

GLY 4930/6932: Cosmochemistry – Fall 2021 – 3 credit hours

Mon. periods 3 – 4 (9:35 – 11:30am EST) and Wed. period 3 (9:35 – 10:25am EST)

Williamson Hall, Room 218

Instructor: Dr. Stephen Elardo

Williamson Hall - 229

selardo@ufl.edu

352-392-2634

Office hours:

Wednesday 10:30 – 12:30am EST or by appointment

Course Website: <http://elearning.ufl.edu>

Course Materials (Suggested): Cosmochemistry by McSween and Huss (Cambridge Univ. press, 2010)

Other course materials will be provided by the instructor on Canvas.

Course Objectives

- 1) Identify the key components of planetary materials and their significance in the early Solar System.
- 2) Quantitatively apply principles of radiogenic dating to analyze age relationships.
- 3) Identify the key factors that led to differences between planetary bodies.
- 4) Apply theories of elemental fractionation during planetary formation quantitatively.
- 5) Apply and synthesize various aspects of planet formation and differentiation into a quantitative model of planetary composition.

In response to COVID-19, the following practices are in place to maintain your learning environment, to enhance the safety of our in-classroom interactions, and to further the health and safety of ourselves, our neighbors, and our loved ones.

- If you are not vaccinated, get vaccinated. Vaccines are readily available at no cost and have been demonstrated to be safe and effective against the COVID-19 virus. Visit this link for details on where to get your shot, including options that do not require an appointment: <https://coronavirus.ufhealth.org/vaccinations/vaccine-availability/> Students who receive the first dose of the vaccine somewhere off-campus and/or outside of Gainesville can still receive their second dose on campus.
- You are expected to wear approved face coverings at all times during class and within buildings even if you are vaccinated. Please continue to follow healthy habits, including best practices like frequent hand washing. Following these practices is our responsibility as Gators.
- Sanitizing supplies are available in the classroom if you wish to wipe down your desks prior to sitting down and at the end of the class.
- Hand sanitizing stations will be located in every classroom.
- If you sick, stay home and self-quarantine. Please visit the UF Health Screen, Test & Protect website about next steps, retake the questionnaire and schedule your test for no sooner than 24 hours after your symptoms began. Please call your primary care provider if you are ill and need immediate care or the UF Student Health Care Center at 352-392-1161 (or email covid@shcc.ufl.edu) to be evaluated for testing and to receive further instructions about returning to campus. UF Health Screen, Test & Protect offers guidance when you are sick, have been exposed to someone who has tested positive or have tested positive yourself. Visit the UF Health Screen, Test & Protect website for more information.
- Course materials will be provided to you with an excused absence, and you will be given a reasonable amount of time to make up work.
- If you are withheld from campus by the Department of Health through Screen, Test & Protect you are not permitted to use any on campus facilities. Students attempting to attend campus activities when withheld from campus will be referred to the Dean of Students Office.
- Continue to regularly visit www.coronavirus.UFHealth.org and www.coronavirus.ufl.edu for up-to-date information about COVID-19 and vaccination.

Coarse Modality Information

This course is presented as a face-to-face course. However, at the discretion of the instructor and with appropriate notice and information provided to the students, the following modifications may be implemented. These modifications, if made, may be rescinded at the discretion of the instructor.

- The Wednesday meeting of this course may be moved to an online Zoom format for all students. If so, the Monday section will remain face-to-face to meet the UF requirements for a face-to-face course.
- The course may move to a HyFlex presentation modality. Students attending a HyFlex course in the online format would do so of their own choosing, if the instructor makes this modification. A Zoom link would be provided by the instructor.

