South Plains College
Common Course Syllabus: ASTR 1403
Revised 08/22/2022

Department: Science

Discipline: Astronomy

Course Number: ASTR 1403

Course Title: Stars and Galaxies

Available Formats: conventional

Campuses: Levelland

Instructor:
David Hobbs
Office: S67
Office Hours: MW 8:30 – 11:00 am, F 8:30 – 11:30 am
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Course Description: Study of Stars, Galaxies, and the Universe outside our Solar System

Prerequisite: There are no prerequisites 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:** 3

Textbook: *The Essential Cosmic Perspective, 9th Edition* by Bennett et al. (Pearson, 2022).
The textbook and Mastering Astronomy learning platform will be available through Blackboard as part of the SPC TexBook program. See details below.

This course partially satisfies a Core Curriculum Requirement:
Life and Physical Sciences Foundational Component Area (030)

Core Curriculum Objectives addressed:

- **Communications skills**—to include effective written, oral, and visual communication
- **Critical thinking skills**—to include creative thinking, innovation, inquiry, 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 within 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 tests will assess how well students have met targeted student learning outcomes.

Course Evaluation: Student grades will be based on daily work, homework, and tests. Final grades will be assigned based on overall point total, using the point values shown below:

Task	Points
Daily Work	25
HW & Tests	75

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: 59.5 – 69.5 F: below 59.5

Borderline cases (within 0.5 points of the break) will be decided based on class participation.

Attendance Policy: Attendance and effort are vital to success in this course. Class attendance keeps you well connected to the course and gives you opportunities to ask questions and clear up confusions. Therefore, students are expected to be in attendance for every class session. Students who stop attending class will *not* be administratively dropped. *You* must complete the appropriate drop procedure or you may end up receiving a failing grade in the course at the end of the semester.

Daily Work: Daily work consists of Mastering Astronomy quizzes, observing sessions, and in-class (lab) practice with feedback. These in-class activities are meant to be formative exercises and are graded primarily on participation. Their purpose is to help develop understanding of the concepts and principles and to prepare you for the tests.

MA Quizzes: The Mastering Astronomy quizzes will consist of *reading quizzes* completed before class discussion of the chapter and *concept/visual quizzes* completed after class discussion of the chapter. The questions on these quizzes are available 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. You may also attempt the graded quiz assignment up to 3 times and your best score will be counted.

Observing Sessions: You must attend at least one observing session. Three sessions will be conducted as specified on the course calendar, weather permitting.

Daily Work Grade Determination: Your daily work grade (up to a maximum of 25 points) will be determined as follows:

Mastering Astronomy Quizzes: Average quiz percentage × 10 points
Observing Sessions: 1 point for each session attended
In-class Practice: 20 sessions worth one point each

Homework: Do your homework! There is no substitute. Students who don't put in a good effort often struggle in the course. Homework will be assigned and graded online. Average of all chapter assignments will be used to determine the homework points (average homework percentage × 25 points). A better homework grade will replace your lowest test score.

Tests: Three tests will be given during the semester as shown on the course calendar. Each test will be worth 25 points. There will be no make-up tests given, so a test missed counts as zero. However, your lowest test grade will be replaced automatically by a greater homework score at the end of the semester. Thus, in addition to demonstrating your grasp of the subject and helping you to prepare for tests, a good homework grade provides "insurance" against a low or missing test grade.

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 described 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 them 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 completed 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 am quite willing to work with you to find a way for you to succeed—but I can't help if I don't know there's a problem.

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 depth, learning both about our tremendous modern understanding of the universe and about the mysteries that remain. If you work hard and learn the material well, this class will be one of the most rewarding classes of your college career.

TexBook Program: ***This course is in the SPC TexBook program, so you do not need to purchase a textbook or access code for this course.***

- **What is TexBook?** The required textbook/digital content for this course is available to you in Blackboard from the first day of class. The charge for the textbook/digital content is the lowest price available from the publisher and bookstore and is included in your tuition.
- **How do I access my TexBook?** Your course material is in your Blackboard course from the first day of class. Access to your course material is provided either by VitalSource or other links inside your Blackboard course. VitalSource (and many publisher's) ebook features include the ability to hear the text read aloud, highlight, take notes, create flash cards, see word definitions, build study guides, print select pages, and download 100% of the book for offline access.
- **Help with TexBook issues and support:** check with your professor or visit**:** **https://support.vitalsource.com/hc/en-us/requests/new** (available 24/7 via chat, email, phone, and text)
- **Opting out of TexBook:** Participating in TexBook is not mandatory, and you can choose to opt out. However, by opting out you will lose access to the course textbook/digital content and competitive pricing, and you will need to purchase the required course material on your own. If you drop the class or opt-out before the opt-out deadline, the TexBook fee will be automatically refunded to your SPC account. The opt-out deadline for Fall and Spring is the twelfth class day. The opt-out deadline for shorter terms varies between the second and third class day.

