Astronomy 121 – Course Information

The Solar System CRN 16540 September 26, 2005

This first term of introductory astronomy covers the early history of astronomy, the origin of the solar system, and what is known about the Sun, Earth, Moon, and other planets. This course requires minimal mathematics – some arithmetic and a little algebra.

Classes: Mondays, Wednesdays and Fridays 15:00 to 15:50 in Room 123 Pacific.

Instructor: Roger Haydock, 172 Willamette Hall, 346-5221. Office hours – Tuesdays and Thursdays 08:00 to 09:00 or by appointment.

Assistant: Chris Harland, office hours – Tuesdays and Thursdays 13:00 to 14:00, Room 218, Willamette Hall, 346-4760; Hayden McGuinness, office hours – Tuesdays and Thursdays 12:00 to 13:00, Room 217, Willamette Hall, 346-4793; and Scott Ernst, office hours – Mondays and Wednesdays 12:00 to 13:00, Room 218, Willamette Hall, 346-4760.


Alternative: Instead of buying the text, students may choose to attend all classes and take thorough notes. Review and Discussion questions and Problems will be posted at the above website. Approval from the instructor is required for this option.

Homework: Prepare for each class by reading the assigned material in the text and answering the appropriate questions from the self-tests. After class reread the material and write out the answers to the questions on that material in Review and Discussion. Try a few of the relevant Problems. Be sure to use complete sentences as well as diagrams and formulas in answering the questions and problems. You should be spending about 6 hours per week, outside of class, studying the text, answering questions, and solving problems.

Midterms: Friday, October 14, and Friday, November 4, there will be midterms in class. Each midterm will consist of ten questions similar to Review and Discussion questions or the simpler Problems. The purpose of the midterms is to tell you how you are progressing with the course. Only your midterms which are better than your final examination will be averaged into your final grade.

Final Exam: Wednesday, 7 December, at 15:15 in Room 123 Pacific is Required for a pass or a grade. This examination will consist of twenty questions similar to Review and Discussion questions or the simpler Problems.

Project: Because this is a four credit course meeting three hours per week, each student is required to plan, conduct and report on a quantitative test of an astronomical principle covered by the course. Examples of the kind of observations appropriate for this project, are measurement of positions at various times for the sun, moon, satellites, or planets. Other kinds of observations are possible, but should be discussed in advance with the Instructor. Examples of principles appropriate for testing in these projects are rotational or orbital periods of the Earth, Moon, other planets, satellites, and so forth. Again, other ideas are encouraged but should be discussed in advance with the Instructor. Data obtained other than by direct observation, for example data downloaded from the internet, is not acceptable.

The grade for each project will be based on a written report, due at the final exam, of not more than 1,000 words, but which may contain sketches, graphs, photographs, equations, and so forth. Reports should be written so as to be understandable to other members of the class and should include an introduction to the principle being tested, a description of how the observations were made, the data obtained, and a discussion of whether or not the results support the principle under investigation.

The total effort on the project should be about 3 hours per week, or a total of 30 hours for the course.

Grading: The Final grade is 75% Exams + 25% Project. The exam grade is the average (weighting individual questions equally) of the Final Exam and any Midterms which were better than the Final. The principle for grading exams is that demonstration of understanding of 2/3 or more of the material is at least an A-, ½ or more at least a B-, and 1/3 or more at least a C-. The project is graded on the principle that a coherent report reflecting 30 hours of effort earns a B+ if the project is outstanding in some respect.


Course Plan

September

26 Introduction to the Solar System Chapter 1

28 Basic Astronomy

30 Sent Astronomy Chapter 2

October

3 Modern Astronomy
5 Origin of the Solar System Chapter 15
7 Formation of the Planets
10 Planetology Chapter 6
12 Exploration of the Solar System
14 First Midterm covering Chapters 1, 2, 15 and 6
17 The Outer Earth Chapter 7
19 The Inner Earth
21 The Moon Chapter 8
24 Mercury
26 The Planet Venus Chapter 9
28 The Atmosphere and Surface of Venus
31 The Planet Mars Chapter 10

November
2 The Atmosphere and Surface of Mars
4 Second Midterm covering Chapters 7, 8, 9, and 10
7 Jupiter Chapter 11
9 The Moons of Jupiter
11 Saturn Chapter 12
14 The Rings and Moons of Saturn
16 Uranus Chapter 13
18 Neptune and Pluto
21 Asteroids Chapter 14
23 Comets
25 Thanksgiving Holiday – no class
26 Review I
30 Review II

December
2 Review III

7 Final Exam at 15:15 in Room 123 Pacific covering Chapters 1, 2, 6-15.