their evolutionary processes.
7. Describe the properties of the Milky Way galaxy, and differentiate between other external galaxies.
8. Describe the evolution of the universe, and contrast various models on the further evolution of the universe.

COURSE CONTENT:

Curriculum Approval Date: 04/14/2026

3 HOURS

CONTENT: Introduction and astronomical overview.

OUT OF CLASS ASSIGNMENTS: Reading and questions from text.

PERFORMANCE OBJECTIVES: List a vocabulary of beginning astronomical terms; recognize the various structural components of the universe,

sun, moon, earth, planets, stars, galaxies; discuss the overall size and scale of the solar system, galaxy and universe.

3 HOURS

CONTENT: Ancient/modern historical astronomy.

OUT OF CLASS ASSIGNMENTS: Reading and questions from text.

PERFORMANCE OBJECTIVES: Describe the accomplishments of man and civilizations and the development of astronomy from its beginnings, describe the motions of

the earth, and how this affects calendars and timekeeping.

3 HOURS

CONTENT: Laws of motion/coordinate systems.

OUT OF CLASS ASSIGNMENTS: Reading and questions from text.

PERFORMANCE OBJECTIVES: Discuss the contributions of early Renaissance astronomers; describe, compare and contrast a celestial sphere and celestial coordinate systems; describe the fundamental differences between solar system models (geocentric versus heliocentric).

3 HOURS

CONTENT: Electromagnetic radiation.

OUT OF CLASS ASSIGNMENTS: Reading and questions from text

PERFORMANCE OBJECTIVES: Describe light and other forms of radiation important to physicists and astronomers. Discuss, compare, contrast and

identify principles of light such as reflection, refraction, dispersion.

3 HOURS

CONTENT: Telescopes.

OUT OF CLASS ASSIGNMENTS: Reading and questions from text.

PERFORMANCE OBJECTIVES: Discuss, compare and contrast the basic optical construction of refracting and reflecting telescopes and the

advantages/disadvantages of both types; describe the important optical characteristics of lenses and mirrors, thus allowing an educated selection in the purchase of an

astronomical telescope.

COURSE CONTENT(CONTINUED):

3 HOURS

CONTENT: The sun and the formation of the solar system.

OUT OF CLASS ASSIGNMENTS: Reading and questions from the text.

PERFORMANCE OBJECTIVES: Describe current theories on how the sun and solar system formed; describe the nuclear reactions that occur in

the sun's interior to produce light, heat, and other forms of electromagnetic radiation; describe the means by which energy is transported from the sun's

interior to its surface.

3 HOURS

CONTENT: The Earth and moon.

OUT OF CLASS ASSIGNMENTS: Reading and questions from text.

PERFORMANCE OBJECTIVES: Describe the Earth from an astronomical perspective; describe the Earth's interior and atmosphere in comparison with other planetary

objects; describe the characteristics of terrestrial-type planets; discuss the Earth's moon, it's orbit, interior composition, surface

features and origin.

3 HOURS

CONTENT: The terrestrial planets.

OUT OF CLASS ASSIGNMENTS: Reading and questions from text.

PERFORMANCE OBJECTIVES: Identify, compare, contrast and describe the principle characteristics of the planets Mercury, Venus and Mars; discuss

continued space exploration by understanding the valuable contributions of modern space research to our understanding of these planets; discuss the interior

and atmospheric properties of terrestrial planets, especially in comparison with our own planet.

3 HOURS

CONTENT: The Jovian planets.

OUT OF CLASS ASSIGNMENTS: Reading and questions from text.

PERFORMANCE OBJECTIVES: Describe the principle characteristics of the planets Jupiter, Saturn, Uranus and Neptune; describe the interior and atmospheric properties of

Jovian planets, especially in comparison with the Earth and other terrestrial planets; describe the characteristics and formation of

Jovian ring systems and Jovian satellites.

3 HOURS

CONTENT: Asteroids, Comets and Meteors.

OUT OF CLASS ASSIGNMENTS: Reading and questions from text.

PERFORMANCE OBJECTIVES: Describe how asteroids were discovered, where they are located, and different types within the solar system; describe the various parts of

a comet, where they come from, different types of comet orbits and composition; describe the relationship between comet orbits and

meteors, sporadic meteors versus shower meteors; discuss the physical and orbital characteristics of the planet Pluto.

COURSE CONTENT(CONTINUED):

3 HOURS

CONTENT: Stellar observations.

OUT OF CLASS ASSIGNMENTS: Reading and questions from text.