  Please consult with your professor before deciding to opt-out.* If you still feel that you should purchase the course textbook/materials on your own, send an **opt-out email to **tfewell4texasbookcompany@gmail.com**. Include your first name, last name, student ID number, and the course you are opting out of. Once you have been opted-out, you will receive a confirmation email. If you need assistance with the process, contact the SPC Bookstore:

  Email: tfewell@texasbook.com / **Phone**: 806-716-2399
  Email: agamble@texasbook.com / **Phone**: 806-716-4610

Plagiarism and Cheating: Students are expected to do their own work on all projects, quizzes, assignments, examinations, and papers. Failure to comply with this policy will result in an F for the assignment and can result in an F for the course if circumstances warrant.

Plagiarism violations include, but are not limited to, the following:

1. Turning in a paper that has been purchased, borrowed, or downloaded from another student, an online term paper site, or a mail order term paper mill;
2. Cutting and pasting together information from books, articles, other papers, or online sites without providing proper documentation;
3. Using direct quotations (three or more words) from a source without showing them to be direct quotations and citing them; or
4. Missing in-text citations.

Cheating violations include, but are not limited to, the following:

1. Obtaining an examination by stealing or collusion;
2. Discovering the content of an examination before it is given;

3. Using an unauthorized source of information (notes, textbook, text messaging, internet, apps) during an examination, quiz, or homework assignment;
4. Entering an office or building to obtain unfair advantage;
5. Taking an examination for another;
6. Altering grade records;
7. Copying another's work during an examination or on a homework assignment;
8. Rewriting another student's work in Peer Editing so that the writing is no longer the original student's;
9. Taking pictures of a test, test answers, or someone else's paper.

Student Code of Conduct Policy: Any successful learning experience requires mutual respect on the part of the student and the instructor. Neither instructor nor student should be subject to others' behavior that is rude, disruptive, intimidating, aggressive, or demeaning**.** Student conduct that disrupts the learning process or is deemed disrespectful or threatening shall not be tolerated and may lead to disciplinary action and/or removal from class.

Diversity Statement: In this class, the teacher will establish and support an environment that values and nurtures individual and group differences and encourages engagement and interaction. Understanding and respecting multiple experiences and perspectives will serve to challenge and stimulate all of us to learn about others, about the larger world and about ourselves. By promoting diversity and intellectual exchange, we will not only mirror society as it is, but also model society as it should and can be.

Disability Statement: Students with disabilities, including but not limited to physical, psychiatric, or learning disabilities, who wish to request accommodations in this class should notify the Disability Services Office early in the semester so that the appropriate arrangements may be made. In accordance with federal law, a student requesting accommodations must provide acceptable documentation of his/her disability to the Disability Services Office. For more information, call or visit the Disability Services Office at Levelland (Student Health & Wellness Office) 806-716-2577, Reese Center (Building 8) 806-716-4675, or Plainview Center (Main Office) 806-716-4302.

Nondiscrimination Policy: South Plains College does not discriminate on the basis of race, color, national origin, sex, disability or age in its programs and activities. The following person has been designated to handle inquiries regarding the non-discrimination policies: Vice President for Student Affairs, South Plains College, 1401 College Avenue, Box 5, Levelland, TX 79336. Phone number 806-716-2360.

Title IX Pregnancy Accommodations Statement: If you are pregnant, or have given birth within six months, Under Title IX you have a right to reasonable accommodations to help continue your education. To activate accommodations you must submit a Title IX pregnancy accommodations request, along with specific medical documentation, to the Director of Health and Wellness. Once approved, notification will be sent to the student and instructors. It is the student's responsibility to work with the instructor to arrange accommodations. Contact the Director of Health and Wellness at 806-716-2362 or email rcanon@southplainscollege.edu for assistance.

Covid Statement:
If you are experiencing any of the following symptoms, please do not attend class and either seek medical attention or test for COVID-19.

