

Earth Sciences 1086G: Origin and Geology of the Solar System

Winter 2020

Instructor: Dr. Elizabeth Webb, Department of Earth Sciences.

I encourage you to post questions about the course content in the online Forums. If you need to contact me about something personal, please email at ewebb5@uwo.ca and put the course code (1086F) in the subject line. Please read the syllabus before asking or posting a question.

Course Description

This half-course will explore the Solar System; we will look at our star (the Sun), the planets and their satellites, and other bodies such as asteroids and comets. We will consider the hypotheses and theories that attempt to explain their origins. We will see how our knowledge of Earth's geology applies to other planetary 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.

This course emphasizes qualitative approaches to the topics included, thus is appropriate for all students, irrespective of backgrounds. Course content is available *online only* (no textbook). 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 recognise 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; an assigned topic will be researched and presented in scientific format.

Important dates

- Essay submission #1 deadline: **Thursday, February 13th at 3:00 pm**
- Mid-term test: **Saturday, February 29th (time and location TBD)**
- Quizzes 1-3b: **Saturday, February 29th at 11:55pm**
- Revised essay submission #2 deadline: **Thursday, March 26th at 3:00 pm**
- Deadline to post in the Forums, read required forum posts and participate in polls: **Friday April 3 at 3:00 pm**
- Quizzes 4-7: **Friday April 3rd at 11:55 pm**
- Final exam set by the Registrar's office. Please check the exam period on the [distance studies web page](#) before making any travel arrangements!

Method of Evaluation

- ❑ 25% Mid-Term 2 hour written examination
Midterm Exam is Saturday, February 29th (time and room TDB)
 - Fill-in-the-blank, multiple choice, and short-answer questions.
 - *This covers Units 1, 2 and 3 inclusive (to the end of Chapter 11)*
 - Make-up midterm will be held on Wednesday March 4th @ 6 pm
You can only take the make-up with permission from an academic counsellor.
- ❑ 25% End-of-Term 2 hour written examination
Date, time and location to be determined by the Registrar's office
 - Fill-in-the-blank, multiple choice, and short-answer questions.
 - *This covers the second half of the course: Units 4, 5, 6 & 7 inclusive (to the end of Chapter 19). The exam is not cumulative.*
- ❑ 35% Scientific Report (Assigned Research Topic). Submitted in 2 parts: *See the Assignment Information provided on OWL.* Because this is an essay course, the written assignment must be completed and you must achieve of grade of at least 50% on the second version to pass the course.
 - ❑ 17.5% Submission of first version : **Due Thursday February 13th at 3:00 pm**
 - ❑ 17.5% Submission of second version: **Due Thursday, March 26th at 3:00 pm**
- ❑ 5% Participation
 - 2% for posting at least 1 thoughtful question/comment/answer in AND reading 50% of the posts in the Forum "Suggested Exam Questions" by **Friday April 3rd, 3:00 pm**
Some of the suggested questions will be used on real exams.
 - 2% for posting at least 1 thoughtful question/comment/answer in AND reading 50% of the posts in the Forum "General Discussion" by **Friday April 3rd, 3:00 pm**
 - 1% for participating in polls distributed throughout the course notes by **Friday April 3rd, 3:00 pm**
- ❑ 10% Graded Quizzes (at intervals during the course; see *Weekly Schedule*)
Quizzes 1, 2, 3a and 3b must be completed by **Saturday February 29th at 11:55 pm.**
Quizzes 4, 5, 6 and 7 must be completed by **Friday April 3rd at 11:55 pm.**
 - There are 8 graded quizzes. 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.
 - The quizzes are automatically administered through the OWL system. **Don't wait to submit your quizzes until the last minute!** Last minute computer problems will not be accepted as grounds for accommodation.
 - No one will be permitted to complete a quiz after the due dates.

