AST 208, Spring 2017

Planets & Telescopes

Syllabus

This course introduces the practice of astronomical observation and the fundamentals of planetary science.

Course goals

This course will introduce you to the science and practice of modern observational astronomy. In this course you will learn many useful skills of astronomical observation: specifying locations on the sky, detecting the radiation from distant objects, and analyzing astronomical data. As scientific motivation, we will draw upon recent discoveries of extra-solar planetary systems.

Prerequisites

Both Introductory Calculus (**MTH 132**) and Introductory Calculus-based Physics (**PHY 183**) are required.

Meeting times and locations

Lecture Monday and Friday 12:40–1:30, 1420 BPS

Lab Tuesday 5:00p-6:50p, 1300 BPS

Instructors

Professor Edward Brown

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Office hours: Monday and Friday 11:30–12:30, Tuesday 11:30–12:30

This document contains embedded hyperlinks, indicated by gold-colored text.

Graduate Teaching Assistant Alex Deibel

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Undergraduate Learning Assistant Claire Kopenhafer

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Office hours: Wednesday 12:00–1:00

Undergraduate Learning Assistant Huei Sears

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Office hours: Tuesday 12:30–1:30

Textbook and course materials

1. Barbara Ryden and Bradley M. Peterson. *Foundations of Astrophysics*. Addison-Wesley, 2010.

2. John R. Taylor. *An Introduction to Error Analysis*. University Science Books, 1997.

3. Notes from the Spring 2016 lecture section of this course are available at this link.

4. We will post course materials, reading assignments, and a dropbox for labs and selected homework assignments on D2L.

You will need a laptop computer (not just a tablet) with at least 2 GB of free storage for lab and an occasional lecture. Any operating system will do. If this presents a problem, please contact Prof. Brown **immediately** (no later than the end of the first lecture meeting) so that an alternative solution can be found.

Components

In-class and take-home assignments

For each topic discussed in class, we shall assign reading assignments, completed before lecture, in-class group exercises, and take-home assignments after the topic is discussed in lecture. The longer take-home assignments are due Fridays at the start of lecture. For all assignments, we will assign one of 4 grades: ⊘ (not done), **−** (below expectations), ✔ (meets expectations), **+** (exceeds expectations).

Exams

Midterms There will be two midterms, tentatively scheduled for February 10 and March 24.

Final Thursday, May 4, 12:45–2:45 in 1420 BPS. The final is comprehensive.

All exams will include topics covered in lab. The exams are closed-book, but we will provide a handout with relevant formulae and data.

Lab

AST 208 lab will give you a taste of modern observational astronomy: you will analyze real astronomical data using standard astronomical software. Regular reading assignments will be given before each lab. During lab, you will work in teams, and your participation with your lab team will be part of your grade. Following lab, you will complete the lab report on your own.

We will attempt to do at least one lab at the MSU Campus Observatory, located 1.5 miles south of BPS at the intersection of Forest Rd and College Rd. Because of the often-cloudy spring semester weather, we may not have many chances to observe the night sky until later in the semester. Check out the campus observatory website `http://www.pa.msu.edu/astro/observ/` for more information.

We will organize teams for observing later in the semester. If you are working on a lab that requires data from the observatory, you will be placed "on call": you will be notified if the sky is clear and your team is expected out at the observatory. You will only be on call during the week nights you are available, and you will told during the lab class period when your team will be on call in the upcoming week.

The course components are weighted as follows.

Lab (85% report, 15% participation)	40%
In-class & take-home assignments	20%
Midterms (2)	20%
Final	20%

Grading standards

4.0 Mastery of subject, based on homework, exams, and in-class performance. Able to consistently apply concepts to solve problems. Ready for upper-level coursework.

3.5 Demonstrates qualities described immediately above and below.

3.0 Generally understands concepts, but has some difficulties in applying them.

2.5 Demonstrates qualities described immediately above and below.

2.0 Incomplete or incorrect understanding of basic concepts.

Academic standards

We have no objection to your working on assignments and lab projects collaboratively; what you turn in must, however, be your own. You must list your collaborators and describe their contributions.

Disability accommodations

Students who require disability accommodations should bring their VISA forms to Prof. Brown during the first week of classes. If you require accommodations but have not yet registered as a student with a disability, please register with the MSU Resource Center for Persons with Disabilities at `https://www.rcpd.msu.edu/services/accommodations`.

If there is a conflict

Disagreements and conflicts occur from time to time and are a fact of life; what is important is that they are swiftly and satisfactorily resolved. We propose a "24–48" rule: if you are unhappy, or have concerns, about any aspect of the course, please bring your complaint to our attention promptly, within 24 hours of the issue arising; in turn, we shall evaluate your complaint and respond within 48 hours.