

Astronomy S120
“Galaxies and the Universe”
Summer Session B 2024
Professor Jeff Kenney
MTWTF 1:00-2:20pm
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An introduction to stars and stellar evolution, the structure and evolution of the Milky Way Galaxy and other galaxies; quasars, active galactic nuclei, and supermassive black holes; cosmology and the expanding universe. No prerequisite other than a working knowledge of elementary algebra. Counts for QR or Sc credit.
Intended for non-science majors.

Lectures:

Our Location in Space and Time
Gravity and Newton's Laws
Nearly All the Clues Come From Light
Blackbody Radiation
Light and Atoms
What is a Star & The Energy Source of Stars
The Masses and Lifetimes of Stars
Life Cycles of Stars & the Importance of Massive Stars
Measuring Distances in the Universe
The Discovery of the Milky Way Galaxy
Varieties of Galaxies
Motions of Stars and Gas in Galaxies & the Doppler Shift
Dark Matter in Galaxies
Clusters, Superclusters & Galaxy Interactions
Relativity & Supermassive Black Holes I
Relativity & Supermassive Black Holes II
Relativity & Supermassive Black Holes III
Quasars & Other Active Galactic Nuclei
Introduction to Cosmology & The Expanding Universe
Age & Fate of the Universe
Events Over Cosmic Time
The Microwave Background Radiation
Microwave Background
The Curvature of Space & Dark Energy
The Big Bang! & The Early Universe

Grading:

25% Mid-term Exam

30% Final Exam

25% Homework (~10 assignments)

10% Reading Quizzes

5% Attendance (required!)

5% Observing Session (at Leitner Observatory)

Textbook:

The course uses a textbook, by Freedman, Geller & Kaufmann, either “Universe: Stars and Galaxies” or “Universe”. Universe: Stars and Galaxies is an abridged version of Universe. The only difference is that the shorter book cuts out about 10 Chapters on the solar system that will not be used in this course.

Any of the following editions can be used:

Universe: Stars and Galaxies: 6th (2019) or 5th (2014) editions are ok.

Universe: 11th (2019) or 10th (2014) editions are ok.

The newer editions have some updated information on a few topics, but nothing that will be important for homeworks or exams.

Universe: Stars and Galaxies

Roger Freedman; Robert Geller; William Kaufmann (publ: Freeman)

either 6th (2019) or 5th (2014) editions are ok

price for new 6th edition:

Paperback from \$70

ISBN:9781319115098

OR...

Universe

Roger A. Freedman; Robert Geller; William J. Kaufmann (publ: Freeman)

either 11th (2019) or 10th (2014) editions are ok

prices for new 11th edition:

E-book from \$67.99

ISBN:9781319227975

Achieve from \$87.99

(Includes online content that is not required but may be useful)

Loose-Leaf \$150.99

ISBN:9781319115012

Paperback from \$79.99

ISBN:9781319039448