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|------------------------|-----------------|-----------------|-----------------|
| Grading Scheme: | A = 93.0-100% | A- = 90.0-92.9% | |
| | B+ = 87.0-89.9% | B = 83.0-86.9% | B- = 80.0-82.9% |
| | C+ = 77.0-79.9% | C = 73.0-76.9% | C- = 70.0-72.9% |
| | D+ = 67.0-69.9% | D = 63.0-66.9% | D- = 60.0-62.9% |
| | F = below 60% | | |

| | POINTS POSSIBLE |
|-------------------------------------|----------------------------|
| ATTENDANCE AND PARTICIPATION | 20% |
| HOMEWORKS | 30% |
| PAPER DISCUSSIONS | 15% |
| FINAL PROJECT: | 35% |

Undergraduate/Graduate Work Distinction: The graduate section of this course (GLY6932) will be responsible for additional homework questions. All other components of the course will be identical.

Lecture Schedule: The tentative schedule for lecture topics, and reading assignments is below, and will also be posted separately on Canvas.

Homework: Throughout the semester, homework exercises will be assigned through Canvas. These assignments should be completed and submitted through Canvas.

Late Work Policy: Work turned in late will be subject to a grade reduction of 20% per day.

Makeup Policy: If you have a preexisting conflict with one of the scheduled exams, an alternative meeting time must be arranged with Dr. Elardo made at least one week prior to the exam. In case of sudden illness or family emergency, please notify the instructor as soon as possible (within no more than 1 week). Appropriate documentation may be required. No make-ups will be permitted for other, unexcused absences.

Email: ALL email communications MUST be sent from (and will be sent to) your Gatorlink accounts, or be sent through the Canvas email tool. I will respond to email within 24 hours Monday through Friday. **Before sending Dr. Elardo a question via email please check the syllabus and class website for the answer to your question.**

Course Evaluation

Students are expected to provide feedback on the quality of instruction in this course by completing online evaluations at <https://gatorevals.aa.ufl.edu/>. Evaluations are typically open during the last two or three weeks of the semester, but students will be given specific times when they are open. Summary results of these assessments are available to students at <https://gatorevals.aa.ufl.edu/>.

Students Requiring Accommodations

Students with disabilities requesting accommodations should first register with the Disability Resource Center (352-392-8565, <https://www.dso.ufl.edu/drc>) by providing appropriate documentation. Once registered, students will receive an accommodation letter which must be presented to the instructor when requesting accommodation. Students with disabilities should follow this procedure as early as possible in the semester.

University Honesty Policy

UF students are bound by The Honor Pledge which states, "We, the members of the University of Florida community, pledge to hold ourselves and our peers to the highest standards of honor and integrity by abiding by the Honor Code. On all work submitted for credit by students at the University of Florida, the following pledge is either required or implied: "On my honor, I have neither given nor received unauthorized aid in doing this assignment." The Honor Code (<https://www.dso.ufl.edu/sccr/process/student-conduct-honor-code/>) specifies a number of behaviors that are in violation of this code and the possible sanctions. Furthermore, you are obligated to report any condition that facilitates academic misconduct to appropriate personnel. If you have any questions or concerns, please consult with the instructor in this class.

University Policy on Accommodating Students with Disabilities: Students requesting accommodation for disabilities must first register with the Dean of Students Office (is <http://www.dso.ufl.edu/drc/>). The Dean of Students Office will provide documentation to the student who must then provide this documentation to the instructor when requesting accommodation. You must submit this documentation prior to submitting assignments or taking the quizzes or exams. Accommodations are not retroactive, therefore, students should contact the office as soon as possible in the term for which they are seeking accommodations.

University Policy on Academic Misconduct: Academic honesty and integrity are fundamental values of the University community. Students should be sure that they understand the UF Student Honor Code at <http://www.dso.ufl.edu/students.php>.

Netiquette: Communication Courtesy: All members of the class are expected to follow rules of common courtesy in all email messages, threaded discussions and chats. [Describe what is expected and what will occur as a result of improper behavior – <http://teach.ufl.edu/docs/NetiquetteGuideforOnlineCourses.pdf>

Campus Resources:

Health and Wellness

U Matter, We Care: If you or a friend is in distress, please contact umatter@ufl.edu or 352-392-1575 so that a team member can reach out to the student.

