Astronomy 101U Skylab #7 – "Term Paper"

Introduction: This lab is intended to be done by those of you who will not have a chance to get outside and get your data at some point in the quarter. Since I'd like to encourage people to get outside and do a skylab rather than this library assignment, I have made this a little more work than a normal skylab.

Equipment: You'll need a primary article dated no earlier than November 1991 from Scientific American, Astronomy, Nature, Science or Sky & Telescope that interests you enough that you might want to write about it. For this project, these journals are at just the right level of difficulty, so those are the only sources that I'm going to allow for this assignment. Other journals are either too shallow or too difficult for the most part, though I will o.k. certain articles if you bring them to me to check out well in advance. You may instead choose as your primary source a book (and I can give you plenty of ideas for good sources), as long as you o.k. it with me first. If you need help finding a source, come by and see me at my office sometime.

Time Required: Probably a day in the library looking for and reading things in order to find both your primary and secondary sources, then a couple of days to read through them and synthesize the information, then several hours to actually write the paper. Total = 3-4 days or about 18-24 hours if you really want to give yourself an honest shot at an "A" or "B". I'm a tough grader when it comes to term papers, so I suggest you plan to spend plenty of time on this assignment.

What To Do: The first part of this assignment consists of a Concept Paper. The Concept Paper is a fairly simple assignment in which you turn in two things to me. First, I need a copy of your primary source, either the book or the article that you have decided to use. Second, I need a one paragraph summary of what you intend to write about in the paper, both a general idea of what issues are discussed in your primary source and an idea of what you intend to say in addition. The idea of the concept paper is that it will give you a chance to run your topic by me first so that I can give you some hints on what I would like to see in your paper and then I can also give you direction toward other secondary sources. Because of this, I will try to get your Concept Paper back to you with comments as soon as possible.

The Concept Paper is due Monday, April 25th, and it is worth 1/4 of this assignment. Normal late penalties will apply for this paper. I strongly recommend that if you are not sure whether or not you'll be able to do one of the other Skylabs at some point later in the quarter, you should turn in a Concept Paper in order to "cover your bets" should you end up having to do this assignment rather than one of the other six. I will also ask you to turn in your Concept Paper and primary source again when you turn in the Term Paper.

Once you've found your primary source, make sure it is something you want to write about! If you get a really tough, incomprehensible article/book, or something that turns out to be really dry and boring, put it back and try another! Remember, the point here is that the assignment should be interesting for you. Use the references given by your primary source or some of the ideas I'll give you in your Concept Paper in order to find 1-3 more secondary sources for your paper. Try to select articles that have plenty to write about (none of these one page or less "sound bites" like the "News and Views" that appear in Nature should count as a source, though you may use them to help you).

Your paper should be at least four pages in length and not more than seven pages in length, double-spaced, or roughly 800 to 1200 words. You should spend 1/4 to 1/2 (but no more than half) of the paper with a summary of the work or the issue that has been described in your sources, but this summary MUST be in terms that you understand, not terms that only the author of the paper understands. In other words, when you are done writing up your summary, I encourage you to give it to a classmate for analysis and see if he/she understands it well. If your summary is not clear (i.e. if it has too much "jargon"), then go back and simplify or further explain some of the concepts. Part of science writing is ability to not only understand but to effectively communicate a difficult concept to the average reader. I will keep this in mind when grading your paper.

For the remainder of the paper, I would like a discussion of what this new result or issue means in the context of something we've learned in the course (whatever is relevant to the paper, like the formation or history of the solar system, stellar evolution, cosmology, etc). If you're not entirely sure where to go with your analysis of this issue, explore some of these questions: Is this good science in the context of the Feynman and Pine readings? What else could be done in this field in order to find out more about this issue, beyond even some of the ideas the authors are sure to suggest? Is this project a worthwhile expenditure of our resources (i.e. if you were a memeber of Congress, heaven forbid, would you fund it)? Does this change your view of science or does it have some fundamental impact on society or the future? What implications (or spin-offs) might this issue have? Note well that I am not looking for a book report, analyzing the technical strengths and weaknesses of writing style and so forth.

These are just examples of the kinds of questions you might ask yourself when analyzing a particular topic. Most importantly, remember that I am looking for depth rather than breadth in your essay. Leave yourself plenty of time and space to write a thoughtful analysis of this issue. Since this paper is not overly long (I don't expect much more than 4 pages, but 4 pages IS a strict minimum), there is no room for fluff. Don't try to spread a weak analysis very thinly over two pages. The whole idea is that you probe this issue thoroughly enough to learn something completely new and perhaps to contribute something new and different to the class discussion.

Your paper should include references and a bibliography. The format for the references should be kept simple, like this: Suppose you have an article from Nature by Carl Sagan written in 1990 as your primary source, along with an article written by Sagan in 1992 as one of your secondary sources. When you are quoting directly or indirectly, put the reference author's last name and year of the article after the quote, like this (Sagan 1990). At the end of your paper, list each reference, and it will be clear whom and what you are quoting. You'll find that this is the way references work in most scientific papers, and it is one of the simplest ways to do it.

I do expect plenty of evidence of your own research in this paper, but I don't want a series of quotations strung together. Don't insert long quotations just to add length to the paper. If you put in a quotation, I expect it to be analyzed and explained in full, so please don't insert extraneous quotations.

You will be graded for neatness (please type), completeness, adherence to the terms of the assignment, writing style and your ability to show an understanding of the material (both actually knowing it and being able to effectively communicate it). Be sure to include a copy of your source article with your paper and to attribute your source whenever you use ideas from it in your paper.

This assignment will be due on the same date as the other Skylabs. Same rules for late work apply.

Summary of things you must turn in:

April 25 - Concept paper, primary source
May 27 - Concept paper (again), primary source (again), term paper, bibliography