PERFORMANCE OBJECTIVES: Describe how astronomical observations are made in order to derive physical properties of celestial objects; discuss simple observational

methods for determining stellar properties such as distance, motion, brightness, temperature and color; describe the science of

spectroscopy, compare and contrast the different spectral types of stars, the value of spectral studies to the understanding of important

stellar properties.

3 HOURS

CONTENT: Stellar Properties.

OUT OF CLASS ASSIGNMENTS: Reading and questions from the text.

PERFORMANCE OBJECTIVES: Describe, compare, contrast and identify the properties and relationship between properties of celestial objects; describe stellar

spectral types and luminosity types; describe the physical nature and makeup of stars, luminosities and temperatures of stars, chemical

composition and age.

3 HOURS

CONTENT: Stellar structure and energy.

OUT OF CLASS ASSIGNMENTS: Reading and questions from text.

PERFORMANCE OBJECTIVES: Describe the interior structure of stars; compare and contrast the means by which energy is produced in a variety of ways.

3 HOURS

CONTENT: Stellar evolution.

OUT OF CLASS ASSIGNMENTS: Reading and questions from text.

PERFORMANCE OBJECTIVES: Describe the evolutionary changes that all stars go through, from birth to final death; describe how a star's physical

characteristics change as a star evolves; describe the last phases of stellar evolution and identify stellar remnants in the form of white dwarfs, neutron stars,

and black holes.

3 HOURS

CONTENT: The Milky Way.

OUT OF CLASS ASSIGNMENTS: Reading and questions from text.

PERFORMANCE OBJECTIVES: Describe the properties of the Milky Way galaxy, types of clusters, our location within the galaxy; compare and contrast the two primary

population types of stars; discuss their location within the galaxy and their unique properties.

3 HOURS

CONTENT: Extragalactic Astronomy.

OUT OF CLASS ASSIGNMENTS: Reading and questions from the text

PERFORMANCE OBJECTIVES: Discuss the various types and properties of galaxies within the universe; describe, compare and contrast

population types within galaxies, composition of galaxies, and evolution of galaxies.

COURSE CONTENT(CONTINUED):

3 HOURS

CONTENT: Cosmology .

OUT OF CLASS ASSIGNMENTS: Reading and questions from text.

PERFORMANCE OBJECTIVES: Compare, contrast and discuss Cosmological theories that include the Big Bang theory and Steady-State theories, open

versus closed models; discuss the importance and value of the Hubble diagram to cosmologists today.

2 HOURS

CONTENT: Review all course materials to prepare for the Final Exam.

OUT OF CLASS ASSIGNMENTS: Students will complete review assignment.

STUDENT PERFORMANCE OBJECTIVES: Students will prepare for the Final Exam.

2 HOURS

FINAL EXAM

METHODS OF INSTRUCTION:

Lecture/discussion, demonstrations, web-based exercises.

OUT OF CLASS ASSIGNMENTS:

Required Outside Hours: 108

Assignment Description:

1. Regularly assigned homework that requires students to analyze and study pertinent text material, solved examples and lecture notes.

2. Regularly assigned homework that requires students to apply the principles and skills covered in class by solving related problems.

METHODS OF EVALUATION:

Writing assignments

Percent of total grade: 20.00 %

Lab reports.

Objective examinations

Percent of total grade: 60.00 %

Objective examinations including multiple choice, true/false, matching items, completion, short answer/essay questions.

Problem-solving assignments

Percent of total grade: 20.00 %

Homework, quizzes, projects.

REPRESENTATIVE TEXTBOOKS:

Palen, et. al.. Understanding our Universe. Norton,2014.

ISBN: 978-0393936315

Reading Level of Text, Grade: 12 Verified by: Jennifer Nari

ARTICULATION and CERTIFICATE INFORMATION

GAV GE:

GAV B1
GAV Area 5

CSU GE:

CSU B1

IGETC:

IGETC 5A

CALGETC:

CALGETC Area 5A

CSU TRANSFER:

Transferable CSU

UC TRANSFER:

Transferable UC

SUPPLEMENTAL DATA:

Basic Skills: N
Classification: Y
Noncredit Category: Y
Cooperative Education:
Program Status: 1 Program Applicable
Special Class Status: N
Prior to College Level: Y
Non Credit Enhanced Funding: N
Funding Agency Code: Y
In-Service: N
Occupational Course: E
Course Control Number: CCC000301101
Sports/Physical Education Course: N
Taxonomy of Program: 191100
CIP: