

Astronomy 116

Fall, 2005

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Modern astronomy concerns itself with the Universe, its origin, its structure, its contents, its processes, its evolution and its ultimate fate. While modern astronomy attempts to explain the Universe in terms of physical principles, the ordered study of the heavens for the purpose of making predictions is as old as human civilization. Astronomy can thus claim to be the oldest of the natural sciences. This enterprise continues because humanity continues to believe that the Universe is comprehensible.

Course Objectives. This course is an introductory survey of the science of astronomy. Students completing Astronomy 116 are expected to have an ordered understanding of the development of the human quest for knowledge of the heavens, of the ways in which modern astronomers know the Universe and of the important current questions and issues in astronomy. They are expected to learn basic information about the Sun, the Solar System, stars, galaxies and modern cosmology, as well as to develop a basic understanding of physical principles underlying astronomical research. They should be able to identify objects in the night sky and develop the foundation for a lifetime of appreciation and enjoyment of the heavens.

Textbook and Readings. The textbook for the course is Kaufmann and Comins, *Discovering the Universe*, 6th edition, published by W. H. Freeman and Co., 2003. Additional readings from other sources may be assigned from time to time, and some films will be shown, that supplement the readings and lectures. You are asked to bring your textbook to class every class period since we will sometimes need to refer to tables, graphs and illustrations in the textbook during lectures.

Laboratory. Laboratory activities are designed to give the student opportunities for investigating nature with scientific methodology. The regular laboratory schedule will begin in the second week of classes. All laboratory sessions will begin promptly at 8:00 p.m. in classroom 206 in Pierce Hall. After two tardies, each additional tardy will result in a reduction of the lab grade.

Laboratory work will consist of investigatory projects using the *Voyager III* software. . Ideally laboratory sessions would involve both types of activities, but actual observation requires clear skies; therefore, more than one indoor project may be assigned on a particular night. Normally the laboratory will last for three hours. Attendance at laboratory sessions is **mandatory**.

The preparation needed for a particular laboratory session will be announced in class on the Thursday preceding the laboratory session. A tentative schedule of laboratory activities will be issued at the first laboratory session on Wednesday, September 7.

Each student's work must be his own. Collaboration is permitted only in using laboratory apparatus, and observing the sky. During the in-class labs, you may discuss your calculations or procedure, but each student must do his own measurements and obtain his own results. Home work and labs are not to be discussed with fellow students in the same manner as an in-class test.

Laboratory Reports. Students will submit laboratory reports in connection with the computer projects mentioned above. All reports will require written work and will be judged on the quality of writing as well as on the presentation of the results of laboratory investigations. Standards for reports will be issued and discussed in laboratory.

Supplemental Observing Sessions. Additional opportunities for observing the heavens will be provided from time to time, especially in connection with astronomical events of particular interest. Times for such observations will be announced in class or on the class conference (see below). Attendance at any particular supplemental observation is not required, although it is required that each student will attend at least one of these supplemental observation sessions. It is not to be assumed that transportation to an observation site for a supplemental observation will be provided.

Observation Requirements and Journal. The student will be expected to observe, on at least two occasions, (supplemental or independent observations) outside the laboratory observation periods. Students will maintain a record of observations in a separate notebook, preferably a small spiral notebook. All observations (laboratory, supplemental or independent) are to be reported in this observation journal. Journals will be submitted and commented upon after the second laboratory observation and at the end of the course. Standards for the journal will be issued and discussed after the first observation. One of the supplemental observations, outside the laboratory sessions, will be a trip to Hard labor Creek Observatory This trip is planned for a Saturday night in October or November , depending upon the weather.

Tests. The tests in Astronomy 116 will include objective as well as essay questions. Some questions will be quantitative in nature. A few questions may require Algebra to solve equations used in class. Some questions may stress reasoning with principles. Laboratory material may be included.

Three tests will be given, during class time, on the following dates:

Test I - Tuesday, 27 September
Test II - Tuesday, 25 October
Test III - Thursday, 17 November

These dates are included on the attached calendar of textbook reading assignments. The textbook material included on each test can be inferred from the placement of the tests.

Oral Presentation. Laboratory groups will prepare and give short, illustrated oral presentations concerning objects in the night sky. Details will be issued after midterm. It is planned that the oral presentations will take place during the last laboratory session (30 th of November & 7 th of December).

Grades

In general course grades will be determined, as follows:

A	900 or more points
B	800 to 899 points
C	700 to 799 points
D	600 to 699 points
F	fewer than 600 points

Grades of A-, B+, B-, C+, C-, D+ may be assigned for sums of points near the ends of the grade ranges given above.

Class Conference. A conference, named 116 Astronomy, has been set up. Students should stay "tuned" to the conference. It is hoped that this arrangement will promote discussion among students professors. Announcements, special assignments, and other matters of interest will be posted on the conference.

Homework and Other Assignments. Questions, exercises, etc., will be assigned in class. Such assignments will be turned in for a grade.

Additional Materials. Students will need scientific calculators for laboratory work and often in class. A lab book is recommended.

Absences. Class attendance is required. There **are no excused class absences**. Each student may be absent four times without penalty. Any additional cuts will result in grade reduction. **USE YOUR CUTS WITH CAUTION**, e.g. for sick leave only. As stated above, attendance at laboratory is mandatory. Excused absences for serious reasons are possible, but the instructor must be notified prior to the day of the lab, except in extreme cases. The missed laboratory work must be made up, and a supplemental report will be assigned. On the second absence from lab, you will be subject to a reduction of your lab grade.

Office Hours. Mr. Honeycutt: Tues & Thu 12:00-2:00 pm or see me after class for a different time.

**THE HONOR CODE OF OXFORD COLLEGE APPLIES TO ALL WORK
SUBMITTED FOR CREDIT IN THIS COURSE.**