Solar System

Astronomy 211 | Spring 2010 9:40 & 11:20 A.M. even | PEngel 319

Instructor:

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Office Hour: 1 P.M. Day 1 | Informal Office Hours: 7:30 A.M. – 5:30 P.M.

Texts:

- *Universe* by Roger Freedman & William J. Kaufmann (Freeman; 8^{th} 2007)
  Chapters: 1–16, & 28 Appendices and Glossary
- http://www.physics.csbsju.edu/astro/

Grading:

Your grade will be determined by averaging six scores: net lab-homework-quiz score, three exam scores, and the final exam score (which is double-counted). Assigned homework is due at the beginning of the next class period. Late homework is generally not accepted. Web-based homework will be graded based on the first submission. Usually quizzes are unannounced and consist of a few short-answer questions covering recently assigned readings or previously discussed lecture material. Expect almost daily quizzes during the first mod. Missed quizzes cannot be made up. There will be three night-labs at the SJU Observatory (located south of the cemetery), two 'home labs' that you do yourself, and several in-class lab experiences. Missed labs cannot be made up. *You will select a night-lab section next class period, so see if one fits into your schedule A.S.A.P.* If none of the suggested lab sections fit, see me today or tomorrow. Exams are about 1/3 true/false, 1/3 short answer, and 1/3 essay. Past exams are online. Exam dates are: February 11 (Thursday), March 18 (Thursday), and April 20 (Tuesday). If informed in advance, I may be able to accommodate exam conflicts. The final exam will be comprehensive and have a structure similar to the other exams (but with more questions since the testing period is longer). The final exams are scheduled for May 5 (Wednesday) at 6 P.M. and May 6 (Thursday) at 1 P.M..

If you intend to take this course S/U, please provide me with a signed, unconditional notification *before* the start of the final.

Questions:

There is no such thing as a dumb question. Questions asked during lecture do not "interrupt" the lecture, rather they indicate your interests or misunderstandings. I'd much rather clear up a misunderstanding or further develop a topic of interest than continue a dull lecture.

Remember: you are almost never alone in your interests, your misunderstandings, or your problems. Please help your classmates by asking any question vaguely related to astronomy. If you don't want to ask your question during class, that's fine too: I can be found almost any time on the 100-level floor of Engel Science Center. Ask if you don't find me, as I spend just as much time in the nearby Physics labs as I do in my office (PENGL 111).

Topics:

This is an elementary course dealing with the "nearby" stuff of the universe: the planets, their moons, and the Sun, but not the other stars. We will begin by studying how the "points of light" in the night sky (Moon, planets, stars, ...) seem to move over a day and through the years. We will discuss old and modern "explanations" for the motions. About half the course will deal with the planets as revealed by recent space probes. We will try to answer questions like: Why is Venus hot? What is in the atmosphere of Jupiter? Why are the rings of Saturn stable? Why are the planets so different? Why are there so few old rocks on Earth? Why is Earth's atmosphere so different from the other planets? Of course, behind these surface questions lie the really interesting questions: Why do we ask the above types of questions? What determines whether an answer is "correct"? How robust are the questions and answers? If you are taking this course for MN teaching certification you should contact me ASAP as additional topics are required.

Night labs (and the first Mod of class) stress the night sky. How do the stars and planets seem to move during a day and over a year? How is the sky mapped? How can you find your way around in the sky? We hope to use both telescopes and binoculars to observe "deep-sky" objects and planets. Sunset times and finite instructor stamina limits us to three night labs. Labs occur rain or "shine." With luck you'll get three good (cloudless, dark) nights; with bad luck you'll get three indoor nights (still at the SJU Observatory) using star charts. You should expect night lab material to appear on exams and in lecture.

The home labs require you to make a series of observations over a couple of months. You must start your observations within the next four weeks; there is no reason you can't start tomorrow. In the past, many students have received Fs for these projects because they did not start in time (e.g., assumed incorrectly that the sky would be clear sometime during the week before the last possible start date) or failed to make the required sustained sequence of observations. Be forewarned!

One final point: it is important to remember that the subjects of our study are not in the book; they are in the night sky. Look up from the sidewalk and let your eyes drink in the sight! You can start tonight by looking for the constellation Orion. We'll soon be learning the names and locations of several bright stars near Orion.

References:

Astronomy (`www.astronomy.com`), *Sky and Telescope* (`www.skypub.com`) — popular monthlies for the general public and amateur astronomer. Star charts, photographing hints, non-technical articles

Science News (`www.sciencenews.org`)— weekly review of general science news summarized from technical journals plus longer "review" articles. Designed for High School science teachers.

`http://www.astro.wisc.edu/~dolan/constellations/` — Chris Dolan's constellation web site.

`http://www.fourmilab.ch/yoursky/` — Sky maps from John Walker's *Your Sky* web site.

`http://www.skymaps.com` — Download a monthly pdf sky map

`http://www.stsci.edu` — Space Telescope Institute

`http://www.noao.edu` — National Optical Astronomy Observatories homepage

`http://www.nrao.edu` — National Radio Astronomy Observatories homepage

`http://www.aas.org` — American Astronomical Society homepage