Astronomy 180 Planetary Astronomy

3 credits
Tuesday and Thursday 2:30-3:45pm

INSTRUCTOR: Mary Beth Laychak
OFFICE: ʻImiloa 135A
OFFICE HOURS: 1:30-2:30pm and by appointment
TELEPHONE: 235-7350 **EMAIL: laychak@hawaii.edu**
EFFECTIVE DATE: Fall 2012

WINDWARD COMMUNITY COLLEGE MISSION STATEMENT

Windward Community College offers innovative programs in the arts and sciences and opportunities to gain knowledge and understanding of Hawai'i and its unique heritage. With a special commitment to support the access and educational needs of Native Hawaiians, we provide O'ahu's Ko'olau region and beyond with liberal arts, career and lifelong learning in a supportive and challenging environment — inspiring students to excellence.

CATALOG DESCRIPTION

A survey of modern solar system astronomy with emphasis on the underlying physical principles. Topics discussed include the celestial sphere and aspects of the night sky, the structure and evolution of the Sun's planetary system, comparative planetology, and theories of the formation of planetary systems. Intended for science majors and prospective science teachers. Introduction to the astronomical universe for non-science students. (3 hours lecture)

Recommendations: The student should have a good operational familiarity with high school algebra.

Activities Required at Scheduled Times Other Than Class Times
None

STUDENT LEARNING OUTCOMES

The student learning outcomes for the course are:

- Outline the development of planetary astronomy from ancient times to present and explain the role of the scientific method in this historic context.
- Describe the major geological and atmospheric features of the objects in our Solar System.
- Describe the physical and chemical properties of the objects in our solar system and apply the concept of comparative planetology.

- Outline the origins of our Solar System and formulate models that explain the different physical and chemical characteristics of objects within the Solar System.

- Describe the properties of our Sun and their effects on objects in the Solar System.

- Outline techniques for discovering extrasolar planets and extraterrestrial life.

COURSE TASKS

1 Quiz…… 30 points
1 Midterm…….. 75 points
Final…….....75 points
Sky Journal……. 50 points
Solar System Mission Review…….. 50 points

Total points…… 280 points

ASSESSMENT TASKS AND GRADING

Quiz: 30 points
Thursday, September 20th

Midterm: 75 points
Thursday, October 18th

Final Exam: 75 points
Thursday, December 13th 3:30-5:30pm

Sky Journal: 50 points
- Due on or before Nov 29th
- Students will keep a journal of the night sky for 30 nights, then write a 1-2 page reflection on their observations. Template and rubric will be provided in class

Solar System Mission Review: 50 points
- Due on November 8th
- Students will select a space mission to one of the planets in our solar system from the list provided in class.
- Paper will follow format described in rubric.
- The paper must be 4-5 pages (12 point font, double spaced). Papers must include a bibliography using at least 5 sources (Wikipedia may be cited, but will not count towards the minimum), including at least one peer-reviewed source. The bibliography must be properly formatted using MLA style. Paper will be graded using a rubric provided in class.

All tests are to be taken within the classroom environment; all are closed-book/closed notes. The midterm and final will cover the topics discussed since the previous exam.

The student is responsible for keeping abreast of any changes in the syllabus that are announced in class. Unless the instructor grants permission, all tests must be completed and submitted to the instructor at the specified date and time.

Grading System

Each letter grade and its respective level of achievement is provided in the following table:

Letter Grade	Definition
A	90%-100% of cumulative points possible (excellent achievement)
B	80%-89% of cumulative points possible (above average achievement)
C	70%-79% of cumulative points possible (average achievement)
D	60%-69% of cumulative points possible (minimal passing achievement)
F	Below 60% of cumulative points possible (less than minimal passing achievement

I Incomplete: this is a temporary grade given at the instruction's option when a student has failed to complete a small part of a course because of circumstances beyond the student's control. The student is expected to complete the course by the designated deadline in the succeeding semester. If this is not done, the "I" will revert to the contingency grade identified by the instructor.

Credit/No Credit Option

Note: Refer to the current Schedule of Classes for CR/NC declaration deadlines. This grading option is <u>not</u> available in all courses and will not be offered to majors in required courses.

CR Achievement of objectives of course at the C level or higher. (course credit awarded)

NC Used to denoted achievement of objectives of the course at less than C level under CR/NC option. (no course credit awarded).

N The "N" grade, which is issued at the instructor's option, indicates that the student has worked conscientiously, attended regularly, finished all worked, fulfilled course responsibilities and has made measurable progress. However, either the student has not achieved the minimal learning objectives and is not yet prepared to succeed at the next level, or the student has made consistent progress in the class but is unable to complete the class due to extenuating circumstances, such as major health, personal or family emergencies (no course credits awarded)

W Official withdraw from the course. See the Schedule of Classes for information regarding current semester deadlines. If a student officially withdraws within the erase period, the record of registration will not appear on the student's transcript. (no course credits awarded).

