



Course Name: Principles of Astronomy

Course Number: AST* E101

Credits: 3.0

Catalog description: This is an introductory descriptive astronomy course with emphasis on the earth and its motions, the moon and planets, the sun, and stars and galaxies. This course is designed to raise the level of student awareness of celestial objects including their history, properties, interrelationships, and impact upon our understanding of the universe.

This course is not intended for science, technology, engineering, or mathematics majors.

Prerequisite: ENG 101 and "C" or better in MAT 095 or eligibility for MAT 137.

Corequisite, or Parallel:

General Education Competencies Satisfied:

HCC General Education Requirement Designated Competency Attribute Code(s):

- | | |
|--|---|
| <input type="checkbox"/> AESX | Appreciation of the Aesthetic Dimensions of Humankind |
| <input type="checkbox"/> QUAX | Quantitative Reasoning |
| <input checked="" type="checkbox"/> SCKX | Scientific Knowledge & Understanding |
| <input type="checkbox"/> SOCX | Social Phenomena Knowledge & Understanding I
<i>(within the fields of anthropology, psychology or sociology)</i> |
| <input type="checkbox"/> SOPX | Social Phenomena Knowledge & Understanding II
<i>(not within the fields of anthropology, psychology or sociology)</i> |
| <input type="checkbox"/> WRCX | Written Communication in English I |
| <input type="checkbox"/> WRIX | Written Communication in English II |

Additional CSCU General Education Requirements for CSCU Transfer Degree Programs:

- | | |
|-------------------------------|---|
| <input type="checkbox"/> ORAX | Oral Communication in English |
| <input type="checkbox"/> HISX | Historical Knowledge & Understanding |
| <input type="checkbox"/> SCRX | Scientific Reasoning |

Embedded Competency(ies):

- | | |
|-------|---|
| CRIX | Critical Analysis & Logical Thinking (Outcomes <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5) |
| CONX | Continuing Learning & Information Literacy (Outcomes <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4) |
| ED | Appreciation of the Ethical Dimensions of Humankind (Outcomes <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4) |
| WCIII | Written Communication in English III (Outcomes <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5) |



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Discipline-Specific Attribute Code(s):

- | | |
|---|---|
| <input type="checkbox"/> BHEL | Behavioral Science elective |
| <input type="checkbox"/> BUS | Business elective |
| <input type="checkbox"/> C | Computer Literacy (satisfies requirement) |
| <input type="checkbox"/> COMP | Computer Science Elective |
| <input type="checkbox"/> FINA | Fine Arts elective |
| <input type="checkbox"/> HUM | Humanities elective |
| <input type="checkbox"/> MATH | Mathematics elective |
| <input checked="" type="checkbox"/> SCI | Science elective |
| <input type="checkbox"/> SSCI | Social Science elective |

Course objectives:

General Education Goals and Outcomes:

- Appreciation of the Aesthetic Dimensions of Humankind:** Students will understand the diverse nature, meanings, and functions of creative endeavors through the study and practice of literature, music, the theatrical and visual arts, and related forms of expression.
- Quantitative Reasoning:** Students will learn to recognize, understand, and use the quantitative elements they encounter in various aspects of their lives. Students will develop a habit of mind that uses quantitative skills to solve problems and make informed decisions.
- Scientific Knowledge & Understanding:** Students will gain a broad base of scientific knowledge and methodologies in the natural sciences. This will enable them to develop scientific literacy, the knowledge and understanding of scientific concepts and processes essential for personal decision making and understanding scientific issues.
- Social Phenomena Knowledge & Understanding I and II:** Students will develop an increased understanding of the influences that shape a person's, or group's attitudes, beliefs, emotions, symbols, and actions, and how these systems of influence are created, maintained, and altered by individual, familial, group, situational, or cultural means.
- Written Communication in English I and II:** Students will be prepared to develop written texts of varying lengths and styles that communicate effectively and appropriately across a variety of settings.
- Historical Knowledge & Understanding (for CSCU Transfer Degree Programs):** Students will study the interrelatedness of various realms of human experience from multiple historical perspectives.
- Oral Communication in English (for CSCU Transfer Degree Programs):** Students will be prepared to develop oral messages of varying lengths and styles that communicate effectively and appropriately across a variety of settings.
- Scientific Reasoning (for CSCU Transfer Degree Programs):** Students will become familiar with science as a method of inquiry. Students will develop a habit of mind that uses quantitative skills to solve problems and make informed decisions.

Embedded Critical Analysis & Logical Thinking: Students will be able to organize, interpret, and evaluate evidence and ideas within and across disciplines; draw reasoned inferences and defensible conclusions; and solve problems and make decisions based on analytical processes.

1. Demonstrate competence in argumentation by identifying issues, evidence and reasoning processes; distinguishing facts from opinion; recognizing various types of arguments.



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- Demonstrate competence in formulating arguments by formulating good arguments, including a significant focus on inductive reasoning.
- Demonstrate competence in analysis by breaking subject matter into components and identifying their interrelations to ascertain the defining features of the work and their contributions to the whole.
- Demonstrate competence in evaluation by identifying assumptions, assessing the quality and reliability of sources of evidence, and demonstrating knowledge of the criteria for evaluating the success of each kind of inference.
- Demonstrate competence in synthesis, drawing together disparate claims into a coherent whole in order to arrive at well-reasoned and well-supported inferences that can be justified as a conclusion

Embedded Continuing Learning & Information Literacy: Students will be able to use traditional and digital technology to access, evaluate, and apply information to the needs or questions confronting them throughout their academic, professional, and personal lives.

- Demonstrate competency in using current, relevant technologies to solve problems, complete projects, and make informed decisions.
- Access, navigate, identify and evaluate information that is appropriate for their need(s) and audience(s).
- Synthesize information to broaden the knowledge base and produce both independent and collaborative work.
- Evaluate the economic, legal, ethical, and social issues surrounding the access and use of information and relevant technologies.

Embedded Appreciation of the Ethical Dimensions of Humankind: Students will identify ethical principles that guide individual and collective actions and apply those principles to the analysis of contemporary social and political problems.

- Respond critically to ethical issues.
- Apply appropriate concepts and terminology in identifying ethical problems, proposing and defending solutions to them.
- Apply standards and practices of scholarship, research, and documentation to defend positions and beliefs, including reevaluating beliefs in light of unforeseen implications or new evidence.
- Recognize the value of creative, collaborative, and innovative approaches to problem-solving, including the ability to acknowledge differing points of view.

Embedded Written Communication in English III: Students will be prepared to develop written texts of varying lengths and styles that communicate effectively and appropriately across a variety of settings.

- Respond to Rhetorical Situations
- Use Sources
- Craft Logical Arguments
- Apply Language Conventions
- Formulate Effective Writing Strategies

Course Specific Objectives:

- Develop the vocabulary, concepts and background knowledge needed to appreciate astronomy.
- Demonstrate an understanding and appreciation of the scale and workings of the universe and of the physical laws that govern it.
- Evaluate how workings of the universe and of the physical laws were deduced by developing a data collection plan.



4. Articulate how scientific explanations and theories of the universe and physical laws were deduced in the past and are being refined and replaced.
5. Evaluate the validity and reliability of research methods used to examine the workings of the universe and physical laws.

Course Content:

Our place in the universe

Discovering the universe

The science of astronomy

Understanding motion, energy, and gravity

Light: the cosmic messenger

Formation of planetary systems

Earth and the terrestrial worlds

Our Sun

The stellar graveyard

Our galaxy

The universe of galaxies

Date Course Created: 9/10/2019

Date of Last Revision: 11/7/2019