ASTRONOMY (ASTR)

ASTR A100 **3 Units (54 lecture hours)**
Introduction to Astronomy
Grading Mode: Standard Letter, Pass/No Pass
Transfer Credit: CSU; UC: Credit Limitation: No credit for ASTR A100 or ASTR A100H if taken after ASTR A101 or ASTR A102 or ASTR A103.

Introduction to the origin, evolution and structure of the solar system, stars, galaxies and the Universe. Milestones in the science of astronomy from ancient times to the space age. Historical development of astronomical ideas leading to current models. Special focus on the latest discoveries from both ground- and space-based instruments. Consideration of current controversies in astronomy and the future of astronomical research. Graded or Pass/No Pass option. This course may also be offered online.

ASTR A100H **3 Units (54 lecture hours)**
Introduction to Astronomy Honors
Grading Mode: Standard Letter, Pass/No Pass
Transfer Credit: CSU; UC: Credit Limitation: No credit for ASTR A100 or ASTR A100H if taken after ASTR A101 or ASTR A102 or ASTR A103.

Introduction to the origin, evolution and structure of the solar system, stars, galaxies and the universe. Milestones in the science of astronomy from ancient times to the space age. Historical development of astronomical ideas leading to current models. Special focus on the latest discoveries from both ground- and space-based instruments. Consideration of current controversies in astronomy and the future of astronomical research. Graded or Pass/No Pass option. This course may also be offered online.

ASTR A100L **1 Unit (54 lab hours)**
Introduction to Astronomy Laboratory
Prerequisite(s): ASTR A100, ASTR A100H, ASTR A101, ASTR A102, ASTR A103 or ASTR A104, or concurrent enrollment.

Grading Mode: Standard Letter, Pass/No Pass
Transfer Credit: CSU; UC.

A laboratory course designed for non-science majors. It will provide practical experience with the scientific method through outdoor astronomical observations and indoor analysis of experimental data. Graded or Pass/No Pass option. This course may also be offered online.

ASTR A100M **1 Unit (54 lab hours)**
Introduction to Astronomy Laboratory Honors
Prerequisite(s): ASTR A100, ASTR A100H, ASTR A101, ASTR A102, ASTR A103 or ASTR A104, or concurrent enrollment.

Grading Mode: Standard Letter, Pass/No Pass
Transfer Credit: CSU; UC.

A laboratory course designed for non-science majors. It will provide practical experience with the scientific method through outdoor astronomical observations and indoor analysis of experimental data. Graded or Pass/No Pass option. This course may also be offered online.

ASTR A101 **3 Units (54 lecture hours)**
Planetary Astronomy
Grading Mode: Standard Letter, Pass/No Pass
Transfer Credit: CSU; UC.

An introduction to the solar system. The formation and properties of planets and their satellites, dwarf planets, and other minor bodies will be examined. Insights from interplanetary missions, the discovery of extrasolar planets, and the search extraterrestrial life will be discussed. Graded or Pass/No Pass option. This course may also be offered online.

ASTR A102 **3 Units (54 lecture hours)**
Stellar Astronomy
Grading Mode: Standard Letter, Pass/No Pass
Transfer Credit: CSU; UC.

A detailed study of the formation, structure, and evolution of the sun and stars, including an overview of binary systems, variable stars, supernovae, white dwarfs, neutron stars, black holes, and other stellar phenomena. A survey of particle physics and special and general relativity will also be included. Graded or Pass/No Pass option. This course may also be offered online.

ASTR A103 **3 Units (54 lecture hours)**
Cosmology
Grading Mode: Standard Letter, Pass/No Pass
Transfer Credit: CSU; UC.

An introduction to the origin and evolution of the cosmos. Application of modern physics concepts, including quantum mechanics and the theory of relativity, to describe the history and ultimate fate of the Universe. Observational evidence for the expanding Universe, dark matter, dark energy, and the Big Bang. Graded or Pass/No Pass option. This course may also be offered online.

ASTR A104 **3 Units (54 lecture hours)**
Galactic Astronomy
Grading Mode: Standard Letter, Pass/No Pass
Transfer Credit: CSU; UC.

An overview of the origin, structure, and dynamical nature of the Milky Way. An emphasis on the different types of galaxies and their evolution through time. Observational techniques used to study galaxies and the evidence for supermassive black holes, quasars, and dark matter. Graded or Pass/No Pass option. This course may also be offered online.

ASTR A110 **2 Units (18 lecture hours; 54 lab hours)**
Observational Astronomy
Grading Mode: Standard Letter, Pass/No Pass
Transfer Credit: CSU; UC.

An introduction to the methods and techniques of observational astronomy, telescope principles, and operations as applied to public viewing of astronomical phenomena. This course is designed for students to operate the telescopes and assist the public in observing objects in the night sky. May include field trips to nearby observatories, planetaria, and public science facilities. Graded or Pass/No Pass option.

ASTR A200 **4 Units (72 lecture hours)**
Introduction to Astrophysics
Prerequisite(s): PHYS A185 or PHYS A185H.

Advisory: PHYS A285.

Grading Mode: Standard Letter
Transfer Credit: CSU; UC.

An introduction to astrophysics for science students. Emphasis on applying physical principles to gain a quantitative understanding of astrophysical phenomena. Topics covered include celestial mechanics; electromagnetic radiation; spectroscopy; stellar structure, evolution, and remnants; galaxies; and cosmology.

ASTR A200H **4 Units (72 lecture hours)**
Introduction to Astrophysics Honors
Prerequisite(s): PHYS A185 or PHYS A185H.

Advisory: PHYS A285.

Grading Mode: Standard Letter
Transfer Credit: CSU; UC.

An introduction to astrophysics for science students. Emphasis on applying physical principles to gain a quantitative understanding of astrophysical phenomena. Topics covered include celestial mechanics; electromagnetic radiation; spectroscopy; stellar structure, evolution, and remnants; galaxies; and cosmology. This course may also be offered online.