

Earth Sciences 1086F: Origin and Geology of the Solar System (Summer Distance)

Instructor

Tony Withers

TAs

- TBA

Each course participant will be assigned a TA at the start of the course.

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.

This half-course emphasizes 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 scientific reports; two assigned topics will be researched and presented in scientific format.

Grading

- Mid-term examination: 35%
- Final examination: 40%
- Assignments (2 written assignments): 20%
- 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 longer format written answer questions.

Quizzes

- There are 8 graded quizzes. You must take the first three Quizzes (1-3a) before **June 13th** and the remaining five Quizzes (3b-7) before the last day of classes (**July 25th**). You can take these at any time between the release date and the relevant 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 count on the quizzes! These are online quizzes, so misspelled words will not be recognized.

Assignments

- Assignments 1 and 2 may be submitted anytime up to 5 minutes before midnight of the stated due date; after the due date a penalty of **minus 10% (absolute) per day** will be applied, up to 3 days late (reports will not be accepted after 3 days past submission deadline). Assignments may be submitted without penalty only upon receipt of documented (and approved) evidence of medical issues that precluded timely submission (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%. Your TA will investigate your report if it 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 class.
- These reports are 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 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.

Important dates

Assignment 1: **Friday, June 6th**
Quizzes 1-3a: **Friday, June 13th**
Mid-term test: **to be confirmed, provisionally June 14th**
Assignment 2: **Friday, July 18th**
Quizzes 3b-7 **Friday, July 25th**

Final exam date will be set by the Registrar's office (UWO's exam period runs **July 28th to July 31st**).

Academic offences (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/ombuds/pdf/academicintegrity.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 two report assignments. 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 subsequently 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 academic counsellor 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 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 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.

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: May 5-11

Introductory materials and familiarise yourself with OWL
Chapter 1

Week 2: May 12-18

Chapter 2
Chapter 3
Quiz 1

Week 3: May 19-25

Chapter 4
Chapter 5
Quiz 2

Week 4: May 26-June 1

Chapter 6
Chapter 7

Week 5: June 2-8

Chapter 8
Chapter 9
Quiz 3a

Week 6: June 9-15

Chapter 10
prepare for midterm test

Week 7: June 16-22

Chapter 11
Quiz 3b

Week 8: June 23-29

Chapter 12
Chapter 13
Quiz 4

Week 9: June 30-July 6

Chapter 14

Week 10: July 7-13

Chapter 15
Chapter 16
Quiz 5

Week 11: July 14-20

Chapter 17
Chapter 18
Quiz 6

Week 12: July 21-25

Chapter 19
Quiz 7