

# REPORTS

Due 2:40pm Wednesday 13 August 2008

Astro/EPS C12 -- Mike Wong

This sheet describes the two reports that are each worth 20 points. Your lowest problem set or report grade will be dropped, so out of four problem sets and two reports, only the best five grades will count. Reports are due the day before the final, but can be turned in early.

## 1. Robotic exploration of the solar system. 20 points.

Spacecraft from many different countries (and groups of countries) have taught us much of what we know about the solar system. These robotic explorers have visited all of the planets, as well as many asteroids, comets, and moons. Choose one spacecraft mission as the focus of your report. Here are the requirements:

**Length:** At least 600 words, or 2.5 double-spaced pages of text. Only the body of the report is counted to determine this length. Bibliography, titles, etc. do not count toward the 600-word total.

**Content organization:** Organize your report into a few short sections. As a minimum, include an overview of the mission, and a section on important discoveries resulting from the mission.

**Figures:** Optional, but may be included to support the text.

**Reference list (or bibliography) and citations:** Include a list of sources for your report, and cite the sources within the text of your report. As a style example, you could say something like: "The scale height of Pluto's atmosphere was found by analyzing the lightcurve of a stellar occultation observed in 1988 [1]. Scale height depends on both the atmospheric temperature and the molecular mass [2]."

Of course, your report will be much more exciting than this example. The [1] and [2] will point me to your list of references, where [1] could be *Pluto and Charon*, and [2] could be the Technical Supplement.

**Choice of references:** *AT LEAST one reference should be a book.* The Physics/Astronomy Library in 351 LeConte has many relevant books about solar system science, and would be a good starting point for learning about spacecraft missions. Other references can include magazine or journal articles, and websites. *Use at least three separate references.*

**Writing:** This is not an English class, so writing style is not a large part of the grade, but please try to use your best English grammar, punctuation, and spelling. However, especially if your English skills are not that good, it is much more important to:

**USE YOUR OWN WORDS:** Do not copy text directly from sources. This is considered plagiarism, and is against University policy. The only way to earn credit for this assignment is to summarize or restate things in your own words.

## Bibliography format.

Please format your reference list to include complete bibliographic information. For each report, you should include at least three separate references. If your style of reference is different from the entries below, you will not lose points. However, if you omit information (like the publisher, the year, etc.) you will lose points for incomplete references. Samples are given here for references to content in a book [1], a magazine article [2], and a webpage [3].

[1] Lang, Kenneth, 2003. *The Cambridge Guide to the Solar System*. Cambridge University Press, Cambridge UK, pp. 86–89.

[2] Atreya, Sushil K., 2007. The Mystery of Methane on Mars and Titan. *Scientific American* 296(5), pp. 42–51.

[3] Nemiroff, Robert and Bonnell, Jerry. Jupiter's Three Red Spots. *Astronomy Picture of the Day*, <http://apod.nasa.gov/apod/ap080523.html>. Accessed on 2008 July 24.

## 2. Comparative planetology. 20 points.

This course focuses on the study of Pluto and Charon, but there are many other interesting objects in the solar system as well. There are many parallels between Pluto studies—including the techniques of investigation, and Pluto’s characteristics, history, and active processes—and the study of other solar system bodies.

For this report, select two solar system bodies (do not choose Pluto or Charon), and compare and contrast one aspect of the two bodies. You could also compare an extra-solar planet to a solar system planet.

For example, you could compare Jupiter’s moon Io and Saturn’s moon Enceladus. You could focus on how outgassing on both Io and Enceladus leads to atmospheric escape, resulting in a ring of gas encircling Jupiter at Io’s distance and a ring of gas encircling Saturn at Enceladus’ distance.

**Outline:** Please show me a very brief outline (3–5 lines of text), by Tuesday August 5, so that I know you’re on the right track. We can discuss this face to face, or you can submit an outline by email by August 5. I do not want any late emails, so after August 5 please only discuss the outline with me in person. Although you can still submit the report without a pre-approved outline, you risk losing points if your report is inaccurate, if your topic is low in scientific significance, or if the report is otherwise inappropriate.

**Length:** At least 500 words, or 2 double-spaced pages of text. Only the body of the report is counted to determine this length. Bibliography, titles, etc. do not count toward the 500-word total.

**Content organization:** Organize your report into a few short sections. As a minimum, include an introduction to the two bodies being compared, a section on methods of study (how do we observe the gas/plasma torus encircling Jupiter at Io’s distance?), and a section that compares and contrasts this aspect of the two objects.

**Figures:** Optional, but may be included to support the text.

**Reference list (or bibliography) and citations:** Include a list of sources for your report, and cite the sources within the text of your report. As a style example, you could say something like: “The scale height of Pluto’s atmosphere was found by analyzing the lightcurve of a stellar occultation observed in 1988 [1]. Scale height depends on both the atmospheric temperature and the molecular mass [2].”

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