

ASTR1020 Stars and Galaxies Dr. Duncan
Homework: 2012

My name: _____

Many people have been asking about 2012 end of the world scenarios associated with astronomy, the Mayan Calendar, the planet Nibiru, and so on. Also, your friends may say, “You took astronomy. Tell me about the planet Nibiru, or 2012.” Since one of the goals of this class is to help you differentiate good science from bad or pseudoscience, and I always assign some homework and a few exam questions on these topics, I’ve chosen 2012 as a topic.

Last year I experimented with giving out an exam essay question a week in advance and letting students work on it at their preferred speed. This worked well so I am doing it again.

Midterm 2 Essay (10 pts). This is to be turned in with your midterm. **You are limited to one page.** (Any more will not be read.)

Investigate the following two websites: <http://www.december212012.com> , and <http://www.astrosociety.org/2012/ab2009-32.pdf> .

Answer the following questions:

1. Describe the point of view of each website holds concerning 2012.
2. Compare each website to the “How to Recognize Good Science” principles we developed as a class (that are on our CULearn home page.) What elements of good science are present in each?
3. Now compare each website to the “Common Elements of Pseudoscience” that we also developed as a class. What aspects of each of the websites show any of those elements? Describe which parts of the websites reflect specific elements of pseudoscience.
4. Describe how scientifically credible the claims about 2012 are.
5. **(Worth 6 points, in addition to the 10 pts for the essay. Please write on the back of the one page essay.)** One of the claims of the 2012 doomsday scenario is that the earth, the sun, and the center of the galaxy will be lined up on Dec. 21, 2012. Is this true? Consider the motion of the earth around the sun, and the sun around the center of the galaxy. Here are some hints: Where is the center of the galaxy in our sky (what constellation?) Where is the sun in the sky on Dec. 21, 2012? (Of course it is on the ecliptic, but towards what constellation? The planetarium program that came with your book will show this; there are lots of ways to look up where the sun is each day on the ecliptic. Newspapers often print it.) Will the sun, earth, and center of the galaxy be lined up on Dec. 21 THIS YEAR? What does this suggest about doomsday being Dec. 21, 2012? Another claim concerns the planet [Nibiru](#). What do you think about it?

You may also wish to refer to <http://www.whowillsurvive2012.com/> , or <http://www.youtube.com/watch?v=tf3jPtaq9Q4> on YouTube, but that is not required. Also from YouTube, well-known [astronomer Neil Tyson](#) , Director of New York’s Hayden Planetarium, presents quite a different view than the other video.