| **PROFESSOR:** |  |
| --- | --- |
| **OFFICE LOCATION:** |  |
| **OFFICE HOURS:** |  |
| **PHONE NUMBER:** |  |
| **E-MAIL:** |  |
| **SEMESTER:** |  |
| **DELIVERY METHOD:** |  |

# COURSE NUMBER AND TITLE, CATALOG DESCRIPTION, CREDITS:

## AST 2002C Astronomy (3 Credits)

This course provides a survey of astronomy as a quantitative observational science. It is designed to provide an introduction to the night sky, astronomical tools and methods, the historical development of our understanding of the universe, the solar system, star formation, stellar properties, the lives and deaths of stars, galaxies and cosmology.

## PREREQUISITES FOR THIS COURSE:

(SB 1720 Testing Exemption or successful completion of all Developmental courses) and MAT 1033 or higher with a grade of “C” or better

### CO-REQUISITES FOR THIS COURSE:

None

## GENERAL COURSE INFORMATION:

Topic Outline

An introduction to the night sky

The geocentric and heliocentric models of our solar system

Gravity

Light and the electromagnetic spectrum

Astronomical tools and methods

Our solar system

The Sun

Stellar properties

The interstellar medium and star formation

The lives and deaths of stars

The Milky Way and the diversity of galaxies

Cosmology

The search for extraterrestrial intelligence

## ALL COURSES AT FLORIDA SOUTHWESTERN STATE COLLEGE CONTRIBUTE TO THE GENERAL EDUCATION PROGRAM BY MEETING ONE OR MORE OF THE FOLLOWING GENERAL EDUCATION COMPETENCIES:

**C**ommunicate clearly in a variety of modes and media.

**R**esearch and examine academic and non-academic information, resources, and evidence.

**E**valuate and utilize mathematical principles, technology, scientific and quantitative data.

**A**nalyze and create individual and collaborative works of art, literature, and performance.

**T**hink critically about questions to yield meaning and value.

**I**nvestigate and engage in the transdisciplinary applications of research, learning, and knowledge.

**V**isualize and engage the world from different historical, social, religious, and cultural approaches.

**E**ngage meanings of active citizenship in one’s community, nation, and the world.

A. General Education Competencies and Course Outcomes

1. Listed here are the course outcomes/objectives assessed in this course which play an integral part in contributing to the student’s general education along with the general education competency it supports.

General Education Competency: Evaluate

Course Outcomes or Objectives Supporting the General Education Competency Selected:

Identify the major celestial phenomena associated with the Sun, Moon, planets, and stars and analyze their relationship to the celestial sphere.

Use star charts to locate stars and constellations, and compare astronomical and astrological predictions; use sampling to approximate the number of stars seen by the naked eye in the night sky.

Describe the ancient concepts of astronomy and show how they relate to modern day concepts.

Identify and apply the relevant theories of gravitation and motion to predict and analyze planetary orbits; use observational data to draw conclusions about the shapes of planetary orbits (such as Mercury’s).

Determine the mass of a celestial object (such as the Moon) by using Kepler's laws and observational data (such as a satellite's orbit around the Moon).

Identify the various observational tools used in astronomy and categorize and differentiate the regions of the electromagnetic spectrum; identify gaseous elements by their spectral lines.

Use the Doppler Effect to determine the rotational period of a celestial object (such as Mercury).

Compare theories of formation of stars and their planetary systems.

Compare and contrast the major physical characteristics of the Earth and Moon; integrate relevant theories related to the Moon's origin, its phases and its tidal effects on Earth.

Compare and contrast the structure and physical characteristics of the terrestrial and Jovian planets.

Compare and contrast the various objects comprising the solar system debris; use occultation data (such as from the Pluto-Charon system) to determine the diameter of each of the objects involved.

Identify, describe, and compare the different layers in the Sun's interior and atmosphere; measure the Sun's diameter using pinhole projection.

Compare the various methods of measuring distances and other stellar properties; measure the proper motion of Barnard's star and determine the star's overall motion in space.

Interpret the H-R diagram and use it to describe stellar evolution.

Describe the properties of the interstellar medium and theories of stellar formation.

Trace and compare the life histories of stars of various masses; compare the properties of white dwarfs, neutron stars, and black holes.

Describe the physical makeup, stellar populations, and evolution of our Galaxy; construct the shape and a scale drawing of our Galaxy by using appropriate observational data.

Compare the different types of galaxies and theories of their origin, and describe the nature of active galactic nuclei.

Differentiate among cosmological models and identify their limitations; deduce the size and age of the observable universe by using Hubble's law.

Describe efforts to communicate with extraterrestrial intelligence, develop one such method, and identify the obstacles astronomers face in pursuing such searches.B. In accordance with Florida Statute 1007.25 concerning the state’s general education core course requirements, this course meets the general education competencies for science.

Students will demonstrate the ability to critically examine and evaluate scientific observation, hypothesis, or model construction, and to use the scientific method to explain the natural world.

Students will successfully recognize and comprehend fundamental concepts, principles and processes about the natural world

## DISTRICT-WIDE POLICIES:

### PROGRAMS FOR STUDENTS WITH DISABILITIES

Florida SouthWestern State College, in accordance with the Americans with Disabilities Act and the College’s guiding principles, offers students with documented disabilities programs to equalize access to the educational process. Students needing to request an accommodation in this class due to a disability, or who suspect that their academic performance is affected by a disability should contact the Office of Adaptive Services at the nearest campus. The office locations and telephone numbers for the Office of Adaptive Services at each campus can be found at <https://www.fsw.edu/adaptiveservices>.

### REPORTING TITLE IX VIOLATIONS

Florida SouthWestern State College, in accordance with Title IX and the Violence Against Women Act, has established a set of procedures for reporting and investigating Title IX violations including sexual misconduct. Students who need to report an incident or need to receive support regarding an incident should contact the Equity Officer at [equity@fsw.edu](mailto:equity@fsw.edu). Incoming students are encouraged to participate in the Sexual Violence Prevention training offered online. Additional information and resources can be found on the College’s website at <https://www.fsw.edu/sexualassault>.

## REQUIREMENTS FOR THE STUDENTS:

List specific course assessments such as class participation, tests, homework assignments, make-up procedures, etc.

## ATTENDANCE POLICY:

The professor’s specific policy concerning absence. (The College policy on attendance is in the Catalog and defers to the professor.)

## GRADING POLICY:

Include numerical ranges for letter grades; the following is a range commonly used by many faculty:

| **Grade Percent** | **Letter Grade** |
| --- | --- |
| 90 - 100 | A |
| 80 - 89 | B |
| 70 - 79 | C |
| 60 - 69 | D |
| Below 60 | F |

(Note: The “incomplete” grade [“I”] should be given only when unusual circumstances warrant. An “incomplete” is not a substitute for a “D,” “F,” or “W.” Refer to the policy on “incomplete grades.)

## REQUIRED COURSE MATERIALS:

(In correct bibliographic format.)

## RESERVED MATERIALS FOR THE COURSE:

Other special learning resources.

## CLASS SCHEDULE:

This section includes assignments for each class meeting or unit, along with scheduled Library activities and other scheduled support, including scheduled tests.

## ANY OTHER INFORMATION OR CLASS PROCEDURES OR POLICIES:

(Which would be useful to the students in the class.)