

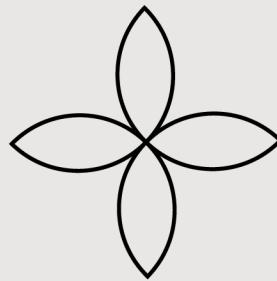
# THE OLDEST SCIENCE



AN OVERVIEW OF ANCIENT  
ASTRONOMY AROUND THE WORLD

FALL 2024

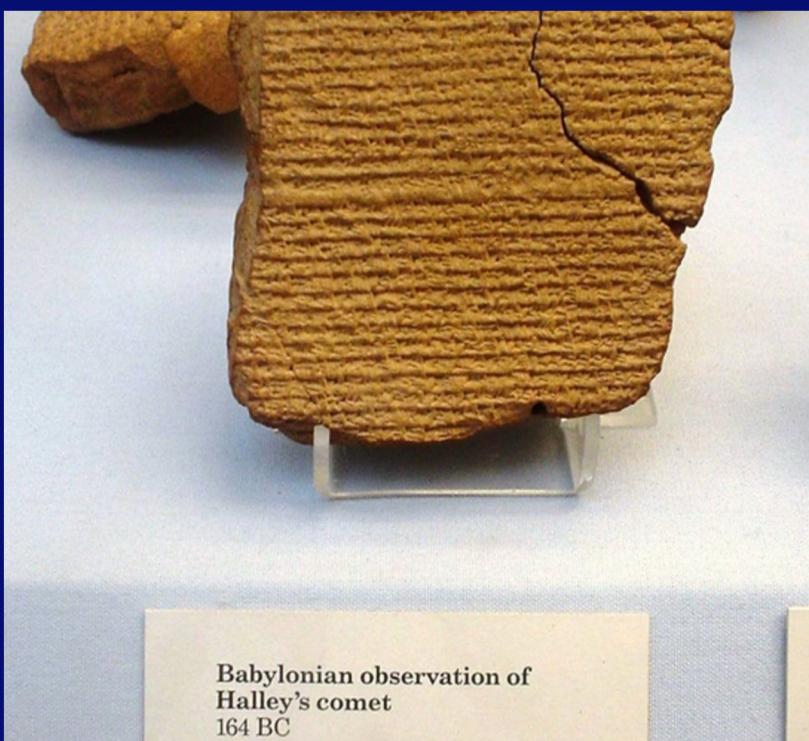
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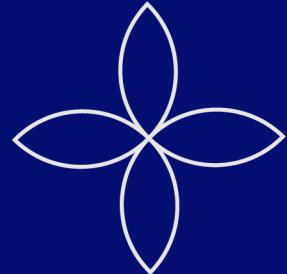


INSTRUCTOR:  
ERIN FLOWERS

# OVERVIEW

For as long as we have been human, we have been looking up. Nearly every culture around the world has independently created its own cosmological systems to explain the heavens: the day-night cycle, objects seen with the naked eye in the night sky, the changing of the seasons, even supernovae. Much of our modern conception of a “Scientific Method” - making an observation, researching a topic forming a hypothesis, conducting experiments, analyzing the data, and reporting conclusions - can be traced back to ancient astronomers. In this course, we will explore the connection between past and present: what tools did ancient civilizations use to study astronomical phenomena, how did they then explain said phenomena, and how does what they learned compare to what we know now?





# OVERVIEW

Knowledge has traditionally been handed down through mythologies, artifacts, and architectural monuments. Each session will focus on a specific astronomical tradition, select a specific phenomenon described in said tradition, and tie it to modern understandings of astrophysical phenomena. We will use class time to discuss readings of modern and ancient texts, collaborate on the creation of artifacts and conduct research. Additionally, we will have excursions to nearby cultural institutions (e.g. The Metropolitan Museum of Art, The American Museum of Natural History, The Penn Museum, and Princeton's own collections) to view artifacts associated with the history of astronomy. Fall break will be spent in Cusco, Peru, where we will tour Incan astronomical sites and meet with conservators and archaeologists to better understand how observatories and architecture were used to study the night sky.





