NSCI 111 – Paper #1 – Pick ONE Topic

Due in Class Tuesday October 31, 2006

Topic 1: NASA Mission Proposal

In this assignment you are to design and propose to NASA a space mission. Pick a solar system object whether it be a planet, moon, an asteroid, the Sun or even the Earth and outline for what scientific and/or practical reasons we need this mission and what we hope to learn from it.

Points you should address:

- Why this object and not another? (i.e., why now?)
- What do we know and don’t know about this solar system object and what questions do you expect to answer from your proposed mission?
- What are the technical hurdles that need to be overcome in order for this mission to be successful? (e.g., launch vehicle, power systems, communications, life support, if needed)
- What kind of instruments would you put on the spacecraft? (Remember, the more instruments you put on it, the greater the cost and risk.)
- How long would expect the mission to last? (The further away the object is the longer it will take to get there. Also the further away it is the larger the launch vehicle and/or complicated the trajectory will be.)
- Estimated cost? (and does the cost justify the expense?)
- If this is to be a manned mission, you should justify scientifically the added expense, which is considerable, of sending people into space.

A useful place to look at current and future NASA missions is at the JPL website: http://www.jpl.nasa.gov/missions/

Your assessment will be based in large part on the thoroughness of your research, including the scientific soundness and relevance of your idea.

I expect all the writing to be your own, if you must use quotes be sure to cite them correctly. Copying directly from other sources is not acceptable.

This should be a 2-3 page proposal, including a budget and timeline.
Topic 2: Solutions to the Energy Crisis?

The question of viable and sustainable energy sources for our society has become a much-discussed topic recently. With the recent increases in the price of fossil fuels and the impact on the environment, most notably on global warming, alternative energy sources are becoming an attractive option. Your assignment is to research and report in detail an assessment of a proposed alternative energy source, discussing such issues as its implications, limitations, cost, etc.

Points you should address:

1. Cost – how much it would cost to run and setup such a system and compare that current systems.
2. Anticipated environmental impact.
3. Issues related to distribution and safety.
4. Economic and political impact.
5. Other Advantages and Disadvantages

You are to turn in a 3 page report, that includes a detailed description of the system you propose with cost estimates, timeline, etc.

Your assessment will be based in large part on the thoroughness of your research. For example, you will not be penalized if you conclude that an approach that does not seem at all viable, provided you backup your argument with sound research.

I expect all the writing to be your own, if you must use quotes be sure to cite them correctly. Copying directly from other sources is not acceptable.

Suggested References – a good place to start

1. Art Hobson, Physics: Concepts and Connections