

## Course Organization and Goals

### Instructors:

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- The course grade will be based on eight quizzes from Cosmic Perspectives having a total weight equal to half a midterm, in-class clicker questions from each lecture with the total from all lectures having a weight equal to half a midterm, two midterms and a final with the final having equal weight as the two midterms. One midterm may be skipped with prior permission from the instructor or for medical reasons with subsequent medical documentation.
- **Please bring your clicker to the first class with your student ID properly initialized. Clickers will be used in all classes including the first.**
- The midterms and final will be in a multiple choice format.
- The course will be based on the textbook:  
Cosmic Perspective: Stars, Galaxies & Cosmology, Fifth Edition by Bennett et al.,  
Lecture Notes by R.K. Ulrich, Distributed through the class web site.
- Course hours:  
Lectures TR 11:00am to 12:15pm in the Physics and Astronomy Building (PAB) 1-434a.  
Discussions – Th 1 PM, room tbd, Th 2 PM 6704 Geology  
Office Hours, R.K. Ulrich – Tues, 1 PM, 3-431 PAB or by appointment.  
Final Exam, Wednesday, Jun. 12, 8:00 am to 11:am in the regular lecture room.
- This course will provide a generally non-mathematical but physical introduction to stars and their last stages of life with an emphasis on the violent endings which occur.
- The concepts of general relativity leading to the formation of Black Holes will be developed qualitatively and the properties of space-time near Black Holes will be described.

**Web Sites Information:** [ccle.ucla.edu/course/view.php?name=08S-ASTR04-1](http://ccle.ucla.edu/course/view.php?name=08S-ASTR04-1) and [www.masteringastronomy.com](http://www.masteringastronomy.com)

The class notes can be found at:

<http://ccle.ucla.edu/course/view.php?name=08S-ASTR04-1>

Feel free to print these notes for your own use but please do not copy or repost them. A good plan is to print them single sided and use the backs for additional notes you take during the lectures.

A quiz tool is provided by the textbook publisher ([www.masteringastronomy.com](http://www.masteringastronomy.com)). You need to use the access number provided in the text. If you purchased a used text, please purchase access to the web site since the course quizzes, midterms and final exam all draw from the quiz banks available on this web site. If you do not take the **masteringastronomy** quizzes, you will be at a substantial disadvantage for the regular exams and probably receive a poor grade in the class. Although the quiz site allows you to enroll in this class and provides a grading system, I will not be using grades from this site. Instead, questions from the publisher web site are collected and modified to create the class quizzes which are due Tuesdays until after the second midterm and then due Thursdays.

The quizzes can be taken only once and must be started before the due time. After the due time for the quizzes, I will post the answer key so it is not possible to make up missing quizzes.

**Course Schedule —****Part 1**

Reading: Bennett *et al.* Preface and Chapters 1, 2, 3.2, 3.3, S1, 4 to 6; Ulrich, Note Sets 1 to 7

Class Meeting Number. Date — Lecture Subject

1. Apr. 1 — General introduction, Orientation to our place in the universe.
  2. Apr. 3 — Geometry of the sky and solar system, distances to stars.
  3. Apr. 8 — Measuring space and time. What is the nature of time? Quiz 1 due 11 PM, Covers Chapters 1 and 2.
  4. Apr. 10 — Matter and Energy. What are the natures of temperature, density and pressure?
  5. Apr. 15 — Laws of Motion. Kepler's and Newton's laws, gravity. Quiz 2 due 11 PM. Covers Chapters 3.2, 3.3, S1 and 4
  6. Apr. 17— Light and energy in the universe.
  7. Apr. 22 — Telescopes and the measurement of the universe. Quiz 3 due 11 PM, Covers Chapters 5 and 6.
- Apr. 24 — **Midterm 1 covering up to lecture 7, Chapters 1, 2, 3.2, 3.3, S1, 4, 5 and 6; 50 multiple choice questions.**

**Course Schedule —****Part 2**

Reading: Bennett *et al.* Chapters S2, S3, S4, 14, 15, 16.1, 17 and 18; Ulrich, Note Sets 8 to 15

Class Meeting Number. Date — Lecture Subject

8. Apr 29 — Space, Time and Special Relativity
  9. May 1 — Gravity and General Relativity
  10. May 6 — Black Holes and Quantum Mechanics. Quiz 4 due 11 PM, Covers Chapters S2 and S3.
  11. May 8 — Our friendly? neighborhood star the Sun.
  12. May 13 — Measuring Stars, Star Evolution. Quiz 5 due 11 PM, Covers Chapters S4, 14 and 15.
  13. May 15 — Death of Stars.
  14. May 20 — Collapse and Explosion of Stars.
  15. May 22 — Binary Stars and Black Holes. Quiz 6 due 11 PM. Covers Chapters 16.1, 17 and 18
- May 27 — **Midterm 2 covering lectures 8 to 15, Chapters S2, S3, S4, 14, 15, 16.1, 17 and 18; 50 multiple choice questions.**

**Course Schedule —****Part 3**

Reading: Bennett *et al.* Chapt. 19 to 23; Ulrich, Note Sets 16 to 18

Class Meeting Number. Date — Lecture Subject

16. May 29 — Galaxies and Measuring the Universe. Quiz 7 due 11 PM, Covers Chapters 19 and 20

17. Jun. 3 — Matter and Energy in the Universe.

18. Jun. 5 — Big Bang and the Evolution of the Universe. Quiz 8 due 11 PM, Covers Chapters 21 to 23

**Final Exam – Wednesday, Jun. 13, 11:30 am to 2:30 pm, 1-434A Physics and Astronomy Building**

- The final exam will have 100 questions.
- The first 35 questions are a midterm on the final three lectures.
- The remaining 65 questions are a review of the whole course including the last three lectures.