GULF COAST STATE COLLEGE
DIVISION OF NATURAL SCIENCES

AST 1002 - Descriptive Astronomy, 3 credit hours—Fall 2024

Section: 81173

Instructor: Clifford Harris, Ph.D Physics

Email: charris@gulfcoast.edu

Office: Natural Sciences A 118, 850-769-1551 ext 2865

Office Hours: The instructor is available for short periods in the room both before class and after. Longer discussions should take place during 10 weekly office hours.

Administrative Assistant: Kathy Bleday, kbleday@gulfcoast.edu 850-872-3851

Natural Sciences Division Chair: Fledia Ellis, fellis@gulfcoast.edu 850-872-3848

Late Registration Drop/Add deadline: Aug. 25

Withdrawal deadline to receive a "W": Oct. 20

Course Description: A study of the earth-moon system, the celestial sphere, the solar system, the sun, stars, galaxies, the universe, and astronomical instruments. Mathematical procedures are not stressed.

Prerequisite: none

Corequisite: none

Course Materials:

Textbook: DISCOVERING the ESSENTIAL UNIVERSE, 6th Ed., 2014, by Neil. F. Comins (can substitute 5th Ed.), Publisher: Maxmillan.

Textbook Options: The textbook is available in the bookstore. The other option is to purchase the textbook from elsewhere. It is required to have a copy of the textbook. The three options below include both.

ISBN-13: 978-1464181702
ISBN-10: 1464181705

This course is a 3-credit course, which means that in addition to the scheduled meeting times, students are expected to do **at least 6 hours** of course-related work outside of class **each week** during the semester. This includes time spent completing assigned readings, doing homework, and studying for tests and examinations.

In-Class Content Delivery: In-class instruction is by lecture, supplemented with white-board figures and PowerPoint-style presentations. Lectures may consist of presentations, worked example problems, group activities, and individual assessments. There are both presenter and hands-on demonstrations and exhibits. Lectures will occur in the designated classroom during the scheduled class time and will include periodic assessments that contribute to the final grade. Office hours will be in the office. Exams will be taken in-person on campus.

Broad Goals of the Course:

1. gaining factual knowledge in astronomy (terminology, classifications, methods, trends)
2. learning fundamental principles, relationships, generalizations, and theories
3. gaining a broader understanding and appreciation of the universe and our place in it

Attendance and Participation: Your full presence at all class meetings is expected. You may withdraw yourself from this class up to the withdrawal deadline (Academic Calendar); to do so, you must submit a withdrawal form

to the Office of Admissions and Records. If you do not submit a withdrawal by this date, you will receive a letter grade (not a "W").

Canvas: Students should be familiar with the college Learning Management System (LMS) Canvas. Course evaluations will be conducted via Canvas.

Email/Voicemail: The instructor will ***NOT*** email you everything you missed in class if you did not attend that day. Any high priority/urgent message sent will be returned as soon as possible during the regular workweek. Emails will be replied to within a week. Voicemail messages may be responded to via email.

Evaluation: Regular exams will count for 60% of the final grade. The lowest regular exam score will be dropped. There will be no make-up exams - not even if you scored low on a previous exam and you want to drop that one. The comprehensive final exam is worth 30% of the final grade and homework projects count 10%.

Letter grades: Grading will be on a percentage system:
90-100 = A 80-89 = B 70-79 = C 60-69 = D below 60 = F

Exams: Exams may be made up of any of the following types of questions: True-False, multiple choice, short answer, fill-in-the-blank and short problems. There will be some problems requiring calculation, but even if you get every one of the numeric calculations wrong, it is still possible to get an "A" in this course. Exams are cumulative; your instructor encourages you to use exams as a learning tool. Go to the restroom before the exam; you will not be allowed to continue the exam if you have left the room.

Homework beyond the reading: Weekly projects will be assigned. Feel free to explore unassigned exercises and problems. **Homework is due on the Monday following the assignment** (except when Monday is a holiday in which case it is due the next class meeting). Late homework may not receive full score.

Student Absences for Participation in Official University Events. Students at Gulf Coast have the opportunity to participate in many extracurricular activities that either contribute to the quality of their college experience or promote their post-graduation goals. At times, students' participation requires them to be absent from regularly scheduled class. Students are responsible for all work missed. According to the Student Handbook, **"It is the student's responsibility to notify his/her instructor or supervisor in advance and identify what tasks or assignments must be made-up before missing class or work hours."** If notice is not provided in a timely manner, accommodations may not be provided.

Students with Religious Obligations: We will make every effort to accommodate students with religious obligations for any part of this course. However, students should notify the instructor at the beginning of the semester of the requirements.

Accessibility Statement: Gulf Coast State College supports an inclusive learning environment for all students. If there are aspects of the instruction or design of this course that hinder your full participation, reasonable accommodations can be arranged. Prior to receiving accommodations, you must register with Student Accessibility Resources. Appropriate academic accommodations will be determined based on the documented needs of the student. For information regarding the registration process email sar@gulfcoast.edu or call (850) 747-3243.

Academic Integrity Policy: 1. Honest participation in academic endeavors fosters an environment in which optimal learning can take place and is consistent with the college's mission. Academic misconduct is destructive to the spirit of an educational environment and therefore will not be tolerated.

The following definitions will apply:

- "Cheating" includes but is not limited to use of any unauthorized assistance in taking quizzes, tests or examinations; dependence upon the aid of sources beyond those authorized by the instructor in writing

papers, preparing reports, solving problems, or carrying out other assignments; the acquisition without permission of tests or other academic materials belonging to a member of the College's faculty.

