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TA: Kirsten Howley, UCSC Dept. of Astronomy. Office ISB 255, phone 459-5722. Email kirsten@ucolick.org.

Grades: Weekly HW (50%), Midterm 5/9 (25%), Final Exam (25%). All percentages approximate. Discussion sections are mandatory (see below). Additional credit for doing, documenting and submitting an observational project over the course of the quarter. Possible topics are to track the position of a planet or the seasonal change in the night sky over the quarter, and compare your data with what we know about the Earth, sun and solar system. These projects should be discussed with me during the second and third weeks of the quarter to make sure they are appropriate.

Expectations, or “What do I have to do to pass this class?”: Attend lecture and discussion sections, take the exams, turn in the homework. Collaborative work on homework is encouraged if it helps you understand the material. Wildly inconsistent performance between homework and exams will be noted; “collaborative” means exactly that. Ask for help if you need it – email me or Kirsten, ask questions in discussion section, come to office hours. All registered students should already have a WebCT account for AY14.

Homework will be passed out on Tuesdays. Sections are 1h 15m long, and the homework is due at the end of section. There will be plenty of time during section to complete the assignments if you keep up with the lecture material and come prepared to section.

Section times are Monday, 12:15-1:30 and Thursday 3:00-4:15. Both sections are held in ISB 165. If you have to miss your section, you can reschedule with Kirsten to attend the other meeting time. If you miss one section, your grade will be penalized by the appropriate percentage. If you miss more than one you are in danger of failing, and you need to make an appointment with Connie to discuss how you can salvage your grade.

Office Hours: Connie’s are Wednesday 2:30-3:30 in ISB 261, or by appointment to make sure I am available. Kirsten’s are Thursday from 12:00-1pm in ISB 255.

Fun: We’ll schedule a few nights of observing using the telescope on the roof of the engineering building. Stay tuned for announcements in class and on the course web pages.

Syllabus

4/4 Introduction, Basic Astronomical Data. HW due 4/11.

4/5, 4/11 The Earth’s motion in space. The night sky, seasons, navigation, look ahead to the sun’s motion in the Milky Way. Resources for finding out what’s up in the night

sky. Discussion of observational projects for additional credit. HW due 4/18.

4/13 Motions of the planets, from Kepler's Laws to Newton's universal theory of gravity.

4/18, 4/20. Gravity. Earthbound examples and applications to understanding astronomical systems. HW due 4/25.

4/25 Light and Energy. HW due 5/2.

4/27, 5/2 Stars and how they shine. Energy generation, hydrostatic equilibrium, nuclear fusion.

5/4 The tools of astronomy, or, How your digital camera works. Review for midterm in discussion sections.

5/9 Midterm exam, in class.

5/11, 5/16 Doppler shift and applications, including the discovery of Exoplanets. HW due 5/16.

5/16, 5/18 Stellar spectra and the development of quantum physics. HW due 5/23. Midterms back 5/16.

5/23 Deciphering the sun's place in the Milky Way: A census of HI gas, dust and stars. HW due 5/30.

5/25 Inferring the "Dark Matter" content of our Galaxy.

5/30 Measuring the distance to other galaxies using variable stars. Historical development of our model for how these stars work, their use in the "distance ladder", comparisons to recent measurements. Discussion of the definition of 'theory'. HW due 6/6.

6/1 The cosmological distance ladder

6/6, 6/8 Topics in cosmology, galaxies, and exotica in the universe.