L Audited Course (no course credits awarded)

LEARNING RESOURCES

Required:
Universe: The Solar System (4th Edition) by Roger A. Freedman and William J. Kaufmann III

Basic calculator

Additional Information

1. If a student is unable to take an exam at the scheduled time, the student is responsible for notifying the instructor of the situation and reason(s). The student is responsible for requesting a make-up exam. An appropriate scoring penalty may be assigned to this make-up at the instructor's discretion. The student may be required to fulfill additional requirements as specified by the instructor in order to qualify for a make-up test. Any test not taken will be assigned a score of zero.

2. Final exams **must** be taken in class or they will result in a zero.

2. Retests are **not** permitted.

3. Students are encouraged to visit WCC's **Aerospace Exploration Lab** (located in Hale `Imiloa 135). Materials from the Aerospace Lab may be helpful resources for the student's assigned research paper. Phone 235-7321 or by appointment with instructor.

4. A student can determine his/her current grade at any time during the semester by dividing his/her cumulative score by the cumulative points possible and converting into a percentage and referring to the table of Letter Grades.

5. Any student wishing to be informed of his/her Final Exam grade and/or semester grade in advance of the official report of grades should email a request for the grades to the instructor immediately after the Final Exam. The student may also provide the instructor a stamped, self-addressed postcard or envelope on the day of the Final Exam with an enclosed note requesting the grades.

DISABILITIES ACCOMMODATION STATEMENT

If you have a physical, sensory, health, cognitive, or mental health disability that could limit your ability to fully participate in this class, you are encouraged to contact the Disability Specialist Counselor to discuss reasonable accommodations that will help you succeed in this class. Ann Lemke can be reached at 235-7448, lemke@hawaii.edu, or you may stop by Hale 'Akoakoa 213 for more information.

Revised August 13, 2012

Schedule for ASTR 180 (61380, 2012)

Tuesday, August 21 Course Introduction	Chapter 2
Thursday, August 23 Motion of the Sky	Chapter 3.1-3.2
Friday, August 24	Last Day to Add/Late Register, Fall - for semester-length classes
Tuesday, August 28 The Moon	Chapter 3.3-3.6
Thursday, August 30 Eclipses	Chapter 4.1-4.5
Tuesday, September 4 Astronomy to Galileo	Chapter 4.6-4.8
Thursday, September 6 Newton's Laws	Chapter 5.1-5.4
Tuesday, September 11 Light I	Chapter 5.5-5.8
Thursday, September 13 Light II	Chapter 6
Tuesday, September 18 Optics	Chapter 7.1-7.3 Study for Quiz
Thursday, September 20 Comparative Planetology I	Quiz Chapter 7.4-7.8
Tuesday, September 25 Planetology II	Chapter 8.1-8.4
Thursday, September 27 Planet Origin Story I	Chapter 8.5-8.7
Tuesday, October 2 Planet Origin Story II	Chapter 9
Thursday, October 4 Earth	Chapter 10
Tuesday, October 9 Moon	Chapter 11.1-11.3
Thursday, October 11 Mercury/Venus	Chapter 11.4-11.9
Tuesday, October 16 Venus/Mars	Study for Midterm
Thursday, October 18 **Midterm**	Chapter 12.1-12.4

Tuesday, October 23 Jupiter/Saturn	Work on Mission Report
Thursday, October 25 Solar System Video	Chapter 12.6-12.10
Tuesday, October 30 Jupiter/Saturn	Chapter 13
Thursday, November 1 Moons of Jupiter/Saturn	Chapter 14.1, 14.3, 14.8
Tuesday, November 6	General Election Day - holiday, campus closed
Thursday, November 8 Neptune	Chapter 14.2, 14.4-14.5, 14.6-14.7 **Due: Mission Report**
Tuesday, November 13 Uranus	Chapter 14.9-14.10
Thursday, November 15 Pluto and TNO	Chapter 15.1-15.6
Tuesday, November 20 Asteroids/Meteorites	Chapter 15.7-15.8
Thursday, November 22	Thanksgiving Day - holiday, campus closed
Tuesday, November 27 Comets	Chapter 28
Thursday, November 29 Life	Chapter 16.1-16.5 **Due: Sky Journal**
Tuesday, December 4 Sun I	Chapter 16.6-16.9
Thursday, December 6 Sun II	Last Day of Instruction, Fall -
Thursday, December 13	**Final Exam** **3:30-5:30pm**