

Earth Sciences 1086G

Origin and Geology of the Solar System

Instructor

Phil McCausland (pmccausl@uwo.ca; but please make primary contact through OWL)

TAs

- Rohan Aranha
- Jessica Stromberg
- Mengmeng Qu
- Zijun Liu
- Jayashree Sridhar

Communication with the TAs and course instructor will take place through the on-line portal (using the OWL 'messages' tool).

Course Description

This half-course will explore the solar system; we will look at our star (Sun), planets and their satellites, asteroids and comets, and we will consider the hypotheses and theories that attempt to explain their origins. As much as is possible, we will see how our knowledge of Earth's geology applies to other bodies in the solar system. We will end the course with a discussion of potential extraterrestrial life. As technology improves and as more and more space vehicles probe beyond Earth, knowledge expands dramatically; thus, there is no way that all hypotheses and facts documented in this course will remain unchallenged even over the three months of the course. As much as possible, we will note new hypotheses and new exploration data with weekly postings on the course forum. You have a role here as well, in that you can introduce questions or observations for discussion!

We emphasize qualitative approaches to the topics included, thus is appropriate for all students, irrespective of backgrounds. The course is offered *on-line only*. Course content is available on-line only. It is your responsibility to maintain access to the internet for the duration of the course.

Course Objectives

- The primary goal of the course is to gain an appreciation of what we know about the solar system, and how we know what we know.
- We will learn to recognize the processes of evolution of a star-planet system, and we will see that the evolution we know best – that of Earth – may not apply well elsewhere.
- We need to understand the logic of a scientific study: from observation and gathering of evidence to hypothesis and, eventually, refined theory.
- We will learn to write a scientific report; an assigned topic will be researched and presented in scientific format.

Grading

- Mid-term examination: 30%
- Final examination: 35%
- Report (assigned topic): 30%
- Graded quizzes (completed prior to final exam): 5%

Exams

- The mid-term exam will cover the first half of the course (Chapters 1-9 inclusively), and the final exam will cover the second half of the course (Chapters 10 – 19 inclusively).
- Both the mid-term and final exams may include fill-in-the-blank, multiple choice, and short answer questions as well as longer answer, essay style questions.

Quizzes

- There are 8 graded quizzes. You must take the quizzes before the last day of classes (**April 8, 2014**). You can take these at any time between the release date and the deadline, but it is recommended that you take them as you read through the chapters. There are also 8 self-tests; these are not graded, and are available to you as practice quizzes.
- Spelling and grammar do count on the quizzes! These are online quizzes, so misspelled words will not be recognized. Please **DO NOT** message me asking for a mark because you misspelled a word, or added unnecessary words to your answer. For example, if I ask “Mars is the colour ____ due to its iron oxide dust”, your answer should be “red”. It should not be “red colour” or “the colour red”, because that does not fit into the sentence. Because these are open-book quizzes, you have the time and resources to have proper spelling and grammar.

Report

- You have a choice between two assigned topics for your Report. You only need to do one of the two topics, and will only be assessed for the one that you submit.
- Your Report may be submitted anytime up to 5 minutes before midnight of the stated due date; after the due date a penalty of **minus 10% per day** will be applied, up to 5 days late (reports will not be accepted after 5 days past submission deadline). Reports may be submitted without penalty only upon receipt of documented (and approved) evidence of medical issues that precluded submission time (this must be brought to your academic counselor). All questions regarding report grading should be first brought up with the TA marking the report.
- When you submit your report, you will get a Turn-It-In score. This score should be below 30%. **Note that you can submit your report more than once, so that you can check your Turn-It-In score and also improve your submission.** You can submit up to five times, but be aware that submissions after the deadline will still be considered “late” even if you had a draft version already in before the deadline!
- Your TA will investigate your report if the Turn-It In score is higher than 30%. If your score is higher than 50%, you will get an automatic zero, and you will be reported to the Dean. Plagiarism is a serious offense (see note on plagiarism below), and is treated seriously in this essay class.

- This report is a great opportunity for you to become familiar with scientific writing. This is a new and different way of writing for many of you, so please read the comments given to you by your TA. I also encourage you to email your TA and arrange a time to meet and discuss how to improve your writing!

Online Forums

The OWL Sakai website has a forum feature that you can use to discuss topics related to class material with your classmates. Feel free to ask each other questions, answer other people's questions, and make comments. I will be monitoring the forum at least three times per week, and I expect that all class participants will read and contribute to the forum. If you have any questions, please message me directly and I will respond. Please keep your comments clean, respectful, and on-topic.

...Bonus marks may be awarded for relevant and constructive online contributions at the sole discretion of the course instructor.

Important dates

Mid-term test: **to be confirmed, provisionally February 8th**

Report: **Monday, March 10th, 2014**

All Quizzes **Tuesday, April 8th, 2014**

Final exam date will be set by the Registrar's office.

Academic offences (Please READ THIS!)

Electronic devices are not permitted during either the mid-term or end-of-term examinations. This includes cell-phones, iPads, tablets, and iPods. They must be turned off and put in your bags. They are not allowed in your pocket.

