**Course Description:** This course discusses the origins, abundances, distributions, and behaviors of the chemical elements in the Solar System.

**Schedule:** We will meet M and W from 9:00 to 10:15AM in Kuiper Space Sciences, Rm. 312. Course materials will be made available online as the semester progresses.

**Instructor:** (Prof.) Tom Zega, tzega@lpl.arizona.edu, 520-626-1356, Kuiper Space Sciences, Room 522. Office Hours, MW 10:15 to 11:15 AM or by appointment.


**Course Objectives and Expected Learning Outcomes:** The objective of this course is to provide students with an understanding of the origins and evolution of our solar system from a chemical perspective. Learning outcomes will be assessed based on class participation, problem sets, and mid-term and final written examinations.

**Absence and Class Participation Policies:** Absences for any sincerely held religious belief, observance, or practice will be accommodated where reasonable. See [http://policy.arizona.edu/human-resources/religious-accommodation-policy](http://policy.arizona.edu/human-resources/religious-accommodation-policy). Absences pre-approved by the UA Dean of Students (or dean’s designee) will be honored.

**Performance Metrics:**
- Mid-term Exam: 35%
- Final Exam: 35%
- Problem sets: 20%
- Class participation: 10%

**Grading Scale (%):**
- A ≥ 90
- B 80 to 89
- C 70 to 79
- D 60 to 69
- E < 60

Credit is not given for assignments that are turned in late.

- See [http://www.registrar.arizona.edu/students/courses/final-exams](http://www.registrar.arizona.edu/students/courses/final-exams) for the final exam schedule.
- The final exam for our class is scheduled for **December 12, 2017 from 10:30AM to 12:30pm**.

**Classroom Behavior:** No mobile phone use during class unless it is somehow involved in the lecture/discussion. Computers are allowed to take notes or otherwise for lecture-relevant content. No Facebook or other social media activities are permitted or anything else that might be construed as behavior that distracts from the lecture.
Threatening Behavior Policy: The UA policy on threatening behavior prohibits threats of physical harm to any member of the University community: policy.arizona.edu/education-and-student-affairs/threatening-behavior-students.

Academic Integrity Policy: The Student Code of Academic Integrity prohibits plagiarism: deanofstudents.arizona.edu/policies-and-codes/code-academic-integrity.

Nondiscrimination and Anti-Harassment Policy: Please see University Policy 200E on prohibited behaviors: http://policy.arizona.edu/human-resources/nondiscrimination-and-anti-harassment-policy

Accommodations for Students with Disabilities: For students with disabilities, reasonable accommodations will be provided by the Disability Resources Center: drc.arizona.edu/instructors/syllabus-statement

Disclaimer: The information contained in this course syllabus, other than the grade and absence policies, may be subject to change with reasonable advance notice, as deemed appropriate by the instructor.

Schedule
Week 1/Chp 1: Introduction to Cosmochemistry
Week 2/Chp 2: Nuclides and elements: The building blocks of matter
Week 3/Chp 3: Origin of the elements: Big Bang and Stellar Nucleosynthesis
Week 4/Chp 4: Solar system abundances of the elements and isotopes
Week 5:/Chp 5: Presolar grains: recorders of stellar and interstellar processes
Week 6: Chemical Bonding, Crystallography, and Mineralogy
Week 7/Chp 6: Meteorites: Components and classification
Week 8/Chp 7: Chemical Fractionation I. Condensation/Igneous/Volatile/Physical

Mid-term Exam – Wednesday October 18, 2017

Week 9/Chp 7: Chemical Fractionation II. Stable Isotopes, Mass-dependent and – independent fractionation
Week 10/Chp 8: Radiogenic Isotopes – Basic principles; Long-lived nuclides
Week 11/Chp 8: Radiogenic Isotopes – Short-lived nuclides
Week 12/Chp 9: Solar system chronology
Week 13/Chp 10: Volatile components: Organics, Ices, and Noble Gases
Week 14/Chp 11-12: (Thanksgiving) Planetesimals and Comets
Week 15/Chp 13: Geochemistry of Moon and Mars
Week 16/Chp 14: A cosmochemical model of solar system formation

Final Exam – Tuesday, December 12th, 10:30 to 12:30