

COURSE SYLLABUS

LAST REVIEW	Fall 2022
COURSE TITLE	Introduction to Astronomy
COURSE NUMBER	NASC-0107
DIVISION	Math, Science, Business & Technology
DEPARTMENT	Biology
CIP CODE	24.0101
CREDIT HOURS	3
CONTACT HOURS/WEEK	Class: 3
PREREQUISITES	None
COURSE PLACEMENT	None

COURSE DESCRIPTION

A survey of astronomy, the topics included in this course are the moon, planets, the sun, stellar birth and death, galaxies and their evolution, and the evolution of our universe. Emphasis is descriptive rather than mathematical.

KANSAS SYSTEMWIDE TRANSFER: PHY 1021

The learning outcomes and competencies detailed in this course outline or syllabus meet or exceed the learning outcomes and competencies specified by the Kansas Core Outcomes Groups project for this course as approved by the Kansas Board of Regents.

PROGRAM ALIGNMENT

This course is part of a program aligned through the Kansas Board of Regents and Technical Education Authority. For more information, please visit:

https://kansasregents.org/workforce_development/program-alignment

General Education Learning Outcome

- ☐ Basic Skills for Communication
- ☐ Mathematics
- ☐ Humanities
- ☒ Natural and Physical Sciences
- ☐ Social and Behavioral Sciences

Institutional Learning Outcomes

- ☐ Communication
- ☒ Computation and Financial Literacy
- ☒ Critical Reasoning
- ☒ Technology and Information Literacy
- ☐ Community and Civic Responsibility
- ☐ Personal and Interpersonal Skills

TEXTBOOKS

<http://kckccbookstore.com/>

METHODS OF INSTRUCTION

A variety of instructional methods may be used depending on content area. These include but are not limited to: lecture, multimedia, cooperative/collaborative learning, labs and demonstrations, projects and presentations, speeches, debates, panels, conferencing, performances, and learning experiences outside the classroom. Methodology will be selected to best meet student needs.

COURSE OUTLINE

The course outline is indicated below and is subject to change as course development dictates.

- I. Background Information
 - A. Survey of the universe
 - B. Powers of ten and the metric system
 - C. The history of Astronomy and observations of the ancients.
 - D. The celestial coordinate system and the night sky
- II. Physics of Optics and Light
 - A. Spectra and spectroscopy
 - B. Atomic structure and the production of light
 - C. Optics of telescopes
 - D. Types of research telescopes
- III. Stellar Types and Stellar evolution
 - A. Stellar properties
 - B. The messages of stellar spectra
 - C. The H. R. Diagram
 - D. Types of stars and stellar groups
 - E. Nuclear physics
 - F. Stellar evolution
 - G. The interstellar medium
 - H. Stellar death and Black Holes
- IV. Galactic Theory
 - A. Types of galaxies, normal and peculiar
 - B. Quasars
 - C. Galactic evolution
 - D. Cosmology

- E. The Sun and the Solar System
- F. The sun and the solar atmosphere
- G. The solar system in general
- H. The Earth
- I. The Moon and Mercury
- J. Venus and Mars
- K. Saturn, Jupiter, and the Outer Planets
- L. Extraterrestrial Life
- M. Modern Astronomy

COURSE LEARNING OUTCOMES AND COMPETENCIES

Upon successful completion of this course, the student will:

- A. The learner will be able to explain the scientific method
- B. The learner will be able to interpret astronomical observations, demonstrate critical thinking and basic problem solving
- C. The learner will be able to explain astronomical phenomena in terms of appropriate scientific models
- D. The learner will be able to explain and critique science as presented by the media
- E. The learner will be able to identify, locate, and predict characteristics of celestial objects
- F. The learner will be able to effectively utilize the tools of observational astronomy
- G. The learner will be able to generate and communicate conclusions based on data and analysis of observations

ASSESSMENT OF COURSE LEARNING OUTCOMES AND COMPETENCIES

Student progress is evaluated through both formative and summative assessment methods. Specific details may be found in the instructor's course information document.

COLLEGE POLICIES AND PROCEDURES

Student Handbook

<https://www.kckcc.edu/files/docs/student-resources/student-handbook-and-code-of-conduct.pdf>

College Catalog

<https://www.kckcc.edu/academics/catalog/index.html>

College Policies and Statements

<https://www.kckcc.edu/about/policies-statements/index.html>

Accessibility and Accommodations

<https://www.kckcc.edu/academics/resources/student-accessibility-support-services/index.html>.