Astronomy 142: Elementary Astrophysics
Course Outline Spring 2015

First lecture: Tuesday 1/20/2015 (B+L407) - there is no class on 1/15
First workshop: Friday 1/23/2015 (B+L403)
First problem set due: Tuesday 1/27/2015 in class

Topic: In this course, we explore the physics of stars, interstellar gas and dust, galaxies, compact objects and the large-scale structure of the universe, introducing and making use of physical, mathematical and astronomical tools. Ast 142 complements the fall class Ast 111 which introduces the solar system, extra-solar planetary systems, and planetary science.

Prerequisites: This class assumes that students know calculus and are familiar with modern physics. Physics 121-123/141-143, Math 161-165/171-174, and Astronomy 111 are recommended with some of these taken concurrently.

Instructor: Alice Quillen, Office B&L 424A, Phone: 275-9625,
aquillen@pas.rochester.edu

Office hours: Alice is generally available M-F 9-5pm, and welcomes students who drop by (*please* come by! often!). However, if you would like to be sure to reach me and find me undistracted, you could arrange an appointment before or after class, in person (drop by) or via email. Chelsea will be holding office hours in the POA library Monday evenings.

Teaching Instructor/Assistants:
Chelsea Jean  chelsea.jean14@gmail.com
Chelsea is an excellent, tireless, friendly and experienced teacher. We are really fortunate to have her helping with this class!
Chelsea will be running a weekly workshop, Friday 2-4:40pm in Bausch and Lomb 403 or 203 (403 until 203 renovation is complete).
She will also be holding office hours in the POA library Monday evenings (a nice time to help you with problem sets that will be due Tuesday mornings in class).

Textbooks:
The Physical Universe by Frank Shu (Call No: QB43.2 .S54 1982).
Astronomy: A Physical Perspective by Marc Kutner (Call No: QB45.2 .K87 2003)
All are recommended and are placed on reserve in the Physics and Astronomy Library (POA).

Class WWW site:  http://astro.pas.rochester.edu/~aquillen/ast142
In these pages one will find lecture notes, workshop-problem solutions, exam solutions, practice examinations, study aids, links to other useful Web sites, and a copy of this document.
Lectures: in Bausch and Lomb 407, 11:05 AM - 12:20 PM on Tuesdays and Thursdays; conducted by Alice Quillen. All students are expected to attend all of the lectures.

Workshops: For the first few weeks: in Bausch and Lomb 403, afterwards in Bausch and Lomb 203, Friday 2:00-4:40 PM. Conducted by Chelsea Jean. All students are expected to attend all of the workshops. During these meetings, students will work in teams to solve a group of problems set by the instructors, that illuminate the more important points brought up in lectures and readings, and prepare students for the exams. Full solutions will also be provided, after the class has worked out the problems. Thus workshops play the role that homework usually plays. We will grade on an effort to do the problems and write clear solutions rather complete all the problems and achieve 100% correct answers. Because there are no labs, the workshops problems and the problem sets are long.

Problem sets: In addition to workshop problems there will be weekly problem sets (almost every week) that will be due in class on Tuesday mornings.

Examinations: Two midterms, given in class during the week just after spring break and in class during the last week of classes. A Final will not be given --- unless the class requests it. Each midterm will be based upon material covered up to its date on which you haven't been tested. The final exam, if given, would be comprehensive. You must take all scheduled tests in order to pass the course. If you miss an exam due to illness or emergency, a makeup exam may be scheduled by appointment. All make-ups will be oral examinations, lasting as long as the exams they replace, and will be administered and graded by the professor. If you request that any piece of an exam be re-graded, then the entire exam will be re-graded. To each exam you are allowed to bring only a writing instrument, a calculator, and one letter-size sheet on which you have written as many notes, formulas, and physical constants as you like. No computers, or graphing calculators into which text and graphics may be downloaded, are allowed. The best way to study for the examinations is to do the workshop problems, and to work out the sample exams that will be available (with solutions) in our World Wide Web pages.

Independent project: You will have the opportunity to do a short independent project on a topic of your choice. The project should include working with astronomical data or numerical simulations. The project should include a measurement based on the data you have obtained or a study of numerically generated outputs, accompanied by physical explanation (which could be order of magnitude). The project should be written like a lab report.

Class participation: Students will make 5 minute in class presentations on recent discoveries, and other topics of interest. The schedule is posted here http://astro.pas.rochester.edu/~aquillen/ast142/five.html
**Grades:** Homework 30%, Exams 50%, Project and Class Participation 20%

**Collaboration policy:** We encourage collaboration. However reports and homework solutions should be written exclusively by you in your own words. Please specify who you collaborated with on your reports and solutions.

**Academic honesty disclaimer:** For our purposes, cheating consists of submission of laboratory reports or exam solutions that are not one’s own work, or submission of such work under someone else’s name. According to University rules, any detected act of cheating that is not the result of a simple misunderstanding must be handed over to the Board on Academic Honesty for investigation.

**Extra Help:** Please come in and see us frequently. We will also answer questions by email, privately or through email. By any means we will be happy enough to answer any questions you have concerning the course, and very happy to help those who find the material or presentation sufficiently confusing that they’re not even sure what to ask.