

# ASTRONOMY 0088: FROM STONEHENGE TO HUBBLE (The History of Astronomy)

Spring 2025  
SYLLABUS

## INSTRUCTOR

**Prof. Sandhya Rao**

Office: 317 Allen Hall

Email: [srao@pitt.edu](mailto:srao@pitt.edu) (or email me using Canvas Inbox)

Office hours: Monday 1:30 PM – 3:00 PM or by appointment

Welcome to our class From Stonehenge to Hubble, where we will explore the development and progress of astronomy from ancient to modern times. It's history and science rolled into one, and we will learn to appreciate both! I am committed to making this an enjoyable and successful semester for you. It's a journey. Be engaged and enjoy it!

**LECTURE: Alumni Hall 343**

**Monday, Wednesday, Friday 11:00 AM – 11:50 AM**

## CANVAS

Our course will be hosted on Canvas. Firefox and Chrome browsers work best. If you are registered for this class, you already have access to our Canvas page. To get started with Canvas, go to <https://canvas.pitt.edu>. This link appears on my.pitt.edu but you may wish to bookmark it. Log in with your Pitt User ID and password and click on the course card for this class. If you are new to Canvas, a short, helpful Canvas Student Tour video series can be found [here](#). There is also a Canvas app that you can download onto your phone or tablet. All course materials will be accessible through the app. You will be able to access homework, quizzes, discussion groups and every other aspect of our course from within our Canvas page. You should check Canvas often. Keep your notifications on so you don't miss postings and deadlines.

## COURSE MATERIALS

Lecture slides, assignments, and additional materials I provide will cover all the content you are responsible for in this class, so it will be important to pay attention during lectures, take notes, and work through the additional materials on your own. All materials will be posted on Canvas. Please check it often for updates.

## COURSE DESCRIPTION

This general education requirement course is a self-contained historical introduction to astronomy. Astronomy is a vast field of study, and it is impossible to even mention all of its major areas in a single course, so ASTRON 0088 is very general and mostly descriptive in nature. Some of the lectures will make use of simple arithmetic and geometry because astronomy is a quantitative science. My primary goals are to cultivate an understanding of the scientific method and an appreciation for critical thought that students can apply well beyond this course, to develop an interest in astronomy, and to have fun!

You will gain an understanding of the ideas and discoveries that have led to the development of our current view of the Universe we live in. In the first part of the course, we will discuss the development of astronomy beginning with Stonehenge during the bronze age. Next, we will discuss astronomy in ancient cultures throughout the world including Native American, Mayan, Babylonian, Egyptian, Persian, Islamic,

Chinese and Indian. We will explore many of the common phenomena in the sky that they observed and used to enhance their lives. We will also discuss cross-cultural exchanges of knowledge systems among these people. We will then learn about the Greeks' vast contribution to astronomy. We will consider the practical aspects of astronomy, including common astronomical phenomena that can be studied with the unaided eye or a small telescope. These include seasons, the phases of the Moon, solar system phenomena and observable planets. We will also study the development of telescopes from Galileo's telescope to the most modern instruments. Finally, we will discuss the development of modern astronomy from the discovery that we live on a planet orbiting a star near the edge of a galaxy that contains billions of stars and is but one of a hundred billion galaxies in the observable Universe, to the nature of dark matter and dark energy, the Big Bang theory and the fate of the Universe. We will conclude with the exciting recent discoveries of thousands of exoplanets. The underlying theme will be the process of scientific discovery and advancement. Understanding the nature of scientific discovery remains critically important in the world of today, especially because science is often misrepresented or described incorrectly in the media, popular literature, and public debate.

Part of this course includes an evening tour of the **University of Pittsburgh's Allegheny Observatory**. The purpose of this trip will be to tour the facility and make observations of the night sky with historical and modern telescopes, weather permitting. A percentage of your course grade will be based on participation in one of these field trips. Tours take place on Tuesday and Wednesday evenings starting in March. Sign-up information will be provided. A bus will pick you up from outside Allen Hall. You must be on the bus for the tour. Arranging your own transportation or bringing friends along is prohibited. The entire trip will last about 3 hours. **If you have a class-scheduling conflict on both Tuesday and Wednesday evenings, please see me as soon as possible.**

## **ASSESSMENT AND GRADING INFORMATION**

### **HOMWORK**

Weekly homework assignments will be posted on Canvas. These will be due by Sunday before midnight. A penalty of 10% per day will be applied for all late submissions, and homework will not be accepted once solutions are posted. Homework is worth 25% of your grade.

### **DISCUSSION BOARDS**

You will be engaging in discussions on class topics via Canvas discussion boards. The class will be divided into discussion groups. You will be graded on your level of participation and relevance of your posts. Guidelines will be posted. Discussions are worth 10% of your grade.

