

Abilene Christian University

Course Syllabus

COURSE DESCRIPTION:

“Covers history, development, observation techniques, solar, planetary, stellar, galactic, and cosmological aspects of astronomy. Requires some observation and lab work. May be used to satisfy Science University Core requirements.”

Course Number: PHYS 101.01
Course Title: Astronomy
Credit Hours: 3
Class Meeting Times: Tuesday and Thursday at 1:30 PM

Professor: Dr. Jess T. Dowdy

Office: Foster Science Bldg. 353

Office hours:

Tuesday	8:00 – 9:30 3:00 – 5:00
Thursday	8:00 – 9:30 3:00 – 5:00

Other office hours gladly by appointment. When my office door is open, you are always welcome.

Phone: (325) 674-2165 (office – Lois Marie)
(903) 353-2329 (cell/text)

Email: jess.dowdy@acu.edu

TEXT/BOOK:

We will cover almost every chapter in our required text, Horizons, exploring the Universe, by Seeds and Backman (twelfth edition) ISBN: 1-111-979-421 (package). You are responsible for all material in the text, as well as additional material presented in class. Unless indicated otherwise in class, every section of every chapter is “fair game” as a source of test or discussion questions, even if not discussed in detail in class. The most important topics will be covered in detail; some minor points will be left for you to spend time with on your own. We will also consider a number of special topics as the semester progresses. You will be responsible for these topics as well as the text-topics. It is important for you to ask questions in class or to see me outside of class if problems arise regarding anything that was not made clear in the text or in the lectures.

CLASS ATTENDANCE/PARTICIPATION:

Attendance at every class proves essential since material not found in the text shows up later on exams. Attendance is taken, and counts for part of the participation grade.

There is no makeup work for any work that occurs during your absence. If you are absent, you get a zero for any work given that day, with no exceptions. Attendance may be taken at any time during the class, or even several times during one class period.

Class participation comprises 25% of the overall grade. Participation includes group work, being called on in class (and answering), discussion, minor assignment grades, homework, observations, turning in at-home exercises when due, and anything else, other than a test, related to the class.

CLASS DEMEANOR:

Questions or observations are encouraged during the class period. Severe cases, as decided by me, of disruptive behavior will not be tolerated, and will result in dismissal from class, with a grade of F (for the entire semester), if exhibited.

Minor infractions, as decided by me, decrease your participation grade heavily (at least 5%). Examples include:

- o arriving late to class
- o departing early from class
- o not paying attention
 - sleeping, reading, closing your eyes, ...
 - preventing me from seeing your eyes (wearing hats or sunglasses, slouching, hiding behind books, papers, or laptops (laptops are not to be opened in this class), ...),
- o creating a distraction for others (or yourself)
 - phones are not allowed in this class unless I instruct you to use your phone, (if I see or hear it, it's mine...to retrieve it you will have to pay penance equivalent to your infraction(s) as decided by me....could be a week, could be a donation to the physics department scholarship fund, you get the idea). For cumulative occurrences, the penance goes up exponentially.
 - talking (if your head is turned to listen to someone talking, you're helping create the distraction!)
- o acting like you are lounging in your living room (coming to class in pj's, feet over chairs, leaving trash behind, ...).

OBSERVATIONS:

You will be required to attend observation sessions during the evenings. You will also have at home lab type exercises. More information and sign-ups will be posted a few weeks after school starts. *Warning: If you sign-up and don't go, you will lose some credit.* These count in your participation grade.

EXAMS:

There are 3 exams during the semester worth 25% each. The fourth exam is the final exam, and is comprehensive in nature.

CHEATING/ACADEMIC DISHONESTY:

Given the unlikely event that anyone is caught cheating, that person, and any collaborators, will receive a grade of "F" in the course. For this case, no withdraw grades are allowed.

FINAL GRADES:

Your final grade will be calculated by using the highest 4 of the 5 following areas:

25%	Participation	_____ / 250
25%	Test #1	_____ / 250
25%	Test #2	_____ / 250
25%	Test #3	_____ / 250
25%	Comprehensive Final	_____ / 250

You will earn a grade according to the scale below:

90 to 100%	A
80 to 89.99%	B
70 to 79.99%	C
60 to 69.99%	D
Less than 60%	F

MAJOR GOALS:

- o Study this world that God has made for us (Acts 17:24-28).
- o Learn about the historical up to current scientific understanding of this world and harmonize this with scripture.
- o Learn about the scientific process
 - examples in history
 - what a model is and how it helps develop theories
 - what a theory is and how they are used
 - the importance of data
 - what is the difference between astronomy and astrology
 - analyze numerical and graphical data
 - interpret, evaluate, and rationalize data and results
 - use mathematical methods to gain insight into the scientific explanation
 - Incorporate real-life problems from the classroom process into laboratory and observational experiences
- o Learn to think critically and analytically and apply your findings
 - Evaluate the scientific explanation for possible inconsistencies and situational failures
 - Determine the point at which a theory must be challenged and possibly replaced by a modified version or completely new theory
 - This class contains quite a few lab type experiences outside of class even though there is no scheduled lab. These experiences help you apply what you discuss, see, and think about actual experiences/experiments as related to the class.
- o Learn some facts:
 - light travels fast, all radiation is not bad
 - types of planets in our solar system
 - differences between solar system, galaxy, and universe
- o Stimulate in you a desire to be lifelong learners.

Course Competencies and Assessment

Competency	Measurement Instrument	Measurement Standard
The student can apply realistic solutions to problems in astronomy.	Homework, Exams, Observations	1. The student will model primary understanding of the problem and identify interactions at the conceptual level. 2. The student will identify physical equations that model the problem. 3. The student will apply mathematical techniques to properly describe the problem and evaluate its plausibility.
The student can apply luminosity, energy, and temperature of stellar objects to a Hertzsprung-Russell (H-R) diagram.	Homework, Exams, Observations	1. The student can identify the luminosity and spectral classification of a star and properly graph its location a H-R diagram. 2. The student can infer from the location the stellar age in the lifecycle sequence. 3. The student can construct a projected path on the H-R diagram for the future of the star and describe its processes. 4. The student can calculate life expectancy for the stellar object. 5. The student can locate the object in the sky by observation.
The student can apply astronomical theories to implications regarding the universe.	Homework, Exams, Observations	1. The student can identify by observation the different objects in the sky. 2. The student can use the theories regarding the type of object to make a sound conclusion as to the objects adherence to universal implications. 3. The student can use the Hubble constant to make predictions regarding the object.

KEYS TO SUCCESS:

- Keys to success:
 - o Be here.
 - o Be prepared.
 - o "Work" in class.
 - o Communicate effectively

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To educate students for Christian service and leadership
throughout the world.**