**PHYSICS 1403**
**Stars and Galaxies**

**Western Texas College**

I. Basic Course Information
   A. Course Description: Study of stars, galaxies and the universe outside our solar system. Including an introduction to the properties of stellar evolution, black holes and current cosmological ideas. Emphasis is on the application of scientific principles and explanation of phenomena in the universe. The laboratory includes outdoor viewing sessions.
   B. Any required prerequisites: None.

II. Student Learning Outcomes

| Student Learning Outcomes | COMM | CT | EQS | TW |
|---|---|---|---|---|
| Explain the daily and annual motions that occur in the sky. | | | X | |
| Relate the contributions of astronomers through the centuries and describe the methods used by them to explain their observations. | X | | | X |
| Apply the principles of science to describe and explain various astronomical phenomena. | | X | X | |
| Describe the basic features of the Sun and explain how it produces energy. | X | | | X |
| List the different stages of stellar evolution and the properties of stars during their life cycles. | X | | | X |
| Distinguish between different types of galaxies and explain current views on their formation. | | X | X | |
| Discuss current cosmological ideas regarding the structure and formation of the universe. | | X | | |

III. Major Course Requirements
   A. Homework/Activities and Quizzes – This course uses Mastering Astronomy from Pearson. This online homework, tutorial and assessment system is designed to improve results by engaging students before, during and after class with powerful content.
   B. Lab Activities – There are classroom labs and star gazing sessions. The classroom labs will be done individually and in groups of 2 or more and require a written lab report. Each star gazing session will require a write up describing what you've observed, and each should be unique.
   C. Learning Project – This is a hands-on activity preceded by some research that includes some astronomical observing or creative expression of ideas learned during the semester. Projects will be evaluated in the following

categories: idea, design, data, write-up and presentation. More information will be provided at a later date.

| Assignments | **Proctored** | **Not Proctored** |
|---|---|---|
| Homework/Activities | | 35% |
| Quizzes | 20% | |
| Lab Activities | 20% | |
| Learning Project | 25% | |
| **Total Percentage** | **65%** | **35%** |

III. Information on Books and Other Course Materials
- A. Required Book: Essential Cosmic Perspective, 8th Edition by Bennett. ISBN: 978-0-13-4446431.
- B. Mastering Astronomy Access is required. ISBN:978-0-13-4583549
- C. The labs are available online on eCampus. A printed hard copy of the write-up MUST be brought to the lab.
- D. Calculators: A scientific calculator capable of handling exponential notation. Cell phones may not be used as calculators.

IV. Other Policies, Procedures and important dates. Please refer to the WTC Catalog for the following:

- A. Campus Calendar
- B. Final exam schedule
- C. How to drop a class
- D. Withdrawal information
- E. Student Conduct/Academic Integrity
- F. Class Attendance
- G. Students with disabilities

V. Course Content

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|---|---|
| Part One:<br>Developing Perspective | Chapter 1 – A Modern View of the Universe<br>Chapter 2 – Discovering the Universe for Yourself<br>Chapter 3 – The Science of Astronomy |
| Part Two:<br>Key Concepts for Astronomy | Chapter 4—Making Sense of the Universe<br>Chapter 5—Light: The Cosmic Messenger |
| Part Three:<br>Learning from Other Worlds | Chapter 6—Formation of the Solar System<br>Chapter 7—Earth and the Terrestrial World<br>Chapter 8—Jovian Planet System<br>Chapter 9—Asteroid, Comets, and Dwarf |

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| | Planets<br>Chapter 10—Other Planetary Systems |
| Part Four:<br>Stars | Chapter 11—Our Star<br>Chapter 12—Surveying the Stars<br>Chapter 13—Star Stuff<br>Chapter 14—The Bizarre Stellar Graveyard |
| Part Five:<br>Galaxies | Chapter 15—Our Galaxy<br>Chapter 16—A Universe of Galaxies<br>Chapter 17—The Birth of the Universe<br>Chapter 18 Dark Matter (option)<br>Chapter 19 Life in the Universe (option) |

Disclaimer: Content is subject to change at instructor's discretion.

Last Modified: April 2, 2018