Scientific Report (essay)

- Details about the requirements for the Scientific Report (essay) can be found on the OWL site under “Assignments”.
- Because this is an “essay course” completion of the essay assignment and a grade of 50% in the second submission are required to pass the course.
- The essay is worth 35% and is submitted in two different versions. The first version will be worth 17.5% of your course grade. You will receive feedback on this version that you can use to improve your essay and resubmit for the second version, which is also worth 17.5% of the course grade. Revising your essay to improve its content, based on feedback from your TA, is an opportunity both to improve your writing and to increase your grade.
- The revised (second) version of the essay may be submitted at any time up to the final submission deadline. **If you do not make any revisions or if you do not submit a second version you will receive the same mark on both “versions”.**
- Every effort will be made to complete the grading of the essay in a timely fashion.
- Questions about the essay should be posted to the forum or communicated to your TA or instructor in an email.
- All essay submissions must be made through the OWL submission system. Mail attachments will not be graded.
- When you submit an assignment you will receive an email receipt from OWL and an email receipt from Turnitin.com. **Keep these for your records.**
- Submission problems must be communicated to the instructor and TA before the deadline.
- **Late assignments** submitted within two hours of the deadline will receive a 2% penalty.
- For 5 days following those “**Due Dates**” (including weekend days) reports may be submitted, but will be subject to a mark deduction of 10 % per late day. No reports will be accepted after that. Late penalties may be reduced only upon the recommendation of an academic counsellor.
- When you submit your report, you will get a **Turnitin score**. Scores of up to 30% are not unusual in this kind of writing, but scores in excess of 40% could indicate a problem. Your TA will use the Turnitin report to check for originality in the written content. **If evidence of plagiarism is found, 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.

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 all class participants are required to read and contribute to the forum. If you have any personal questions, you can email the instructor directly and I will respond. Before sending an email message, consider posting your query to the forum where you may get a quicker response and allow other students to benefit from the discussion. Some information may be communicated only through the forum, so **be sure to check regularly for new forum posts**. Please keep your comments clean, respectful, and on-topic.

Before the deadline on **Friday, April 3rd at 3:00 pm**, you are required to:

- Make one original and thoughtful post in the **Write an Exam Question** Forum topics (just once for the whole term in any topic, not once per topic).
This is worth 1% of your grade. Further details are in the Forum description on OWL.
- Make one original and thoughtful post in the **General Discussion** Forum topics (just once for the whole term in any topic, not once per topic).
This is worth 1% of your grade. Further details are in the Forum description on OWL.
- You are required to read 50% of the posts in the **Write an Exam Question** Forum (1%)
- You are required to read 50% of the posts in the **General Discussion** Forum (1%)
- There are polls scattered throughout the course notes – please complete the polls and see how your classmates responded. **This is worth 1% of your grade.**

Academic offences

Electronic devices are not permitted during either the mid-term or end-of-term examinations. These include 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/pdf/academic_policies/appeals/scholastic_discipline_undergrad.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 proper referencing. For more information see Scholastic Offence Policy in the Western Academic Calendar.

Please note: When you write your essay, you are **not** allowed to copy and paste **ANYTHING** (even if it's just a sentence!) from **ANYWHERE**. This includes text from 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**. If *any* part of your paper is determined to be plagiarized, that part of your paper will **NOT** be marked. **NO EXCEPTIONS!**

Plagiarism detection software: 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>).

Multiple Choice: Computer-marked multiple-choice tests and/or exams may be subject to submission for similarity review by software that will check for unusual coincidences in answer patterns that may indicate cheating

Students' 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 an academic counsellor in your home 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 immediately from an academic counsellor.

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 (including stress/anxiety) should obtain documentation from a doctor.

Support Services

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: https://www.registrar.uwo.ca/academics/distance_studies.html

Instructions for how to contact the Student Development Centre are given here: <http://www.sdc.uwo.ca/>

Students who are in emotional/mental distress should refer to Mental Health@Western (<http://www.uwo.ca/uwocom/mentalhealth/>) for a list of options about how to obtain help. If you are confused about who to contact, please email me (your instructor) for help.