Counseling and Wellness Center: <http://www.counseling.ufl.edu/cwc>, and 392-1575; and the University Police Department: 392-1111 or 9-1-1 for emergencies.

Sexual Assault Recovery Services (SARS)

Student Health Care Center, 392-1161.

Software Use

All faculty, staff, and students of the University are required and expected to obey the laws and legal agreements governing software use. Failure to do so can lead to monetary damages and/or criminal penalties for the individual violator. Because such violations are also against University policies and rules, disciplinary action will be taken as appropriate. We, the members of the University of Florida community, pledge to uphold ourselves and our peers to the highest standards of honesty and integrity.

Student Privacy

There are federal laws protecting your privacy with regards to grades earned in courses and on individual assignments. For more information, please see: <http://registrar.ufl.edu/catalog0910/policies/regulationferpa.html>

Schedule of Topics

Bold: Lectures on a topic

Italics: Group discussion on papers related to previous topic

ToG: Treatise on Geochemistry – See Canvas

| Week | Day | Date | Topic | Paper Leader | ToG Reading Rec |
|------|-----|--------|--|--------------|-------------------------------|
| 1 | M | Aug 23 | Course Intro, Nuclides, Elements, Tools | | |
| | W | Aug 25 | <i>Paper Discussion</i> | Elardo | |
| 2 | M | Aug 30 | Nucleosynthesis and Solar System Composition | | 2.1, 2.2 |
| | W | Sep 1 | Overview of Planetary Materials | | 1.1 |
| 3 | M | Sep 6 | Holiday – No Class | | |
| | W | Sep 8 | <i>Paper Discussion</i> | Bristol | |
| 4 | M | Sep 13 | Solar Nebula Processes and Condensation | | 1.9, 1.10, 2.3 |
| | W | Sep 15 | <i>Paper Discussion</i> | Kivrak | |
| 5 | M | Sep 20 | Determining Early Solar System Event Ages | | 1.11, 1.12 |
| | W | Sep 22 | <i>Paper Discussion</i> | Astudillo | |
| 6 | M | Sep 27 | Planetary Materials - Chondrites | | 1.2, 1.3 |
| | W | Sep 29 | <i>Paper Discussion</i> | Gant | |
| 7 | M | Oct 4 | Planetary Materials - Achondrites | | 1.6 |
| | W | Oct 6 | <i>Paper Discussion</i> | Hill | |
| 8 | M | Oct 11 | Planetary Accretion | | 2.4, 1 st ½ of 2.8 |
| | W | Oct 13 | <i>Paper Discussion</i> | Buckner | |
| 9 | M | Oct 18 | Planetary Differentiation – Core Formation | | 3.15, 3.16 |
| | W | Oct 20 | <i>Paper Discussion</i> | Kowalski | |
| 10 | M | Oct 25 | Planetary Differentiation – Magma Oceans | | |
| | W | Oct 27 | <i>Paper Discussion</i> | Anderson | |
| 11 | M | Nov 1 | Special Guest: Arya Udry – Martian Meteorites | | 2.10 |
| | W | Nov 3 | <i>Paper Discussion</i> | Andrews | |
| 12 | M | Nov 8 | Bulk Composition of Planets | | 3.1 |
| | W | Nov 10 | <i>Paper Discussion</i> | Cruz | |
| 13 | M | Nov 15 | Magmatic Evolution – 1: The Moon | | 2.9 |
| | W | Nov 17 | <i>Paper Discussion</i> | Pesar | |
| 14 | M | Nov 22 | Magmatic Evolution – 2: Mercury and Venus | | 2.6, 2.7 |
| | W | Nov 24 | Thanksgiving – No Class | | |
| 15 | M | Nov 29 | Impacts, LHB (?), Late Accretion | | 2.5, 2 nd ½ of 2.8 |
| | W | Dec 1 | <i>Paper Discussion</i> | Borel | |
| 16 | M | Dec 6 | Project Presentations and Discussions | | |
| | W | Dec 8 | Project Presentations and Discussions | | |

---Above schedule is tentative and subject to change---