

UNIV 103: Scientific Revolutions

Coming of Age in the Milky Way - Reading Assignment Chapters 1-5

These are the things I ask the students to do before they come to class.

Things to Do While Reading your Text

- 1) Write down at least 3 interesting quotes from each chapter. Be able to explain why you find them interesting.
- 2) Write down a list of words/concepts you do not understand. Use a dictionary to look up any words you do not understand and write those definitions down in your notebook. Make sure you ask any unanswered questions in class.
- 3) Create a timeline of important people and their contributions. The time line should include the following people: Aristarchus, Aristotle, Brahe, Copernicus, Eudoxus, Galileo, Kepler Ptolemy
- 4) Write a 2 paragraph summary of each chapter.

After the classroom discussion, I will highlight any of the topics raised during class, and tell them they should be able to answer the questions discussed. I will post this on D2L.

Questions Considered During Discussion: These were the topics discussed in class. You should be able to answer any of these questions on an exam.

- 1) How have society's needs influenced science? Be able to give at least one example from the text and one example from the modern world.
- 2) How has science's discoveries influenced society? Be able to give at least one example from the text and one example from the modern world.
- 3) Why is exploration of the Earth seemingly so important for scientific discovery?
- 4) What are the traits of a good scientist? Would Columbus have made a good scientist? Why or why not?
- 5) Were Brahe and Kepler good collaborators? Why or why not?
- 6) Describe what science is and how it works.
- 7) What does the following quote mean? "Theirs (Roman) was a non-scientific culture. Rome revered authority; science heeds no authority but that of nature. Rome excelled in the practice of law; science values novelty over precedent. Rome was practical, and respected technology, but science at the cutting edge is as impractical as painting and poetry..." (page 41)

I try to highlight that there are certain things that really aren't debatable and then there are others that can be viewed from multiple perspectives. Hence, the Questions for Discussion (lots of factors and considerations) and the Things to be Able to Explain (it's the science – you should know it and be able to explain it to others).

Things to be able to Explain

- 1) Why is Polaris the North Star? Why is the North Star important for navigation? Will Polaris always be the North Star? Why or why not?

- 2) What is retrograde rotation? Why does Mars appear (at times) to have a retrograde orbit? Explain how early Astronomers solved the retrograde rotation problem? Be able to draw a diagram of this.
- 3) Explain how Prince Henry knew that the Phoenicians were south of the equator when the Sun was to their right when they were sailing west.
- 4) Explain what causes the seasons.

After all of the class discussions, I will post the entire sheet on D2L (minus my editorial comments) and tell them that all exam questions will come from the sheet. And they really do! They don't always believe me – so after the exam (which many will bomb) I have them review the test and compare it to the exam. This helps them better understand how I write questions and we talk about how they might have studied more effectively.