- "Plagiarism" includes, but is not limited to, the use by paraphrase or direct quotation of the published or unpublished work of another person without full and clear acknowledgment. It also includes the unacknowledged use of materials prepared by another person or agency engaged in the selling of term papers or other academic materials.
  c. The term "academic misconduct" includes any or all forms of cheating and plagiarism. In addition, academic misconduct may include the following:

- Destroying, damaging, or stealing another person's work or work materials including, but not limited to, lab experiments, computer programs/files, term papers, projects, or copy of an examination.

- Theft, damage, or misuse of library resources; removing uncharged material from the library; defacing or damaging library materials; intentionally displacing or hoarding library materials within the library for one's unauthorized private use, or any other abuse of reserved materials.

- Theft, damage, or misuse of computer resources including, but not limited to, computer accounts codes, passwords, or facilities; damaging computer equipment or interfering with the operation of any computer system in the college.

2. Individual instructors or programs may provide students with additional academic integrity policy statements at the start of a semester.

3. Sanctions for incidences of academic misconduct, depending on the severity of the incidence and/or its repetition, may range from receiving an F grade (or zero) for the test, assignment, or activity to failure of the course, to suspension, or dismissal from the program or the college.

4. An instructor who believes that an incidence of academic misconduct has occurred will discuss it immediately with the student. If, in the judgment of the instructor, the student has committed an act of academic misconduct, or if the student admits that there has been misconduct, the instructor will assess the appropriate penalty.

5. Instances of admitted or proven academic misconduct should be reported in writing to the Dean of Student Life. The purpose of this reporting is to track individuals who have repeated incidences. The Vice President of Academic Affairs reserves the right to pursue disciplinary action against a student if deemed necessary.

6. Students who think they have been treated unfairly may invoke the Student Academic Grievance Procedure.

Assessments: Homework, regular exams (4) and a Final Exam.

HB233 statement: In accordance with federal and state privacy laws, students may record class lectures for their own personal educational use, in connection with a complaint to the college, or as evidence in internal or external legal proceedings. Students may not publish or upload the recordings or any components thereof without the knowledge and written permission of the faculty member. Failure to obtain permission to publish could lead to the students' having to pay damages, attorney fees, and court costs. For more information about what can be recorded, please see the guidelines in the current Student Handbook on the Gulf Coast State College website.

Learning Objectives - understand the reading assignments

Reading Assignment Topics:

Exam 1 covers the following material:

Chapter 1 - Discovering the Night Sky
- Scales of the Universe
- Patterns of Stars
- Earthly Cycles
- Eclipses

Chapter 2 - Gravitation and the Motion of the Planets
- Science: Key to Comprehending the Cosmos
- Changing Our Earth-Centered View of the Universe
- Guided Discovery: Astronomy's Foundation Builders
- Kepler's and Newton's Laws
- Heavy Elements of the Solar System
- Formation of Heavy Elements
- Comparative Planetology
- Planets Outside Our Solar System

Exam 2: Covers the following material:

Chapter 3 - Light and Telescopes
- The Nature of Light
- Optics and Telescopes
- Nonoptical Astronomy
- Blackbody Radiation
- Identifying the Elements by Analyzing Their Unique Spectra
- Atoms and Spectra

Chapter 4 - Formation of the Solar System and Other Planetary Systems
- The Solar System Formed from an Earlier Generation of Stars
- The Formation of the Planets
- Debris: Remnants in the Solar System
- Categories of the Present-Day Solar System
- Planets Outside Our Solar System

Chapter 5 - Exoplanets This chapter isn't in 5th Ed.
- Protoplanetary disks are common
- Astronomers have at least seven ways of detecting exoplanets
- Exoplanets orbit a variety of stars
- Exoplanets come in a wide range of sizes and orbits
- There are lots of exoplanets

Chapter 6 - The Terrestrial Planets and Moons Chapter 5 of 5th Ed.
- Earth: a Dynamic, Vital World
- The Moon and Tides

Mercury
Venus
Mars

Chapter 7 - The Outer Planets and Their Moons Chapter 6 of 5th Ed.
Jupiter
Jupiter's Moons and Rings
Saturn
Uranus
Neptune

Exam 3 covers the following material:

Chapter 8 - Vagabonds of the Solar System Chap. 7 Dwarf Planets and Small Solar System Bodies of 5th Ed.
Dwarf Planets
Asteroids
Comets
Meteoroids, Meteors, and Meteorites

Chapter 9 - The Sun Chapter 8 of 5th Ed.
The Sun's Atmosphere
The Active Sun
The Sun's Interior is the Source of it's Energy

Chapter 10 - Characterizing Stars Chapter 9 of 5th Ed.
Magnitude Scales
The Temperatures of Stars
Types of Stars
Stellar Masses

Exam 4 covers the following material:

Chapter 11 - The Lives of Stars Chapter 10 of 5th Ed.
Protostars and Pre-Main Sequence Star
Main-Sequence and Giant Stars
Evolution of Stars with Masses between 0.08 and 0.4 Solar Masses
Early and Midlife Evolution of Stars with more than 0.4 Solar Masses
Late-Stage Evolution: Variable Stars and Globular Clusters

Chapter 12 - The Deaths and Remnants of Stars Chapter 11 of 5th Ed.
Intermediate-Mass Stars and Planetary Nebulae
High-Mass Stars and Type II Supernovae
Neutron Stars and Pulsars
Black Holes
The Relativity Theories
Inside a Black Hole
Evidence for Black Holes
Gamma-Ray Bursts

Chapter 13 - The Galaxies Chapter 12 of 5th Ed.
The Milky Way
Types of Galaxies
Clusters and Superclusters
Superclusters in Motion
Quasars
Other Active Galaxies
Supermassive Engines

Chapter 14 - Cosmology Chapter 13 of 5th Ed.

The Big Bang
A Brief History of Spacetime, Matter, Energy, and Everything
The Fate of the Universe