Physics 1303: Fundamentals of Astronomy
Fall 2019

Course Information

Meeting Place & Time: ASU Planetarium (VIN P-02) MWF 09:00-09:50 AM

Instructor
Dr. Kenneth Carrell
Office: VIN 119
Phone: (325) 942-2136
Email: kenneth.carrell@angelo.edu
Office Hours: M 1-2PM, R 1-3pm, M-F 11am-noon (if no groups)

Course Description
Physics 1303, Fundamentals of Astronomy, is a three credit hour introductory study of the current knowledge and techniques of astronomy and astrophysics. Broad topics in the field will be covered, but the emphasis will be on stellar astronomy and cosmology.

Required Materials

Astronomy by Fraknoi, Morrison, & Wolff
Print:
Digital:
iBooks:
ISBN-10: 0-9986257-3-6

This book is available freely from OpenStax by going to this webpage: https://openstax.org/details/books/astronomy
You may purchase a hard copy, but you do not have to, you can download the entire book for free from the above webpage.

Academic Integrity
Angelo State University expects its students to maintain complete honesty and integrity in their academic pursuits. Students are responsible for understanding and complying with the university Academic Honor Code and the ASU Student Handbook.

Accommodations for Disabilities
The Student Life Office is the designated campus department charged with the responsibility of reviewing and authorizing requests for reasonable accommodations based on a disability, and it is the student’s responsibility to initiate such a request by contacting the Student Life Office. The Student Life Office will establish the particular documentation requirements necessary for the various types of disabilities.

Religious Holidays
A student who intends to observe a religious holy day should make that intention known in writing to the instructor prior to the absence. A student who fails to do class work for the observance of a religious holy day shall be allowed to take an examination or complete an assignment scheduled for that day within a reasonable time after the absence.
### Assessing Outcomes & Grade Determination

#### Method of Assessing Outcomes

Student learning outcomes will be assessed with:

- Worksheets/Quizzes (20%) for chapters are assigned each week. Worksheets will *normally* be handed out in class on Mondays and ALL quizzes will be completed through Blackboard and due on Fridays (except the week of Thanksgiving, which will be Wednesday).
- Conceptual Activities (20%) will be given in class on the dates given below in the Course Outline.
- Four midterm exams (40%) completed on Blackboard and due as given below.
- A comprehensive Final Exam (20%) on December 11.
- Extra credit will be given for attending public planetarium shows. You will receive 1% on your overall semester grade for every show you attend, up to a possible 5% total. Public shows are Thursday nights at 7 & 8 PM.

**NOTE #1:** If you know you will be gone on the day of an activity, you **MUST** inform the professor **BEFORE** the activity. Absences will receive a score of 0 (zero) and **CAN NOT** be made up unless proper documentation for extenuating circumstances is provided (e.g. a note from a doctor).

**NOTE #2:** Blackboard assignments are due “at the end of the day” which means 11:59PM. However, tests are timed and WILL NOT be available all the way until the end of the day (e.g. tests with 1-hour time limits will not be available starting at 11:00PM). Blackboard issues **will** arise, if you wait until the last minute to complete assignments you run the risk of missing them. I can fix problems such as browser crashes and internet outages, but **NOT** the hour before it is due. You have multiple days to complete work, so **due dates are firm.**

#### Late Work

Unexcused late work or missed tests will not be accepted. If your assignments are not submitted by the posted deadline you will receive a zero for that assignment. You must contact your professor **before** the assignment is due if you believe it will be late or as soon as possible after the due date in the case of an unexpected emergency.

#### Grade Determination

Your final grade will be determined by your scores on all tests and exams.

<table>
<thead>
<tr>
<th>Assignment</th>
<th>Percentage</th>
<th>Due Date</th>
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</thead>
<tbody>
<tr>
<td>Worksheets/Quizzes</td>
<td>20%</td>
<td>Mondays &amp; Fridays</td>
</tr>
<tr>
<td>Conceptual Activities</td>
<td>20%</td>
<td>See Below</td>
</tr>
<tr>
<td>Midterm Exams</td>
<td>40%</td>
<td>See Below</td>
</tr>
<tr>
<td>Final Exam</td>
<td>20%</td>
<td>December 11</td>
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**TOTAL** 100%

Angelo State University employs a letter grade system. Grades in this course are determined on a percentage scale: A = 90-100%, B = 80-89%, C = 70-79%, D = 60-69%, F = 59% and below

**Final course grades will also be determined in part based on attendance as follows:**

<table>
<thead>
<tr>
<th>Number of Absences</th>
<th>Highest Grade Possible</th>
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</thead>
<tbody>
<tr>
<td>0-6 (&gt;85% attendance)</td>
<td>A</td>
</tr>
<tr>
<td>7-10 (75-85% attendance)</td>
<td>B</td>
</tr>
<tr>
<td>11-14 (65-75% attendance)</td>
<td>C</td>
</tr>
<tr>
<td>15-19 (55-65% attendance)</td>
<td>D</td>
</tr>
<tr>
<td>20+ (&lt;55% attendance)</td>
<td>F</td>
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</tbody>
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Course Outline

**UNIT #1: Background Science**

**WEEK 1 (August 26 – 30)**
Read Chapter 1, Science and the Universe: A Brief Tour

**WEEK 2 (September 3 – 6)**
Read Chapter 2, Observing the Sky: The Birth of Astronomy

*Astronomy vs Astrology Activity – September 6*

**WEEK 3 (September 9 – 13)**
Read Chapter 3, Orbits and Gravity

**WEEK 4 (September 16 – 20)**
Read Chapter 5, Radiation and Spectra
Read Chapter 6, Astronomical Instruments

*Midterm Exam #1 is due by the end of the day September 20*

**UNIT #2: Stellar Properties**

**WEEK 5 (September 23 – 27)**
Read Chapter 17, Analyzing Starlight
Read Chapter 18, The Stars: A Celestial Census

**WEEK 6 (September 30 – October 4)**
Read Chapter 18, The Stars: A Celestial Census
Read Chapter 19, Celestial Distances

*H-R Diagram Activity – October 4*

**WEEK 7 (October 7 – 11)**
Read Chapter 15, The Sun: A Garden Variety Star
Read Chapter 16, The Sun: A Nuclear Powerhouse

*Midterm Exam #2 is due by the end of the day October 11*

**UNIT #3: Life Cycle of Stars**

**WEEK 8 (October 14 – 18)**
Read Chapter 20, Between the Stars: Gas and Dust in Space
Read Chapter 21, The Birth of Stars

**WEEK 9 (October 21 – 25)**
Read Chapter 22, Stars from Adolescence to Old Age

*Low-Mass Stellar Evolution Activity – October 25*

**WEEK 10 (October 28 – November 1)**
Read Chapter 23, The Death of Stars
Read Chapter 24, Black Holes and Curved Spacetime

*Midterm Exam #3 is due by the end of the day November 1*

**UNIT #4: Galaxies**

**WEEK 11 (November 4 – 8)**
Read Chapter 25, The Milky Way Galaxy

*Galaxy Classification Activity – November 8*

**WEEK 12 (November 11 – 15)**
Read Chapter 26, Galaxies

**WEEK 13 (November 18 – 22)**
Read Chapter 27, Active Galaxies, Quasars, and Supermassive Black Holes

**WEEK 14 (November 25 – 27)**
Read Chapter 28, The Evolution and Distribution of Galaxies

*Midterm Exam #4 is due by the end of the day November 27*

**WEEK 15 (December 2 – 6)**
Read Chapter 29, The Big Bang
Read Chapter 30, Life in the Universe

**FINAL EXAM is Wednesday December 11 at 8am**