Physics 1304
Astronomy of the Solar System

Summer II 2019

Course Information

Instructor
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Office Hours: By appointment only

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

*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.

**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

**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.

**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.
Assessing Outcomes & Grade Determination

Method of Assessing Outcomes
Student learning outcomes will be assessed with:

- Quizzes/Worksheets (35%) for chapters/material assigned each week are all due on Friday (except for the last week, which is due Wednesday). Both quizzes and worksheets will be completed through the Blackboard website.
- Conceptual Activities (15%) will be given with due dates on Saturdays.
- Four midterm exams (30%) completed on Blackboard due on Sundays.
- A comprehensive Final Exam (20%) on August 7.

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 multiple days to complete work, so due dates are firm.

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

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<tr>
<th>Assignment</th>
<th>Location</th>
<th>Percentage</th>
<th>Due Date</th>
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<tbody>
<tr>
<td>Quizzes/Worksheets</td>
<td>Blackboard</td>
<td>35%</td>
<td>Fridays</td>
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<tr>
<td>Conceptual Activities</td>
<td>Blackboard</td>
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<td>Saturdays</td>
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<tr>
<td>Midterm Exams</td>
<td>Blackboard</td>
<td>30%</td>
<td>Sundays</td>
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<td>Final Exam</td>
<td>Planetarium</td>
<td>20%</td>
<td>August 7</td>
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<td>TOTAL</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
NOTE: “end of the day” means 11:59 PM but assignments are timed and will not be available to start all the way until that time

WEEK 1 (July 8 – 12): Background Science
Chapter 1: Science and the Universe: A Brief Tour
Chapter 2: Observing the Sky: The Birth of Astronomy
Chapter 3: Orbits and Gravity
Chapter 4: Earth, Moon, and Sky
Quizzes & Worksheets due by the end of the day July 12
Phases of the Moon Activity due by the end of the day July 13
Midterm Exam #1 due by the end of the day July 14

WEEK 2 (July 15 – 19): Solar System Overview, Earth, & Spaceflight
Chapter 7: Other Worlds: An Introduction to the Solar System
Chapter 8: Earth as a Planet
Chapter 9: Cratered Worlds
The History of Spaceflight
Quizzes & Worksheets due by the end of the day July 19
Greenhouse Effect & Sea Ice Activity due by end of the day July 20
Midterm Exam #2 due by the end of the day July 21

WEEK 3 (July 22 – 26): Planets in Our Solar System
Chapter 10: Earthlike Planets: Venus and Mars
Chapter 11: The Giant Planets
Chapter 12: Rings, Moons, and Pluto
Quizzes & Worksheets due by the end of the day July 26
Transiting Exoplanets Activity due by the end of the day July 27
Midterm Exam #3 due by the end of the day July 28

Chapter 13: Comets and Asteroids: Debris of the Solar System
Chapter 14: Cosmic Samples and the Origin of the Solar System
Quizzes & Worksheets due by the end of the day Aug 2
Asteroid Discovery Activity due by the end of the day Aug 3
Midterm Exam #4 due by the end of the day Aug 4

WEEK 5 (August 5 – 7): The Search for Life
Chapter 30: Life in the Universe
Quizzes & Worksheets due by the end of the day Aug 7
FINAL EXAM due by the end of the day Aug 7