Physics 1304.D10
Astronomy of the Solar System

Summer II 2018

Course Information

Instructor
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Office Hours: By appointment

Course Description

Physics 1304, Astronomy of the Solar System, is a three credit hour introductory study of the current knowledge and techniques of planetary astronomy. Broad topics in the field will be covered, but the emphasis will be on the birth of modern planetary astronomy and planetary geology.
**Required Materials**

**21st Century Astronomy** 5th Edition by Kay, Palen, & Blumenthal  
ISBN: 978-0-393-60333-0

The ASU Bookstore has the loose leaf version of the book with Ebook and SmartWork registration. There is also an Ebook only version with SmartWork registration.

**Physical Geology** by Steven Earle  
This book is available for free under the CC-BY 4.0 international license and can be found at this link:  
[https://opentextbc.ca/geology/](https://opentextbc.ca/geology/)

**Optional Software**

Starry Night College planetarium software is suggested for your personal use only. There will be no required assignments using this software for this class. However, purchasing this software is a requirement if you are taking the laboratory that goes along with this course (PHYS 1104).

When ordering your student version of Starry Night College, use the referral code: omeh7t
Goals, Objectives, and Outcomes

General Course Goals
There are two general goals for Physics 1304.

1. After completing the Astronomy of the Solar System course, you should be able to comprehend, apply, and analyze the most important scientific models governing modern solar system astronomy and planetary geology and be familiar with the properties of the planets and smaller members of the solar system studied by planetary astronomers.
2. After completing the Astronomy of the Solar System course, you should be able to comprehend, apply, and analyze the practices and methodologies used by modern astronomers in constructing planetary models.

Course Objectives
Upon completion of the Fundamentals of Astronomy course, you should be able to:

1. Recognize scientific and quantitative methods and the differences between these approaches and other methods of inquiry used in modern solar system astronomy and planetary geology and to communicate the findings, analyses, and interpretations in writing.
2. Identify and recognize the differences among competing modern planetary science scientific theories.
3. Demonstrate the ability to translate, interpret, and extrapolate the most important scientific models governing modern planetary science, the practices and methodologies used by modern planetary astronomers in constructing planetary models, and to be familiar with the solar system objects studied by astronomers.
4. Further develop critical/logical thinking, scientific reasoning, and problem solving skills in the area of planetary astronomy.

Learning Outcomes
When you complete this course, you should be able to apply the following intellectual skills to astrophysical concepts:

- Knowledge: define, recite, describe, label, list
• **Comprehension**: explain, predict, summarize, translate
• **Application**: change, compute, construct, predict
• **Analysis**: compare, contrast, diagram, infer
• **Synthesis**: combine, compose, create, revise, summarize
• **Evaluation**: appraise, compare, critique, contrast

**Course Administration**

**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.

**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:

- Quizzes – 10 questions per chapter (7-8 per Geology Unit) will be given as a short quiz. You will have two (2) attempts at the quiz, but questions are randomized so you will likely not get the same questions both times, and your second attempt counts if you take it twice, regardless of the score (higher or lower than the first). Quizzes for chapters assigned each week are all due on Friday (except for the last week, which is due Wednesday).
- Four Conceptual Activities from the 21st Century Astronomy textbook, each worth 20 points and due on Saturday of each of the first four weeks.
- Four Unit tests worth 40 points each, due on Sunday of each of the first four weeks.
- A Final Exam worth 100 points due on Aug 8.

NOTE: 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 an entire week to complete work, so due dates are firm.

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

<table>
<thead>
<tr>
<th>Assignment</th>
<th>Location</th>
<th>Points</th>
<th>Percentage</th>
<th>Due Date</th>
</tr>
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<tbody>
<tr>
<td>Chapter Quizzes</td>
<td>Blackboard</td>
<td>160</td>
<td>32%</td>
<td>Fridays</td>
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<tr>
<td>Conceptual Activities</td>
<td>Blackboard</td>
<td>80</td>
<td>16%</td>
<td>Saturdays</td>
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<tr>
<td>Unit Tests</td>
<td>Blackboard</td>
<td>160</td>
<td>32%</td>
<td>Sundays</td>
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<tr>
<td>Final Exam</td>
<td>Blackboard</td>
<td>100</td>
<td>20%</td>
<td>Aug 8</td>
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<tr>
<td>TOTAL</td>
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<td>500</td>
<td>100%</td>
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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
Course Outline

Reading Assignments and Other Important Class Assignments

21st = 21st Century Astronomy textbook
PG = Physical Geology textbook

NOTE: “end of the day” means 11:59 PM

WEEK 1 (July 10 – 13): Background Science
Read 21st Chapter 1, Why Learn Astronomy?
Read 21st Chapter 2, Patterns in the Sky – Motions of Earth and the Moon
Read 21st Chapter 3, Motion of Astronomical Bodies
Read 21st Chapter 4, Gravity and Orbits

Chapter Quizzes due by the end of the day July 13
Logical Fallacies test due by the end of the day July 14
Unit Test #1 is due by the end of the day July 15

WEEK 2 (July 16 – 20): The Earth
Read PG Chapter 1, Introduction to Geology (Sections 1.4 & 1.5)
Read PG Chapter 3, Intrusive Igneous Rocks (Section 3.1)
Read PG Chapter 4, Volcanism (Sections 4.1, 4.2, & 4.3)
Read PG Chapter 5, Weathering and Soil (Sections 5.1, 5.2, & 5.6)
Read PG Chapter 8, Measuring Geological Time (All Sections)
Read PG Chapter 9, Earth’s Interior (All Sections)
Read PG Chapter 10, Plate Tectonics (All Sections)
Read PG Chapter 11, Earthquakes (Sections 11.1, 11.2, & 11.3)

Quizzes due by the end of the day July 20
Phases of the Moon test is due by the end of the day July 21
Unit Test #2 is due by the end of the day July 22
WEEK 3 (July 23 – 27): Inner Planets
Read 21st Chapter 7, The Birth and Evolution of Planetary Systems
Read 21st Chapter 8, The Terrestrial Planets and Earth’s Moon
Read 21st Chapter 9, Atmospheres of the Terrestrial Planets
Chapter Quizzes due by the end of the day July 27
Exploring Extrasolar Planets test due by the end of the day July 28
Unit Test #3 is due by the end of the day July 29

WEEK 4 (July 30 – Aug 3): Outer Planets and Small Objects
Read 21st Chapter 10, Worlds of Gas and Liquid – The Giant Planets
Read 21st Chapter 11, Planetary Moons and Rings
Read 21st Chapter 12, Dwarf Planets and Small Solar System Bodies
Chapter Quizzes due by the end of the day Aug 3
Measuring Features on Io test due by end of day Aug 4
Unit Test #4 is due by the end of the day Aug 5

WEEK 5 (Aug 6 – 8): Search for Life
Read 21st Chapter 24, Life
Chapter 24 Quiz due by the end of the day Aug 8
FINAL EXAM is due by the end of the day Aug 8