SDC's Learning Skills Services: Rm 4100 WSS, <http://www.sdc.uwo.ca/learning>. Counsellors are ready to help you improve your learning skills. They offer presentations on strategies for improving time management, multiple-choice exam preparation/writing, textbook reading, and more. Individual support is offered throughout the Fall/Winter terms in the drop-in Learning Help Centre, and year-round through individual counselling.

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, a Self-Test and a Graded Quiz. The “Learning Goals” in the Unit Introductions are a starting off point for you to begin your studies. More detailed information on what to study is provided in the “Study Guides” that can be found in the section “Reading and Studying the Material” under the Course Notes.

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 exam covers up to the end of Chapter 11 *

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

* the Final exam covers the Unit 4 Intro to Chapter 19 *

Suggested weekly schedule

This is a suggested schedule – you should plan your own schedule according to your reading speed and your other obligations. There are 3 weeks without suggested readings to allow time to work on your essays and study for the midterm. Plan ahead, read regularly and keep up with the chapters. Numbers in parenthesis are approximate # of pages of text/week without figures.

Week 1, starts January 6 (~14 pages)

- ☐ Start work on the essay as soon as your schedule will allow (due in ~5.5 weeks)
- ☐ Read the introductory materials and familiarise yourself with course site on OWL
- ☐ Unit 1 Introduction
- ☐ Chapter 1
- ☐ Chapter 2

Week 2, starts January 13 (~24 pages)

- ☐ Chapter 3
- ☐ Quiz 1
- ☐ Unit 2 Introduction
- ☐ Chapter 4

Week 3, starts January 20 (~31 pages)

- ☐ Chapter 5
- ☐ Quiz 2
- ☐ Unit 3 Introduction
- ☐ Chapter 6
- ☐ Chapter 7

Week 4, starts January 27 (~28 pages)

- ☐ Chapter 8
- ☐ Chapter 9
- ☐ Quiz 3a
- ☐ Chapter 10

Week 5, starts February 3 (~21 pages)

- ☐ Chapter 11
- ☐ Quiz 3b
- ☐ This is the end of the material that will be on the midterm

Week 6, starts February 10 (no readings)

- ☐ Deadline for essay submission: **Thursday February 13th, 3:00 pm**

Week 7, starts February 17 - READING WEEK

- ☐ Use this time to catch up on any readings.
- ☐ Study for your midterm which is **next week**
- ☐ Look for the study guides provided at the beginning of the course notes under “reading and studying the material”.

Week 8, starts February 24 (~26 pages)

- ☐ Unit 4 Introduction
- ☐ Chapter 12
- ☐ Chapter 13
- ☐ Quiz 4
- ☐ Midterm on **Saturday, February 29th** (time and location to be announced)
- ☐ Deadline for Quizzes 1-3b: **February 29th, 11:55 pm**

Week 9, starts March 2 (~22 pages)

- ☐ Unit 5 Introduction
- ☐ Chapter 14

Week 10, starts March 9 (~29 pages)

- ☐ Chapter 15
- ☐ Chapter 16
- ☐ Quiz 5

Week 11, starts March 16 (~24 pages)

- ☐ Unit 6 Introduction
- ☐ Chapter 17 Pluto
- ☐ Chapter 18 Comets
- ☐ Quiz 6
- ☐ (The second essay deadline is next week)

Week 12, starts March 23 (no readings)

- ☐ Deadline for revised essay: **Thursday, March 26th, 3:00 pm**

Week 13, starts March 30 (~16 pages)

- ☐ Unit 7 Introduction
- ☐ Chapter 19
- ☐ Quiz 7
- ☐ Deadline for polls, posting and reading Forums: **Friday April 3, 3:00 pm**
- ☐ Deadline for Quizzes 3b-7: **Friday April 3, 11:55 pm**