## COURSE OBJECTIVES

1. Understand the concept of Scientific Methods in the context of ancient and modern astronomical research
2. Learn ancient and modern astronomical observation techniques
3. Understand current mathematical explanations of astrophysical phenomena
4. Identify objects and constellations in the night sky (naked-eye astronomy)
5. Observe and explain transient astronomical phenomena
6. Interpret astronomical artifacts and ancient observational facilities
7. Compare and contrast ancient and modern data analysis techniques and interpretations

# ASSIGNMENTS



Every week we will study a specific ancient culture and an astrophysical phenomenon that they observed. Students will create a written and/or tangible “artifact” to explain the astronomical phenomenon first from the perspective of an ancient astronomer belonging to the culture we are studying in a given week, and secondly from the perspective of a modern researcher. For the former perspective, students are encouraged to write their own mythologies or create small “artifacts” in the StudioLab that would explain the phenomenon or be used to study it (with an explanation for the artifact’s design). For the latter perspective, students will write a short research essay that demonstrates understanding of the mathematical concepts discussed in class to explain the phenomenon as we currently understand it with modern equipment and techniques. The purpose of these assignments is to think about how scientific methods of observation arose initially and compare and contrast those original methods to the ones we currently employ.

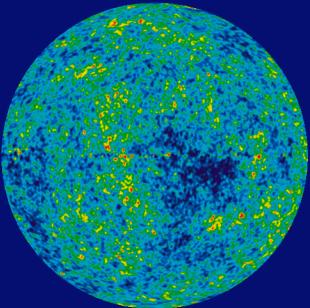


# TOPICS



## CULTURE

Who were the first astronomers?  
Prehistoric man and the beginning of tool use.

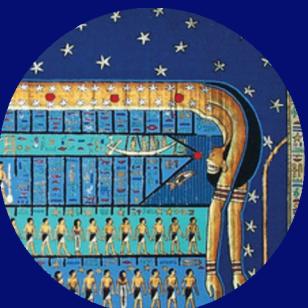


## SCIENCE

The Big Bang

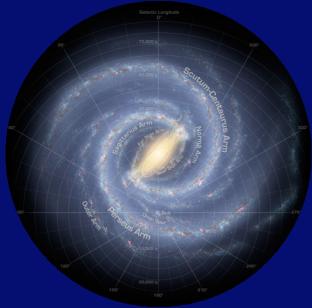


# TOPICS



## CULTURE

Ancient Egypt and Nubia



## SCIENCE

Galaxies and Galaxy Formation



# TOPICS



## CULTURE

Babylonian mathematical astronomy and Greco-Roman philosophies



## SCIENCE

Star Formation



# TOPICS



## CULTURE

China, Japan, and Korea



## SCIENCE

The Deaths of Stars

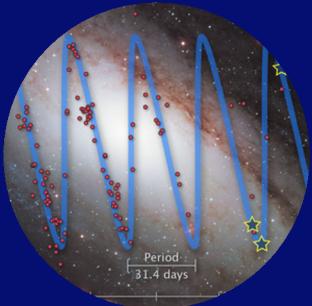


# TOPICS



## CULTURE

The Middle East and India



## SCIENCE

Transient phenomena

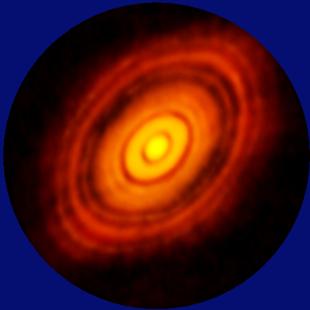


# TOPICS



## CULTURE

Australian Aboriginal cultures, Hawaii, Samoa, and other Polynesian cultures



## SCIENCE

Planet formation



# TOPICS



## CULTURE

Native North American tribes



## SCIENCE

Habitability

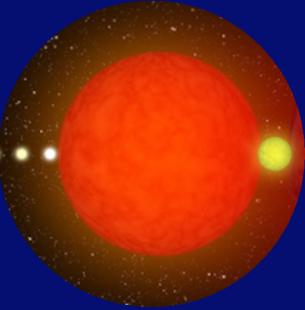


# TOPICS



## CULTURE

Central America



## SCIENCE

The End of the Universe

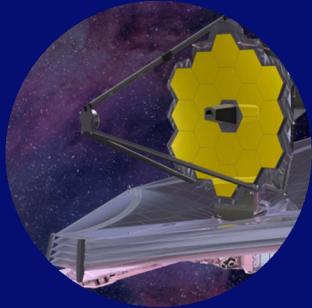


# TOPICS



## CULTURE

Ancient Western Europe and Scandinavia



## SCIENCE

Modern Astrophysical Observatories