- Cough, shortness of breath, difficulty breathing
- Fever or chills
- Muscles or body aches
- Vomiting or diarrhea
- New loss of taste and smell

Please also notify DeEtte Edens, BSN, RN, Associate Director of Health & Wellness, at dedens@southplainscollege.edu or 806-716-2376. Proof of a positive test is required. A home test is sufficient but students must submit a photo of the positive result. The date of test must be written on the test result and an ID included in the photo. If tested elsewhere (clinic, pharmacy, etc.), please submit a copy of the doctor's note or email notification. Results may be emailed to DeEtte Edens, BSN, RN at dedens@southplainscollege.edu.

A student is clear to return to class without further assessment from DeEtte Edens, BSN, RN if they have completed the 5-day isolation period, symptoms have improved, and they are without fever for 24 hours without the use of fever-reducing medication.

Students must communicate with DeEtte Edens, BSN, RN prior to their return date if still symptomatic at the end of the 5-day isolation.

Note: The instructor reserves the right to modify the course syllabus and policies, as well as notify students of any changes, at any point during the semester.

Calendar

Astr 1403 Fall 2022

Week	Tuesday		Thursday	
	Readings	Topics	Readings	Topics
1	08/30	Course Intro – Blackboard, Mastering Astronomy	09/01 **Ch 1**	Our Cosmic Address – Where (and when) are we in the universe? Lab – Scale Model of the Solar System
2	09/06 **Ch1**	Spaceship Earth – What is our motion through space? Lab – Scale Model: Distances to the Nearest Stars	09/08 **Ch2**	The Night Sky – What does the universe look like from Earth? The Reason for Seasons. Lab – Scale Model: Size and Spacing of Galaxies
3	09/13 **Ch2**	Phases of the Moon; Solar and Lunar Eclipses; Planetary Motion Lab – Moon Phases	09/15 **Ch3**	Ancient Roots of Astronomy Lab – 2022 Mars Opposition **Observing Session 9 – 11 pm**
4	09/20 **Ch4**	Motion, Energy, Conservation Laws Lab – Energy Comparisons	09/22 **Ch4**	Universal Law of Gravitation Lab – Kepler's Third Law
5	09/27 **Ch5**	Light and Matter Lab – Emission Spectra	09/29 **Ch5**	Cosmic Messenger – Reading the Information in Light Lab – Blackbody Radiation
6	10/04 **Ch11**	Sun's Structure and Energy Source Review for Test 1	10/06	**Test 1 – Chapters 1 through 5**
7	10/11 **Ch11**	Solar Activity and Sunspot Cycle Discussion of Test 1 Results	10/13 **Ch12**	Classifying Stars – Luminosity, Temperature, Mass Lab – Nuclear Fusion in the Sun
8	10/18 **Ch12**	Patterns Among Stars – H-R Diagrams Lab – H-R Diagrams	10/20 **Ch13**	Stellar Birth Lab – H-R Diagrams
9	10/25 **Ch13**	Stellar Life Cycles Lab – Stellar Evolution	10/27 **Ch14**	Stellar Corpses – White Dwarfs and Neutron Stars Lab – Cosmic Distance Scales
10	11/01 **Ch14**	Black Holes, Gamma-Ray Bursts, and Gravitational Waves Lab – Black Holes **Observing Session 8 – 10 pm**	11/03 **Ch15**	Our Galaxy – The Milky Way Lab – Size and Shape of the Milky Way
11	11/08 **Ch15**	Formation of the Milky Way Review for Test 2	11/10	**Test 2 – Chapters 11 through 14**
12	11/15 **Ch16**	Characteristics and Distances of Galaxies Discussion of Test 2 Results	11/17 **Ch16**	Galaxy Formation and Evolution Lab – Hubble's Law
13	11/22 **Ch17**	The Big Bang – Birth of the Universe No Lab due to Thanksgiving!	11/24	Thanksgiving – No Class
14	11/29 **Ch17**	Explaining Key Features of the Universe – Inflation Lab – Interacting Galaxies **Observing Session 10 pm – 12 am**	12/01 **Ch18**	Dark Matter and the Large-Scale Structure of the Universe Lab – Detecting Dark Matter
15	12/06 **Ch18**	Dark Energy and the Fate of the Universe Lab – Fate of the Universe	12/08 **Ch19**	Are We Alone? – Life Elsewhere in the Universe Review for Test 3
16	12/13		12/15	**Test 3 – Chapters 15 through 19** **8 – 10 am**

This schedule may be subject to change. Any necessary changes will be announced in class and through Blackboard.