

DESCRIPTIVE ASTRONOMY I

Lecture: MTWThF 10:00 a.m. to 11:50 a.m., Room 101 Lewis Hall
 Instructor: Dr. Ostrovskii, Igor
 Office: Room 207 Lewis Hall, Tel: 915-1536; Email: iostrov@phy.olemiss.edu

- **Office Hours: MWTh 3:00 – 4:00 p.m. (207 Lewis Hall)**
- **Text:** The Cosmos: Astronomy in the New Millennium, 2nd edition, 2004,
 by Jay M. Pasachoff and Alex Filipenko, Thomson, Brooks/Cole/John.
- **Grading scale and evaluation:**
 - Grading Scale: A's --- 90 – 100%; B's --- 80 – 89%; C's --- 70 – 79%; Etc.
 - Grades will be based on homework, tests, and the final examination:

Quizzes & in-class activities ---	30%
Two tests -----	30%
Final exam -----	40%

❖ **Tests and Final examination schedule:**

TEST #1 (class 19), Chapters 1 through 9 → Monday, June 13 (10:00a.m.)

TEST #2 (class 36), Chapters 10 through 18 → Thursday, June 23 (11:00 a.m.)

- **FINAL EXAMINATION: → Monday, June 27, 2005, NOON (12:00 a.m.)**

➤ **Common Courtesy Guidelines:**

For the benefit of your fellow students and your instructor, you are expected to practice common courtesy with regard to all course interactions. **For example:**

- Show up for class on time.
 - Do not leave class early, and do not rustle papers in preparation to leave before class is dismissed.
 - Be attentive in class; stay awake, don't read newspapers, etc.
 - If you must be late or leave early on any particular day, please inform your instructor in advance.
 - After the first day, you will need to sit in the same seat for each class.
 - **Absence** may jeopardize your standing in class because you are responsible for any in-class activities.
- ❖ Students who do not practice common courtesy should expect their grade to be reduced because their in-class activity is under the question.

COURSE SYLLABUS

1. *A GRAND TOUR OF THE HEAVENS.*
 - Observing the Universe, Constellations, Distances in the Universe, Scientific method.
2. *LIGHT, MATTER, AND ENERGY: POWERING THE UNIVERSE.*
 - Spectrum, Black body radiation, spectral lines of atoms, Doppler effect.
3. *LIGHT AND TELESCOPES: EXTENDING OUR SENSES.*
 - Telescopes, Hubble space telescope, outside the visible spectrum.
4. *OBSERVING THE STARS AND PLANETS: CLOCKWORK OF THE UNIVERSE.*
 - Phases of the Moon, Eclipses, Twinkling, Celestial coordinates, Motions of the planets.
 - Time and the International Date Line.
5. *GRAVITATION AND MOTION: THE EARLY HISTORY OF ASTRONOMY.*

- Ancient Greece Astronomy, Copernicus, Tycho Brahe, Johannes Kepler.
 - Galileo Galilei, Isaac Newton, Rotation and revolution of the planets.
6. *THE TERRESTRIAL PLANETS: EARTH, MOON, AND THEIR RELATIVES.*
- Terrestrial planets, Moon, Earth's Atmosphere, Mercury, Venus, Mars.
7. *THE JOVIAN PLANETS: WINDSWEPT GIANTS.*
- Jupiter, Saturn, Uranus, Neptune.
8. *PLUTO, COMETS, AND SPACE DEBRIS.*
- Pluto, Kuiper-belt, Comets, Meteoroids, Asteroids.
9. *OUR SOLAR SYSTEM AND OTHERS.*
- Formation, Extra-Solar planets, Planetary systems in formation.

➤ **TEST #1 (class 19), Chapters 1 through 9 → Monday, June 13 (10:00a.m.)**

10. *OUR STA: THE SUN.*
- Basic structure, Sunspots and activity, Scientific value of Eclipses, Sun and theory of Relativity.
11. *STARS: DISTANT SUNS.*
- Colors and Temperatures, Spectral types, Distances, Triangulating, Luminosity, Motions of Stars.
12. *HOW THE STARS SHINE: COSMIC FURNACES.*
- Stars in formation, Energy sources, Atoms and Nuclei.
 - Stellar energy cycles, Brown Dwarfs, Solar Neutrino, Life cycles of Stars.
13. *THE DEATH OF STARS: STELLAR RECYCLING.*
- The death of Stars, Supernovae, Pulsars.
14. *BLACK HOLES: THE END OF SPACE AND TIME.*
- Formation, Photon sphere, Event horizon, Time dilation, Detecting a Black Hole.
15. *THE MILKY WAY: OUR HOME IN THE UNIVERSE.*
- Milky Way, Parts of our Galaxy, Center, Spiral structure, Matter between the stars.
 - Radio observations, Mapping, Radio observatory.
16. *A UNIVERSE OF GALAXIES. .*
- Galaxies, Dark side of matter, Birth and life of Galaxies.
17. *QUASARS AND ACTIVE GALAXIES. .*
- Active galactic nuclei, Quasars.
18. *COSMOLOGY: THE BIRTH AND LIFE OF THE COSMOS.*
- Expanding Universe, Age, Geometry, Expected deceleration, Future of the Universe.
19. *IN THE BEGINNING.*
- Cosmic microwave radiation, Deviations from isotropy, Early and Inflationary Universe.

➤ **TEST #2 (class 36), Chapters 10 through 18 → Thursday, June 23 (11:00 a.m.)**

20. *LIFE IN THE UNIVERSE.*
- Origin of life, Life in Solar system, Search for Extraterrestrial Intelligence.
21. *REVIEW.* (Last class # 38)

➤ **FINAL EXAMINATION: → Monday, June 27, 2005, NOON (12:00 a.m.)**

* - The dates and sections are tentative, and may be changed (but not Final exam!).