**CLASS PARTICIPATION:** We will use Top Hat to keep you engaged in class. You can click on the Top Hat tab on our Canvas page to get integrated. You can also use the Top Hat app and enter our class code (348672). You will answer questions during lecture to assess your understanding of the material that is being presented. Your scores will be tallied at the end of semester and will count as extra credit. Class participation will count as extra credit and can add a maximum of 5% to your grade.

### **EXAMS AND EXAM POLICY**

Four exams will be given; they will each cover approximately one-quarter of the course material. All questions will be multiple choice. **There is no final exam.** Each exam is worth 15% of your grade. The use of books, notes or other written materials during the exam are prohibited. All students must practice academic integrity as laid out by the University. Integrity and honesty are qualities that will serve you well in all aspects of life, and class is no different.

## EXAM DATES

- Exam 1: Friday, January 31
- Exam 2: Monday, February 24
- Exam 3: Friday, March 28
- Exam 4: Monday, April 21

## GRADING SCHEME

The final grade will be determined from the curve of the distribution of final percentage grades. Obtaining >90% of points guarantees an A, >80% of points guarantees a B, >70% of points guarantees a C, and >60% of points guarantees a D. If you are taking the class pass/fail, you need to achieve a score equivalent to a C or higher to receive a passing grade. The final grade will be computed as follows:

- Exams: 60%
- Homework: 25%
- Discussion posts: 10%
- Observatory trip 5%

## COURSE POLICIES

### MEDICAL ABSENCES

Unless you are going to miss a substantial number of lectures, there is no need to let me know about absences for medical or personal reasons or due to athletic events. The one exception is on the exam dates. If you are sick or incapacitated on the day of an exam, *please email me before the exam*. If you want to reschedule the exam, make sure you see a doctor and provide me with a note as described in the University policy for medical absences: <https://www.studentaffairs.pitt.edu/shs/medical/medical-excuses/>

### ACADEMIC INTEGRITY

Students in this course will be expected to comply with the [University of Pittsburgh's Policy on Academic Integrity](#). Any student suspected of violating this obligation for any reason during the semester will be required to participate in the procedural process, initiated at the instructor level, as outlined in the University Guidelines on Academic Integrity. This may include, but is not limited to, the confiscation of the examination of any individual suspected of violating University Policy. Furthermore, no student may bring any unauthorized materials to an exam, including dictionaries and calculators. A minimum sanction of a zero score for the quiz or exam will be imposed on students violating this policy.

### DISABILITY SERVICES

If you have a disability for which you are or may be requesting an accommodation, you are encouraged to contact both your instructor and the Disability Resources and Services (DRS), 140 William Pitt Union, (412) 648-7890, [drsrecep@pitt.edu](mailto:drsrecep@pitt.edu), (412) 228-5347 for P3 ASL users, as early as possible in the term. DRS will verify your disability and determine reasonable accommodations for this course.

### CODE OF CONDUCT

Communication is key to a productive learning environment, and we can maintain productive communication by exhibiting respect for one another. The success of the course for yourself and others depends on all of our commitment to behavior that demonstrates respect for differences, understanding towards others and a willingness to listen and learn. For these reasons, it is unacceptable to harass, discriminate against, or abuse anyone because of race, ethnicity, gender, disability, religious affiliation,

sexual orientation, or age. If you witness or are subject to such harassment, please report it to the instructor or to the Office of Diversity and Inclusion.

## **TITLE IX**

Legal text: “No person in the United States shall, on the basis of sex, be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any education program or activity receiving Federal financial assistance.”

As a professor I am a mandatory reporter, and I am required to report violations of Title IX that I observe or am made aware of to the Title IX office. Title IX violations include, but are not limited to, sexual harassment, sexual violence and verbal or sexual abuse. Within the classroom, behavior in violation might appear as: suggestive jokes or innuendos, inappropriate touching, and unwanted sexual behavior or advances, but my capacity and obligation to report does not end at the classroom.

## **MOST IMPORTANTLY, TAKE CARE OF YOURSELF**

In order to succeed academically, taking the time to care for yourself is equally as important as study time. You are encouraged to maintain a healthy lifestyle by eating a balanced diet, exercising regularly, avoiding drugs and alcohol, getting enough sleep, and taking time to relax.

It can be helpful to remember that we all benefit from assistance and guidance at times, and there are many resources available to support your well-being while you are at Pitt. If you or anyone you know experiences overwhelming academic stress, persistent difficult feelings and/or challenging life events, you are strongly encouraged to seek support. In addition to reaching out to friends and loved ones, consider connecting with a faculty member you trust for assistance connecting to helpful resources.

The [University Counseling Center](#) is also here for you. You can call 412-648-7930 at any time to connect with a clinician. If you or someone you know is feeling suicidal, please call the University Counseling Center at any time at 412-648-7930. You can also contact Resolve Crisis Network at 888-796-8226. If the situation is life threatening, call Pitt Police at 412-624-2121 or dial 911.