

## **AY 101-001: Introduction to Astronomy (Fall 2003)**

**Instructor:** Professor Philip Hardee, **Office:** 311C Gallalee Hall, **Phone:** 348-5050

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**Office Hours:** Wednesday 1:00 – 2:30 and by appointment

**Lectures:** MWF 10:00 – 10:50 in room 227 Gallalee

**Text:** *Astronomy: The Solar System and Beyond* by Michael Seeds

**Course Description:** History of Astronomy, the solar system, stars, galaxies and the universe, pulsars, black holes, quasars and relativity will be discussed. This course in conjunction with the Laboratory course AY102 taken either concurrently or during a subsequent semester can be used to satisfy part of the NS requirement of the University Core Curriculum.

**Course Objectives:** To gain an appreciation for the basic objects in the universe and the structure of the universe as well as an understanding of the physical processes occurring in these objects and in the universe.

**Attendance:** Attendance is not mandatory. However, some lecture material will not be found in the book so regular attendance is essential for a passing grade. If you are late to class or must leave early, please have the courtesy to sit near to the door so as not to distract the other students.

**Examinations & Grading:** Three multiple choice exams will be given during the term. *There are no make ups for the exams except by prearrangement.* The final exam will consist of a fourth multiple choice exam + a separate multiple choice comprehensive exam. The final grade will be based on *four* exam scores. If one of the three exams given during the term is missed, the final comprehensive exam can be used in its place. If the student takes all three exams during the term and the first part of the final exam, the comprehensive part of the final exam need not be taken. The final grade will be determined by averaging four exam scores out of a possible five exam scores.

**Drop Date:** The last day to drop this course (with a grade determination of “W”) is October 29, 2003. After that students will receive a grade that will appear on the students official transcript.

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## Class Outline

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Dates	Topics (Chapters)	Dates	Topics (Chapters)
Aug 20	Introduction, distance/time/temp scales	Oct 15	The Sun – a medium mass star (10)
Aug 22	Overview, The Sky (1)	Oct 17	Forces in the Universe, Fusion (10)
Aug 25	The Sky, Earth-Moon System (1)	Oct 20	Stars: distance, brightness (11)
Aug 27	Tides, Lunar Phases (1)	Oct 22	Stars: masses, sizes, the H-R diagram (11)
Aug 29	Eclipses, <i>Practice test</i>	Oct 24	Stars: formation (12)
<b>Sept 01</b>	<b>Labor Day Holiday</b>	Oct 27	Stars: the main sequence, structure (12)
Sept 03	Historical Astronomy (2)	Oct 29	Stellar Evolution: low & medium mass stars
Sept 05	Ptolemy & Copernicus (2)	Oct 31	Stellar Evolution: White dwarfs, Novae (13)
Sept 08	Kepler & Newton (2)	Nov 03	Star Evolution: massive stars, Supernovae
Sept 10	Light & Radiation (3)	Nov 05	Relativity, Neutron Stars, Black Holes (14)
Sept 12	Telescopes (3)	Nov 07	<i>Review</i>
Sept 15	<i>Review</i>	<b>Nov 10</b>	<b>Exam #3</b>
<b>Sept 17</b>	<b>Exam # 1</b>	Nov 12	The Galaxy (15)
Sept 19	Atoms & Starlight (4)	Nov 14	Galactic Structure (15)
Sept 22	Spectra (4)	Nov 17	Types of Galaxies, Properties (16)
Sept 24	Solar System Introduction (5.2)	Nov 19	Galaxy Formation, Distances, Hubble law
Sept 26	The Earth (6)	Nov 21	Galaxy masses, clusters & dark matter (16)
Sept 29	The Moon, Mercury (6,7)	Nov 24	Active Galaxies & Quasars (17)
Oct 01	Venus, Mars (7)	<b>Nov 26</b>	<b>No class</b>
Oct 03	Jupiter & The Galilean Moons (8)	<b>Nov 28</b>	<b>Thanksgiving Holiday</b>
Oct 06	Saturn, Uranus, Neptune (8)	Dec 01	Cosmology – observations (18)
Oct 08	Pluto, Comets, Meteors (9)	Dec 03	Cosmology – Big Bang Universe (18)
Oct 10	Solar System Formation (5) & <i>Review</i>	Dec 05	<i>Review</i>
<b>Oct 13</b>	<b>Exam #2</b>	<b>Dec 11</b>	<b>Exam #4 &amp; Comprehensive (#5)</b>

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**Final Exam: Thursday December 11 @ 11:30 am – 2:00 pm**

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**AY102 Schedule****Fall 2003****Rms 310, 328**

All labs must be completed and handed in during the lab period. There are three quizzes during the semester, comprising 30% of the lab grade. If you must miss a quiz on your scheduled day, inform your instructor ahead of time. It is usually possible to make up a quiz by attending a different lab during the week - check with your instructor. Illness needs to be documented with a valid excuse. If you are short one lab at semester's end, a makeup lab (Lab 13) is scheduled for the last meeting in the semester. If you complete 12 regular labs you will only need to take Quiz 3 during the last meeting of the semester.

<b>Dates</b>	<b>Lab Exercise</b>
Wed 20 Aug - Fri 22 Aug	<b>No Labs. Purchase Lab Manual at Supe Store.</b> Read orientation materials. Bring lab manual to next week's lab, along with millimeter ruler and scientific calculator.
Mon 25 Aug - Fri 29 Aug	Lab 1: Sky as World Turns
Mon 1 Sep - Fri 5 Sep	<b>No Labs - Labor Day week</b>
Mon 8 Sep - Fri 12 Sep	Lab 2: Yearly Path of the Sun
Mon 15 Sep - Fri 19 Sep	Lab 3: Lenses & Telescopes
Mon 22 Sep - Fri 26 Sep	Lab 4: Parallax
Mon 29 Sep - Fri 3 Oct	<b>Quiz 1</b> (on Labs 1-4); Lab 5: Lunar Surface Features
Mon 6 Oct - Fri 10 Oct	Lab 6: Spectra & the Solar Spectrum
Mon 13 Oct - Fri 17 Oct	Lab 7: The Sun & Solar Activity
Mon 20 Oct - Fri 24 Oct	Lab 8: The Hertzsprung-Russell Diagram
Mon 27 Oct - Fri 31 Oct	<b>Quiz 2</b> (on Labs 5-8); Lab 9: The Galactic Distribution of Clusters
Mon 3 Nov - Fri 7 Nov	Lab 10: The Milky Way
Mon 10 Nov - Fri 14 Nov	Lab 11: Galaxies & Clusters of Galaxies
Mon 17 Nov - Fri 21 Nov	Lab 12: Galactic Redshifts & Cosmology
Mon 24 Nov - Fri 28 Nov	<b>No Labs - Thanksgiving Break</b>
Mon 1 Dec - Fri 5 Dec	<b>Quiz 3</b> (on Labs 9-12); Make-up Lab 13: Orbital Motions

**Lab Supervisor:** Prof. Ray White  
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