

Physics 174
Lecture Outline for Exam I

13 October, 2006

Lectures as given

Lect.	Date	Topic	Material covered (see outline below)
1	30 Aug	Intro	0.1-0.5
2	1 Sep	Intro	0.6-0.7
3	6 Sep	I.01	1.1.1.-1.1.5.
4	8 Sep	I.02	1.1.6. 1.2. 1.3.1.
5	11 Sep	I.03	1.3.1.-1.3.4.
6	13 Sep	I.04	1.3.5.-1.3.6. 1.4.1.-1.4.4.
7	15 Sep	I.05	1.4.4.-1.4.5. 1.5.1.-1.5.2.
8	18 Sep	I.06	1.5.2.-1.5.3.
9	20 Sep	I.07	1.5.4.-1.5.5.
10	22 Sep	I.08	1.5.6. 1.6.1.-1.6.4.
11	25 Sep	I.09	1.6.5.-1.6.6. 1.7.1.-1.7.5.
12	27 Sep	I.10	1.7.6. 1.8.1.-1.8.2.
13	29 Sep	I.11	1.8.3. 1.9.
14	2 Oct	I.12	1.10.1.-1.10.4.
15	4 Oct	I.13	1.10.5. 1.11.
16	6 Oct	II.01	2.1.
17	9 Oct	II.02	2.2.-2.3. 2.4.1.
18	11 Oct	II.03	2.4.1.-2.4.4. 2.5.1.-2.5.3.
19	13 Oct	II.04	2.5.4.-2.5.5. Review (1)
20	16 Oct	I and II	Review (2)
21	18 Oct	Exam I	

Outline

0. Introduction

- 0.1. Policies
- 0.2. Scope
- 0.3. Structure
- 0.4. Clickers
- 0.5. Intro Quiz
- 0.6. Science
- 0.7. The Grand Tour

1. The Birth of Astronomy

- 1.1. Ancient astronomy
 - 1. Civilization and towns
 - 2. Needs for astronomy
 - 3. Sun
 - 4. Stars
 - 5. Planets
 - 6. Definitions

1.2. Egypt

- 1. Historical sketch
- 2. Early Egyptian cosmology
- 3. Sirius and the Nile
- 4. Calendar

1.3. Mesopotamia

- 1. Historical background
- 2. Religion and cosmology
- 3. Babylonian astronomy
- 4. The rise of astrology
- 5. The Seleucid Era
- 6. Conclusions

1.4. Ancient Greece

- 1. The Setting
- 2. The Milesian School
- 3. The Pythagoreans
- 4. The Rationalists
- 5. The Greek mind

Outline (continued)

- 1.5. The Celestial Sphere Model
 1. Physical solution
 2. Coordinates
 3. Motion of the Sun
 4. Motion of the Moon
 5. Motion of the other planets
 6. Time
- 1.6. Classical Greece
 1. Socrates and Plato
 2. Eudoxan spheres
 3. Aristotle
 4. The Alexandrian School
 5. Hipparchus
 6. Ptolemy
- 1.7. The Dark Ages
 1. The Fall of Rome
 2. Science in the Dark Ages
 3. Moslem astronomy
 4. The rise of Scholasticism
 5. The roots of the Renaissance
 6. Renaissance science
- 1.8. The Copernican Revolution
 1. Nicholas Copernicus
 2. The heliocentric model of Copernicus
 3. The reaction
- 1.9. Galileo
 1. Background
 2. Physics
 3. The telescope
 4. The trial of Galileo
- 1.10. Kepler
 1. Background
 2. Tycho Brahe
 3. Kepler's method
 4. Kepler's Laws
 5. Consequences
- 1.11. Newton
 1. Background
 2. Isaac Newton's life in review
 3. Newton's Three Laws of Motion
 4. The Law of Universal Gravitation
2. Light
 - 2.1. The Spectrum
 1. Electromagnetic radiation
 2. Electromagnetic waves
 3. The electromagnetic spectrum
 4. The Correspondence Principle
 - 2.2. Optics
 1. Reflection
 2. Refraction
 3. Diffraction
 - 2.3. Telescope
 1. Refracting
 2. Reflecting
 3. New frontiers
 - 2.4. Photometry
 1. Blackbody Radiation
 2. Brightness and Distance
 3. Albedo
 4. Photometric methods
 - 2.5. Spectroscopy
 1. The spectrum
 2. Bohr model
 3. Kirchhoff's Laws
 4. Reality
 5. Doppler Shifts