

# ASTRONOMY 2232G: Sun, Earth and Planets

## 2008-2009: winter term

*All registered students are expected to have read this course outline carefully.*

### General Information:

- **Lectures:**  
Tuesday & Thursday from 11.30am to 12.30pm, Kresge Building K203
- **Instructor:**  
Prof. Els Peeters  
Rm 213 PAB  
phone: 661-2111 extension 80973
- **Office Hours:**  
Tuesday 2.30-3.30pm or by appointment (e-mail preferred).
- **Teaching Assistant:**  
Talayah Hezareh  
Rm 207 PAB
- **Course Website:**  
WebCT OWL: <http://owl.uwo.ca>
- **Course e-mail:**  
[a2232-at-astro.uwo.ca](mailto:a2232-at-astro.uwo.ca)
- **Required textbook:**  
“An introduction to the solar system” by P.A. Bland, N. McBride, E.A. Moore, M. Widdowson and I. Wright, eds. N. McBride and I. Gilmour, 1<sup>st</sup> co-published, edition 2004. Available in the UWO bookstore. The textbook is on reserve in the Allyn & Betty Taylor library.

### Course Description:

- **Calendar description:**  
A survey of the contents of the solar system and space science phenomena, with emphasis on processes that are common to planets and solar system bodies. Advances in solar system understanding and space science will be highlighted with particular attention to recent results from space missions and contemporary ground-based observations.
- **Prerequisite/Antirequisite:**  
Antirequisite(s): Astronomy 2201A/B, the former Astronomy 221a/b, 231F/G.  
Prerequisite(s): 1.0 university course in Mathematics, Chemistry, Computer Science, Earth Sciences or Physics.  
It is your responsibility to make sure you either comply with the prerequisites/antirequisites for this course or have written special permission from your Dean to enroll in it. If not, you may be removed from this course and it will be deleted from your record. This decision may not be appealed. You will receive no adjustment to your fees in the event that you are dropped from a course.

- **Course Outline:**

The course is intended to offer a detailed survey of what is presently known about the solar system and its constituents. We will cover the following topics:

1. A tour of the solar system
2. The internal structure of the terrestrial planets
3. Planetary volcanism
4. Planetary surface processes
5. Atmospheres of terrestrial planets
6. The giant planets
7. Minor bodies in the solar system
8. The origin of the solar system
9. Meteorites: a record of formation
10. Extra-solar planets

Course content may vary.

Some of the course material will be descriptive. This is partly because a descriptive knowledge of what is known is a necessary background for understanding how objects in the solar system have formed and changed. It is also partly because much of this material is in itself quite interesting; it is hard to imagine here on earth the variety of bodies found orbiting our sun. However, you should always focus your attention particularly on the aspects of the material that require understanding. An important objective of the course is to gain skill at reading critically the scientific literature at the level of Scientific American.

- **Lectures Slides:**

Much of the material provided in the lectures will be posted on the course website for ease of future reference. You will still be expected to take notes during the class which will cover the numerous discussion topics/informational tidbits not found in the formal class presentations.

- **Mark distribution:**

- Assignments (2): 20%
- Midterm: 30%
- Final exam: 50%

**A student whose weighted average of the midterm and the final exam is less than 50% cannot obtain a passing grade for the course.** This means that failing both exams equals failing the course, even if your final mark is higher than 50%.

- **Description of examinations:**

- One 50 minutes midterm (multiple-choice, short answer questions, essay questions; closed book)
- One 3-hour final exam (multiple-choice, short answer questions, essay questions; closed book; cumulative)

- **Course Calendar:**

- Assignment due dates to be announced in class.
- Midterm: February 26 during class hours in Rm KB-K203.
- Final exam: during April exam period. Details to be announced.
- Last day to drop this course: February 15
- Last day to add this course: January 13

