What was the Antikythera mechanism? What was its purpose? Its astronomical uses? Why is it such a remarkable invention? How was the Saros cycle incorporated into the device?

- Explain why interior planets are either morning or evening stars. A picture might help.
- What is the difference between the sidereal and the synodic periods of a planet or the Moon?
- What does it mean for celestial bodies to be “in conjunction” or “in opposition”? If objects are in conjunction are they really as close together as they appear on the sky? Explain. How did various cultures interpret these different aspects? What planets can be seen in opposition to the Sun and which cannot?
- Venus shows phases just like the Moon. Why? Can Mars show phases? Why?
- What is retrograde motion? Why does retrograde happen? What is relationship between retrograde motion and opposition/conjunction for outer/inner planets? What time of day/night does an outer planet in retrograde motion cross the meridian? Why is retrograde motion hard to reconcile with a “geo-centric” model for the Solar System?
- What is the significance of Venus to the Maya? How did the Maya explain the disappearance and reappearance of Venus?
- Name the three Maya calendars. How long was each one? What was the use of each one? To what calendar(s) does the “Calendar Round” refer? Does our modern calendar have any similarities with the Maya? What happened on December 21, 2012? What are the relationships between the Calendar Round and the appearances of Venus? Why is this important to the Maya?
- What is precession? Why is it referred to as “precession of the equinoxes”? Why does it happen? What celestial bodies change location relative to the time of year due to precession? How does precession affect the zodiac? What is the difference between zodiac signs and zodiac constellations?
- How long is the entire precessional cycle? Was it possible for ancient cultures to know about precession? If so, how? Why is precession an effective tool for dating buildings, rituals or objects? What examples of “precession dating” exist? How are the Biblical “Great World Ages” related to precession?
- What were the four original zodiac constellations? Why were these four chosen? How many zodiac constellations are there today in the Greek/Babylonian zodiac? Do all ancient cultures use the same zodiac constellations? Other examples? What is the difference between zodiac constellations and zodiac signs? What is the amount of the difference today and what causes this difference?
- What zodiac constellation was in the direction of the Sun on the spring equinox in 2000 BCE? Summer solstice in 0 CE? Be able to make this determination for other eras.
- What is the Principle of Hermes and its cultural significance? What does it mean “As above, so below”? What does the “reverse Principle of Hermes” or “as below so above” mean in an astronomical context?
- What is the difference between astronomy and astrology? Describe the differences which make astronomy a science and astrology not a science. Does astrology not being a science make it invalid?
- Describe the basic principles of the scientific method. Did ancient cultures practice science in the modern sense? Explain why or why not? How did their methods of obtaining knowledge differ from the methods of modern science?
- What is a supernova? What does a supernova look like in the sky? For how long are they visible? How many supernovae have occurred in human history? How did the Chinese interpret supernovae?
- What is the difference between a comet and a meteor? A meteor and a meteorite? What is a meteor shower and why does it happen? How often do meteor showers occur? Why?
- What is cosmology? What is cosmogony? Know some examples for how the constellation patterns of ancient or indigenous cultures reflect their cosmology (a.k.a. “world view”). What are the differences in the way the sky looks at far northern latitudes, at mid-latitudes, near the equator and in the southern hemisphere that give rise to different constellation patterns? Know some examples of how different cultures created different constellation patterns based on their own world view.
- What are the differences between the “cosmologies” of Ptolemy (geo-centric) and Aristarchus (heliocentric)? Why is Aristarchus called the “Greek Copernicus”? What were the astronomical discoveries by Hipparchos of Rhodes and of Anaxagoras? How was the size of the Earth first measured? What are the “epicycles” in Ptolemy’s model of the solar system? What are the “Spear of Archytus” and the Dark Night Sky Paradox and what do they have to say about a finite Universe?

GENERAL EXAM TIPS

- Understand the astronomy first and foremost. Then afterwards, apply cultures to the astronomical concepts as examples of its use.
- Spend some time making the “cheat sheet”. Many students forget to do this, and it’s a great tool to be successful on the exam. And don’t forget your calculator in order to make the little bit of math go quickly.
- Print blank homework and redo them. All the answers are posted online now so check your answers and understand them. This is the best study tool in my opinion.
- Reread the green notes book and review the power points.
- Observe the sky whenever you’re outside. Concepts make more sense when you can connect them with something.
- Study in groups or pairs. Explain concepts to one another. Quiz one another. This class makes the most sense when you can explain it out-loud.
  “If you can’t explain it simply, you don’t understand it well enough.” –Einstein
- If Professor Stocke’s overall questions are confusing to you, underline the specific question he is asking and then go back and reread the entire description.
- Don’t memorize numbers (i.e., the number of days in the synodic period vs. the sidereal period). Write the numbers on your “cheat sheet”, and come to the exam understanding how to apply the numbers to the broader concept(s) with which they apply.
- Draw pictures. A lot of the stuff in this class is much easier once you can visualize it.
- Remember, we want you to succeed! Email Professor Stocke, Bobby or myself if you have questions. We are all glad to help.
- There will be review sessions during homework club hours this week. As a reminder, homework club is on Wednesday from 11-1 (with Kate) and 4-6 (with Bobby) in Duane D142 and Professor Stocke’s office hours are Wednesday 1:30-2:30 at Pekoe’s Coffee Shop in the Atlas building (tip: fewer students go to Professor Stocke’s office hours than go to homework club, which means more one-on-one attention).

GOOD LUCK! 😊