



PHYS 101-01, Survey of Astronomy, Fall 1998

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Rhodes College
Department of Physics
Physics 101- Survey of Astronomy

General Course Information-Fall Term, 1998

Show a little inspiration, show a little spark.....

Mary Chapin Carpenter, "The Hard Way"

This survey course in astronomy is directed toward the non-science-major student. The text is *Astronomy* by Chaisson and McMillan (Prentice Hall, 1998). The supplemental text is *Magnificent Cosmos*, produced by the editors of Scientific American. Both are required. You may find the CD accompanying the text to be helpful; check it out.

Lectures will both cover and expand upon material in the text and cover other topics--in short, lectures will not, in general, follow the text in detail. You are responsible on tests and the exam for both text and lecture material. Only elementary math, mainly algebra, will be employed; we will introduce the use of scientific notation, and similar numerical and algebraic topics, in class.

Course grading is based upon the following weights:

Hour Tests (4)	40%
Weekly Readings	15%
Problems	15%
Final Exam	30%

A weekly report, between 100-200 words in length, on one of any article from *Magnificent Cosmos*, is due at the start of class on the day given on the assignment sheet. Your report should briefly summarize the subject matter, and your reaction to and understanding of it (it's OK not to understand all of the article, especially early in the term!).

Problems are due at the start of class on the assigned day. No late work--problems or weekly report--will be accepted. if you will not be in class on the day an assignment is due, make failsafe arrangements to have your work submitted on time.

My office hours (219 RT, x3915, email:rmac) are 9-10 MWF, 1-2:30 M and 1-2 Th; others may be arranged by appointment, most efficiently by email. I am glad to discuss and

amplify upon lecture or text materials and offer guidance on problems during these times.

Physics 101-Astronomy

Lecture Schedule/*Assignments*- Fall 1998

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|-----|-------|--|---------------------------------------|
| 1. | 8/26 | Introduction, Math Concepts | |
| 2. | 8/28 | Scales, Units, Distances, Scientific Reasoning (Prologue) | |
| 3. | 8/31 | The Sky, Motions of Stars and Planets, Seasons (Chapter 1) | |
| 4. | 9/2 | The Moon, Lunar Phases, Eclipses | |
| 5. | 9/4 | History of Astronomy | |
| 6. | 9/9 | Newton and Gravity | |
| 7. | 9/11* | Forces and Relativity | <i>Weekly Report</i> |
| 8. | 9/14 | The Nature of Light (Chapter 2) | <i>Probs 1-1, 1-2, 1-3</i> |
| 9. | 9/16 | Radiation from Hot Objects and Atoms | |
| 10. | 9/18 | Atoms and Molecules | <i>Weekly Report</i> |
| 11. | 9/21 | Doppler Effect; Telescopes (Chapter 3) | <i>Probs 2-1, 2-2, 2-3, 2-4</i> |
| 12. | 9/23 | Making Telescopes Work | <i>Probs 3-1, 3-3</i> |
| 13. | 9/25 | Summary and Review | <i>Weekly Report</i> |
| 14. | 9/28 | <i>Test 1</i> | |
| 15. | 9/30 | The Solar System: Characteristics (Chapter 4) | |
| 16. | 10/2 | Formation of the Solar System | <i>Weekly Report</i> |
| 17. | 10/5 | Terrestrial Atmospheres (Sections 5.3 and 6.8) | <i>Probs 4-1, 4-5</i> |
| 18. | 10/7 | The Solar System Population | <i>Probs 5-1, 6-3</i> |
| 19. | 10/9 | Summary and Review | <i>Weekly Report</i> |
| 20. | 10/12 | <i>Test 2</i> | |
| 21. | 10/14 | The Sun (Chapter 9) | |
| 22. | 10/16 | Properties of Stars (Chapter 10) | <i>Weekly Report</i> |
| 23. | 10/21 | Stellar Distances and Masses | <i>Probs 9-1, 9-4</i> |
| 24. | 10/23 | Stellar Birthplaces (Chapter 11) | <i>Probs 10-1, 10-2 Weekly Report</i> |
| 25. | 10/26 | Stellar Births | <i>Probs 10-4, 10-5</i> |
| 26. | 10/28 | Stellar Evolution (Chapter 12) | <i>Prob 11-4</i> |
| 27. | 10/30 | Stellar Deaths | <i>Weekly Report</i> |
| 28. | 11/2 | Neutron Stars and Black Holes (Chapter 13) | <i>Prob 12-2</i> 29. 11/4 |
| 30. | 11/6 | <i>Test 3</i> | <i>Weekly Report</i> |
| 31. | 11/9 | The Milky Way, I (Chapter 14) | |
| 32. | 11/11 | The Milky Way, II (Chapter 14) | |
| 33. | 11/13 | Normal Galaxies (Chapter 15) | <i>Probs 14-1, 14-2 Weekly Report</i> |
| 34. | 11/16 | Large Scale Structure and the Hubble Law | |

- 35. 11/18 Quasars, Active Galaxies (Chapter 16) *Prob 15-2*
- 36. 11/20 Summary and Review *Prob 16-1 Weekly Report*
- 37. 11/23 *Test 4*
- 38. 11/30 Cosmology: Assumptions and Models (Chapter 17)
- 39. 12/2 Big Bang vs. Steady State
- 40. 12/4 Experimental Evidence *Probs 17-1, 17-2 Weekly Report*
- 41. 12/7 The Early Universe
- 42. 12/9 The State of Cosmology Today
- 12/15 8:30 am *Final Examination*