

Test One Preview

AST I05 Life in the Universe

General study advice:

- 1) Use the course outline as your guide.
- 2) Then, study your notes.
- 3) Then, go over your written assignments, including the new terms.
- 4) Finally, as much as time permits, go over your reading assignments.

For the early history, Unit II (blue Course Outline), know the following:

- reasons why astronomy is the oldest science, that is, what were its impetuses?
- in what ways the Greeks took science beyond what anyone else ever did
- what Eratosthenes and Hipparchus did.
- Aristotle's reasons for the geocentric model
- Aristotle's approach to doing science and how it relates to current-day pseudoscience

This test covers one of the very most important revolutions in history—the Scientific Revolution. It is covered in Unit III of your blue Course Outline. The central sciences of the Scientific Revolution were the closely related astronomy and physics. The Scientific Revolution was covered in a straightforward way, with the key players and their work presented. So just make sure you know what each of them did that was noteworthy. And of course, with Galileo, you should also know about his clash with the Roman Catholic Church and the lessons we learned from that clash and advances to science he contributed.

There are some possibilities for math problems on this test. Specifically, they will deal with Kepler's 3rd Law of planetary motion and Newton's Law of Gravity. The numbers used regarding the gravity formula will be simple enough that you should not need a calculator. You just need to know what to do with the numbers. Complete understanding of the three motion laws was not given, but I do expect you are comfortable with the concepts of inertia (First Law) and force (Second Law). That means, some basic question or two may be asked about them.

See that Section "B" in Unit IV of the Course Outline? Past experience has shown me that students space out, as it were, the observational/experimental proofs of earth's motions in space that we learned following the scientific revolution. Earlier, I wanted you to understand Aristotle's reasons for favoring the geocentric model, but it would not do if graduates of my courses do not understand why scientists have progressed beyond the geocentric model. Kepler and Galileo's work was impressive, but not conclusive, for the reason that they did not prove that earth, itself, is a moving planet. What are the two proofs given in class?

Science is covered by the Introductory Note Set you purchased. The units referred to in the text box (next page) refer to the units in the Introductory Note Set, not the blue Course Outline.

Review of Introductory Course Note Set

The gist: Study your Foundational Assignment answers for all the Introductory Course Notes Units, except for Units IV and VI, which were covered in class. Details follow...

In your review of the Introductory Note Set, read over the goals/benefits to attain in this course in Unit I.

You may skip Unit II (on the teaching) and skim Unit III (U.S. scientific illiteracy). By “skim,” I mean just note the interesting survey results.

Focus especially on Unit IV (science) You must understand the aspects of science as presented in its definition in Section A of Unit IV, and in later sections, the “Heart of Science” and the “Scientific Attitude.” In Unit IV, note especially, well, everything.

In Unit V memorize the 8 aspects of critical thinking; they will be on the test. (You may be helped by the article “Thinking Creatively and Critically.” See side cabinet in the classroom for a copy.)

In Unit VI, note especially the characteristics of pseudoscientific thinking and the differences between science and pseudoscience. At the end, recognize those pseudosciences related to astronomy.

I don't expect for you to pick up a lot of the detailed information in unit VIII, just be able to briefly describe the three dangers of pseudoscience.

In Units IX and X, covering non-psychological and psychological factors that influence us into accepting pseudoscientific claims, make sure you are familiar with the first factor in each unit. I don't expect you to be well familiar with all the factors I cover, though most are fairly straightforward and you should be able to mention several on the test.

Unit XI? The challenge of casinos to those who think humans possess certain psychic abilities.

Be familiar with the magnitude numbers for the brightest celestial objects.

Know the relation between light energy and wavelength. Also know the regions of the electromagnetic spectrum. Know what multiple of a meter is a(n) Ångstrom, nanometer, micrometer.

You should know the scale factor and zero point for each of the three temperature scales. Be sure you memorize the surface temperature of our sun, as it offers a handy reference value when discussing stars.

Be able to describe or draw the two basic types of spectra covered: continuous and absorption line.

Be able to describe the three fundamental observational techniques of astronomy.

Regarding the textbook, my hint is the same for all tests. Any question and problem I chose for homework is fair game to ask on the test.

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