Scholastic offences are taken seriously and students are directed to read the appropriate policy, specifically, the definition of what constitutes a Scholastic Offence, at the following Web site:
<http://www.uwo.ca/univsec/handbook/appeals/scholoff.pdf>

Plagiarism is a **serious academic offence**. The UWO Senate Academic Handbook defines plagiarism as "The act of appropriating the literary composition of another, or parts or passages of his writings, or the ideas or language of the same, and passing them off as the product of one's own mind." Students must write their assignments in their own words. Whenever students take an idea, or a passage from another author, they must acknowledge their debt by using both quotation marks where appropriate and proper referencing such as footnotes or citations. For more information see Scholastic Offence Policy in the Western Academic Calendar.

Please note: When you write your report, you are **not** allowed to copy and paste **ANYTHING** (even if it's just a sentence!) from **ANYWHERE**. This includes websites, papers, books, other students, etc. You are not allowed to copy and paste paragraphs and then change several words. You must gather ideas for your report then **write the entire paper in your own words**. I cannot stress this enough. If any part of

your paper is determined to be plagiarized, that part of your paper will **NOT** be marked. **NO EXCEPTIONS!!**

Plagiarism-checking software will be used for the report assignment. 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 will be included as source documents in the reference database for the purpose of detecting plagiarism of papers submitted to the system. Use of the service is subject to the licensing agreement, currently between Western University and Turnitin.com (<http://www.turnitin.com>).

The course is available (upon registration) at <https://owl.uwo.ca/portal> .

Help with computer problems encountered either during initial setup or during the course should be addressed to ITS: <http://www.uwo.ca/its/>

General information about Distance Studies courses, including viewing exam schedules, is available at: http://www.registrar.uwo.ca/applying/distance_studies/

Student's responsibilities in the event of a medical issue

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 Dean's office 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 Dean's Office immediately. A list of forms can be found here:

http://www.registrar.uwo.ca/general-information/forms_listing.html

No accommodations will be given without documentation, and you must contact the instructor before the deadline or exam, unless you are physically unable to do so.

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 Dean's Office) for visits to Student Health Services. The form can be found here:

https://studentservices.uwo.ca/secure/medical_document.pdf

Accessibility Statement

Please contact the course instructor if you require material in an alternate format or if you require any other arrangements to make this course more accessible to you. You may also wish to contact Services for Students with Disabilities (SSD) at 661-2111 x82147 for any specific question regarding an accommodation.

ES 1086G Course Outline

Each Unit contains an Introduction, Study Guide, a Self-test and a Graded Quiz. The study guides are a starting off point for you to begin your studies. Remember that ALL material is testable; it is not limited to that which is on the study guide.

1. Unit 1: Basic concepts
 - Chapter 1 – Scientific Theory and the Big Bang
 - Chapter 2 – Time and Space
 - Chapter 3 – Matter and the Nebular Hypothesis
2. Unit 2: The Solar System
 - Chapter 4 – A Star called Sun
 - Chapter 5 – Geometry of the Solar System
3. Unit 3: The Terrestrial Planets
 - Chapter 6 – When two planets collide
 - Chapter 7 - Earth
 - Chapter 8 – The Moon
 - Chapter 9 – Mercury
 - Chapter 10 – Venus
 - Chapter 11 – Mars

the Mid-term covers up to the end of Chapter 9

4. Unit 4: From Asteroids to Meteorites
 - Chapter 12 – Asteroids
 - Chapter 13 – Meteorites
5. Unit 5: The Gas Giant Planets
 - Chapter 14 – Jupiter and family
 - Chapter 15 – Saturn and family
 - Chapter 16 – Uranus and Neptune
6. Unit 6: Plutoids, TNOs and Comets
 - Chapter 17 – Plutoids and TNOs
 - Chapter 18 – Comets
7. Unit 7: Extraterrestrial Life
 - Chapter 19 – Life in the Universe

Suggested weekly schedule

Week 1: January 6-10

- Introductory materials and familiarize yourself with OWL
- Chapter 1

Week 2: January 13-17

- Chapter 2
- Chapter 3
- Quiz 1

Week 3: January 20-24

- Chapter 4
- Chapter 5
- Quiz 2

Week 4: January 37-31

- Chapter 6
- Chapter 7

Week 5: February 3-7

- Chapter 8
- Chapter 9
- Quiz 3a
- prepare for midterm test

Week 6: February 10-14

- Chapter 10

Week 7: February 17-21 READING WEEK

Week 8: February 24-28

- Chapter 11
- Quiz 3b

Week 9: March 3-7

- Chapter 12
- Chapter 13
- Quiz 4

Week 10: March 10-14

- Chapter 14

Week 11: March 17-21

- Chapter 15
- Chapter 16
- Quiz 5

Week 12: March 24-28

- Chapter 17
- Chapter 18
- Quiz 6

Week 13: March 31-April 4

- Chapter 19 + Quiz 7