**South Plains College**

**Common Course Syllabus**

**Revised 1/4/2022**

**Department:** Science

**Discipline:** Astronomy

**Course Number:** ASTR1403

**Course Title:** Stars and Galaxies

**Available Formats:** Conventional and Embedded

**Campus:** Hale Center (Embedded)

**Instructor:**

 Dan Boren

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**Course Description:** Study of Stars and Galaxies, and the Universe outside our Solar System.

Prerequisite: There are no prerequisite for this course, however you will be expected both on the homework and in the exams to be able to perform simple mathematical calculations. Examples of the mathematical concepts we will use in this course are scientific notation, multiplying and dividing powers of 10, converting between different metric units, rearranging, and solving simple equations. It will be assumed that you are familiar with high school algebra.

**Credit:** 4 Lecture: 3 Lab: 1 (3 lab hours = 1 credit)

**Textbook:** Modified Mastering Astronomy with the Cosmic Perspective, 9th edition eText by Bennett et al. (Pearson 2020)

**This course partially satisfies a Core Curriculum Requirement**

 Life and Physical Sciences Foundational Component Area (030)

**Core Curriculum Objectives addressed:**

* Communication skills--to include effective written, oral, and visual communication.
* Critical thinking skills—to include creative thinking, innovation, inquire, and analysis, evaluation and synthesis of information.
* Empirical and quantitative competency skills—to manipulate and analyze numerical data or observable facts resulting in informed conclusions.
* Teamwork—to include the ability to consider different points of view and to work effectively with others to support a shared purpose or goal.

**Student Learning Outcomes:** Upon successful completion of this course students will:

1. Describe key features of the universe, its scale, our place in it, and the physical principles relevant to astronomy.
2. Understand basic principles of physics that allow astronomers to learn about the universe.
3. Apply quantitative reasoning to solve a variety of astronomical problems.
4. Explain the principles and uses of telescopes in astronomy.
5. Describe the classifications and lifecycles of stars.
6. Explain the basic classification of galaxies in terms of structure.
7. Discuss current theories of galaxy formation and evolution.
8. Describe the spatial distribution of galaxies with the Universe.
9. Describe the evidence for the Big Bang as the origin of the Universe and the Methods for estimating the age of the Universe.
10. Discuss experimental observations leading to the ideas of Dark Matter and Dark Energy and current theories for explaining these observations.

**Student Learning Outcomes Assessment:** Selected questions on the comprehensive final exam will assess how well students have met targeted student learning outcomes.

**Course Evaluation:** Student grades will be based on Mastering Astronomy quizzes, homework, class participation, observing sessions, two test during the semester, and a comprehensive final exam. Final grads will be assigned based on overall, weighted average using the weighting scheme shown below:

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| --- |
| Weighting Scheme |
| **Task** | **Weight** |
| MA Quizzes | 10% |
| Homework | 10% |
| C-Notes | 15% |
| Observing Sessions | 10% |
| Test 1 | 15% |
| Test 2 | 15% |
| Final Exam | 25% |

The letter grades will be based on a fixed scale as follows:

 A: 89.5 - 100 B: 79.5 - 89.5 C: 69.5 – 79.5 D: 59. – 69.5 F: below 59.5

Borderline cases (grades within 0.5 of the break point) will be decided on class attendance and participation.

**Attendance Policy:** Attendance and effort are vital to success in this course. Class attendance keeps you well connected to the course, so that you know at all times what’s going one, what are the most important points, etc., and gives you opportunities to ask questions and clear up confusions. Therefore, students are expected to be in attendance for every class session. During classes, we will engage in discussions and various activities, some of which may involve completing worksheets. Participation in these activities will form part of your final grade.

**MA Quizzes:** The Mastering Astronomy quizzes will consist of 25 multiple choice questions complete online. The questions on these quizzes will come from the reading, concept, and visual quizzes located in the study area of Mastering Astronomy. You may work the quizzes in the study area as many times as you want in preparation for taking the graded quiz assignment. You may also attempt the graded quiz assignment up to 5 times and your best score will be counted. Noted that the set of 25 questions selected from the quizzes in the study area will be different each time you retake the graded quiz.

**Homework:** You will complete 6 homework assignments. Late homework will be accepted only if you have made prior arrangements and there is a very good reason for lateness.

Observing Sessions: Two observing sessions are scheduled as shown on the course calendar. You are expected to attend these two sessions and complete the observing worksheet that will be provided to you.

Can I get the grade I really want?

Yes, but it will depend on your effort. It does not matter whether you have even learned anything about astronomy before or whether you are “good” in science. What does matter is your willingness to work hard. Astronomy is a demanding course, in which we will move quickly, and each new topic will build on concepts covered previously. If you fall behind at any time, you will find it extremely difficult to get caught back up. If you want to get a good grade in this class, be sure to pay special attention to the following:

* Carefully read the section in your textbook called “How to Succeed in Your Astronomy Course.” It describes how much time you should expect to spend studying outside class and lists a number of useful suggestions about how to study efficiently.
* When you turn in assignments of any kind, make sure they are done clearly and carefully as describe in the “How to Succeed” subsection called “Presenting Homework and Writing Assignments.”
* Don’t procrastinate. The homework assignments will take you several hours, so if you leave then to the last minute, you’ll be in trouble—and it will be too late for you to ask for help. Both quizzes and homework need to be completed on time to earn credit.
* Don’t miss class, and make sure you come to class prepared, having complete the assignments due by that date.
* Don’t be a stranger to your instructor—come see me in office hours, even if you don’t have any specific questions.
* If you find yourself confused or falling behind for any reason at any time, let me know immediately! No matter what is causing your difficulty, I’m quite willing to work with you and find a way for you to succeed.

All the hard work described above might sound a bit intimidating, but I can make you this promise: Few topics have inspired humans throughout the ages as much as the mysteries of the heavens. This class offers you the opportunity to explore these mysteries in more depth, learning both about our tremendous modern understanding f the universe and the mysteries that remain. If you work hard and learn the material well, this class will be one of the most rewarding in your college career.