

# COURSE SYLLABUS

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**YEAR COURSE OFFERED:**

**SEMESTER COURSE OFFERED:**

**DEPARTMENT:** Physics

**COURSE NUMBER:** ASTR 1303/1103

**NAME OF COURSE:** Introduction to Astronomy: Stars and Galaxies

**NAME OF INSTRUCTOR:**

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**The information contained in this class syllabus is subject to change without notice. Students are expected to be aware of any additional course policies presented by the instructor during the course.**  
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## **Learning Objectives**

### Stars and Galaxies (ASTR 1303)

Upon completion of this course, students will be able to:

- (CT, C) Describe properties of the sun and stars and how energy is transported from the core to the surface
- (CT, C) Explain how the quantum mechanical nature of electrons in atoms give rise to stellar spectra
- (CT, C) Explain at least three properties of a star that can be determined from its spectrum
- (CT, C) Describe the stages in a star's formation, life and death, explaining the major cause(s) of each stage and where it lies on the Hertzsprung-Russell (HR) Diagram
- (CT, C) Explain the major processes and results of stellar nucleosynthesis
- (CT, C) Explain the methods behind measuring distances to astronomical objects (cosmic distance ladder)
- (CT, C) Explain why it is believed the universe is expanding and the potential consequences of this expansion
- (C, CT) Describe the early stages in the expansion of the universe from the perspective of the fundamental forces of nature, subatomic particles, the formation of atoms, and the clumping of matter into galaxies and stars

### Laboratory for Stars and Galaxies (ASTR 1103)

Upon completion of this course, students will be able to:

- (CT) Develop a hypothesis to explain data/observations related to stars and galaxies and apply the scientific method to test it and compare with currently accepted explanations

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- (C) Write laboratory reports to effectively communicate results of experiments/projects performed, including experimental/project design, reporting data and calculations in tabular or graphical form, and discussion of results
- (EQ) Use experimental/observational data and perform calculations to determine other properties of astronomical objects (e.g. Sun, stars, supernova remnants, black holes, pulsars, galaxies) and interpret results
- (T) Work effectively with one or more students, considering different points of view, to reach conclusions about the interpretation of astronomical data, observations, or events.

## Major Assignments/Exams

(Please remove blue text and insert all major course assignments and their weight in the final class grade for any assignments worth 10% or more)

## Required Reading

(Please remove blue text and list the Title, Author, and Year of all required readings for the course)

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## List of discussion/lecture topics

(Please remove blue text and include here all main lecture topics for the semester - dates optional)