## Course policies & friendly reminders from UWO:

- **Assignments:** Assignments must be submitted both by hardcopy and electronically on the requested date **before** 12pm, i.e. they have the same deadline. The electronic copy must be submitted through WebCT. The hardcopy must be turned in at the main office of Physics and Astronomy (Rm 125, PAB). There is no grace period: missing either the hardcopy deadline or the electronic submission deadline will result in a mark of zero.
- **Missed mid-term exam:** Documentation must be provided to the academic counselors in your faculty in order for you to receive permission to write a make-up exam (see item on medical or other serious circumstances below). If you miss the make-up, again documentation must be provided in order for you to obtain a new evaluation scheme as follows: assignments - 20%; final exam - 80%. At any time, you must contact your instructor immediately.
- **Missed final exam:** Documentation must be provided to the academic counselors in your faculty in order for you to receive permission to write a make-up (see item on medical or other serious circumstances below). If you miss the make-up, again documentation must be provided in order to receive permission to write the exam at the next sitting of this course's final exam (typically one year later). At any time, you must contact your instructor immediately.
- **Medical or other serious circumstances:** If you are unable to meet a course requirement due to illness or other serious circumstances, you must provide valid medical or other supporting documentation to the academic counselors in your faculty as soon as possible and contact your instructor immediately. It is the student's responsibility to make alternative arrangements with their instructor once the accommodation has been approved and the instructor has been informed. In the event of a missed final exam, a Recommendation of Special Examination form must be obtained from the Deans office immediately. For further information please see:  
<http://www.uwo.ca/univsec/handbook/appeals/medical.pdf>  
A student requiring academic accommodation due to illness, should use the Student Medical Certificate when visiting an off-campus medical facility or request a Records Release Form (located in the Deans Office) for visits to Student Health Services. The form can be found here:  
[https://studentservices.uwo.ca/secure/medical\\_document.pdf](https://studentservices.uwo.ca/secure/medical_document.pdf)
- **Questions:** Before contacting the instructor or the teaching assistant, make sure you have carefully read this document and the Frequently Asked Questions (FAQs) on the course website. Questions already addressed will not be answered.
- **E-mail:** When sending an e-mail, please use your UWO account to make sure your message is not treated (i.e. deleted) as spam. If you want your message to be read, use only the course e-mail address (listed above); i.e. do not use our personal e-mail addresses at Western.
- **Course Website:** The course website will be the only medium where course materials are distributed, where announcements are made, where you can access your marks for various components of this course. It is your responsibility to check the course website frequently.
- **Classroom Conduct:** Disruptive behavior will not be tolerated in class or on the course website. Please respect the rights of your classmates to benefit from the lecture by limiting your conversations to those essential to the class. Students who persist in loud, rude or otherwise disruptive behavior will be asked to leave.
- **Exam Policy:**
  - **No** electronic devices, no extra sheets, no calculator will be allowed during the exams.
  - **No** make-up exams will be given to accommodate travel!
  - The exams are based on the material covered in class, all of the class slides, the corresponding textbook sections and distributed course notes whenever appropriate. Material from the textbook

that is not discussed in class or in the notes will not be tested on any exam.

- All exams in this course may contain multiple-choice questions. Since the scantron forms used for these exams are computer-marked and cannot be processed when filled out in ink, you should bring a pencil to the exams.

- **Academic Offenses:**

Students must write their assignments **entirely** in their **own** words. Unacknowledged quotations are plagiarism. Plagiarism is a major academic offense.

Scholastic offenses are taken seriously and students are directed to read the appropriate policy, specifically, the definition of what constitutes a Scholastic Offense, at the following website :

<http://www.uwo.ca/univsec/handbook/appeals/scholoff.pdf>.

All required papers will be subject to submission for textual similarity review to the commercial plagiarism detection software under license to the University for the detection of plagiarism. All papers submitted for such checking will be included as source documents in the reference database for the purpose of detecting plagiarism of papers subsequently submitted to the system. Use of the service is subject to the licensing agreement, currently between The University of Western Ontario and Turnitin.com (<http://www.turnitin.com>).

Computer-marked multiple-choice exams may be subject to submission for similarity review by software that will check for unusual coincidences in answer patterns that may indicate cheating.

## **Critical Assessment of Scientific Articles:**

In reading (or writing an essay about) the type of scientific arguments encountered in this course you should bear in mind the following points.

Usually your reading will include one or more theories which have been proposed to account for physical phenomena which are observed (or believed to exist).

- How accurately known, or how well observed is the phenomenon to be explained? It is pointless providing an incredibly accurate explanation for something that is only rather poorly quantified.

- What assumptions have gone into the theory? What effect do you think that these assumptions will have? How have the authors proposed to test their theory?

- All evidence that has a bearing on the subject is relevant. How important is each piece of evidence? Is a particular fact crucial or rather peripheral?

- Is contradictory evidence discussed clearly? Are the contradictory facts a serious problem, or is it likely that they appear to be contradictory because of the assumptions made in the explanation and could, perhaps, be explained by a more detailed investigation?

- Do the authors make a consistent argument or are there gaps left in their argument? There may well be gaps - are they honest about them and do they discuss them?

- Form your own critical opinion on the subject. Don't assume that the viewpoint of the article is correct just because it is in print or because the authors say that it is the only plausible explanation.

## **General Instructions for Writing Essays:**

- Think carefully about the organization of your essay. Make sure the order of presentation and logic are clear. Good organization is one of the most important features of a good essay, and this aspect is considered quite seriously in marking. Having a good, detailed outline before you start writing makes the actual job of writing much easier.

- Write clearly, carefully, and succinctly and then check your paper for grammatical and spelling errors.

Your model for style should be Scientific American articles, not the informal language that many people use with their friends.

- Do not use any direct scientific quotations in the body of your essay. It should be written entirely in your own words. (The reason for this rule is to discourage you from letting the original article do your work for you - it has to be your writing, not someone else's.) Unacknowledged quotations are plagiarism, and will lead to a mark of 0.

- You may include illustrations if you wish, but this is not necessary. Include a bibliography of all the articles that contributed significantly to your essay. References/citations should be consistent with the ApJ reference style guidelines:

<http://www.journals.uchicago.edu/ApJ/information.html>; manuscript preparations and instructions; Instructions for preparing specific aspects of an ApJ paper; References.

- You may make use of the internet as a secondary means of researching your topic but do *not* rely on any internet information as a primary source for your essays. In particular, do not cut and paste material from websites into the text of your essay. Use your own words to summarize important points.

- **All essays must be submitted in both hardcopy and electronic form.** All required papers will be subject to submission for textual similarity review to the commercial plagiarism detection software under license to the University for the detection of plagiarism.