

Assignment 3

Great Ideas in Science (BIOL 3018)

Written Assignment Due November 21

In a sense, physics is the most *fundamental* of the sciences, and astronomy is the most *observationally based* (and least experimentally based) of the sciences. Our knowledge of the universe has a great influence on our philosophy and our culture. Much of our fiction today, in the form of science fiction, is based on ideas from physics and astronomy.

Groups of 2 or 3 students will be formed to explore a topic from modern physics or astronomy. Give an explanation of the science involved. Each group will write a 750 word report and give a 15 minute oral presentation (with PowerPoint slides or websites, if you like).

On November 2, ten groups will be randomly formed. You will have the opportunity to “ask an expert” (Mark Giroux of the ETSU Department of Physics, Astronomy, and Geology) on November 16. Groups will give their oral presentations on November 21, 28, and 30, with each member of the group contributing.

Possible topics include:

1. time travel — the science
2. warp drive (the science)
3. interstellar travel
4. string theory
5. black holes or wormholes
6. gravity waves
7. classification and structure of galaxies, or the distribution of galaxies
8. stellar evolution, the fate of our sun, or the birth of stars
9. supernovae
10. the big bang
11. inflationary theory
12. the accelerating universe
13. something based on Stephen Hawking’s writings
14. quantum theory (the two-slit experiment, perhaps)
15. the ultimate fate of the universe