G446 / G546 Meteorites

Winter 2012
CRN 44740 (446)
CRN 44741 (546)

Location: Portland State University
Lecture MWF 10:00-10:50, room CH S17

Instructor: Dr. Alex Ruzicka
CH 17K, 503-725-3372
e-mail: ruzickaa@pdx.edu
Office Hours: Monday 2-3, Wednesday 9-10

Class website: http://web.pdx.edu/~ruzickaa/meteorites

Course Description: In this seminar-style course, students will learn about meteorites and the stories they tell us about the birth and evolution of the solar system. Learning will be accomplished primarily through class discussions and readings of recent scientific articles. Topics will include meteorite classification, asteroids, chondritic and differentiated meteorites, the solar nebula, extinct radionuclide chronology, the processes and consequences of heating asteroidal bodies, pre-solar grains, abiotic synthesis of organic matter, impact and collisional processes, and meteorites from the Moon and Mars.

Text: There is no text for this course, but there will readings consisting of published papers. Most readings are available freely over the internet and links to these have been provided in the Reading List placed on-line. Other reading material will be accessible via D2L at https://d2l.pdx.edu following PSU login to ODIN. (The D2L site will contain PDFs of *all* of the papers.) These readings are required.

Class readings: An essential component of this class will involve reading and thinking about the reading materials. These have been selected to provide a relatively comprehensive and timely survey of meteorite-related topics. They will form the basis for class discussions, homework assignments, and exams (see below). Unlike most text materials for classes, these readings rely on peer-reviewed published articles, written by scientists for others. The instructor will help students to understand and critically analyze the articles. A copy of the reading list with links will be provided on the class website.

Exams: There will be one mid-term exam and a Final. These exams will be some combination of short answer and multiple choice. No make-up exams will be given except for a medical emergency or unless arrangements to take the test at another time are made with the instructor in advance. The **Final** (held Thursday, Mar 20, 8:00-9:50) will be comprehensive. Questions from the mid-term exam may be re-used on the Final. Exams may be curved. Answers and score distributions for the exams will be posted on the class website.

Homework: Homework assignments will be built around the class readings. They will be due the start of class the day that the associated class readings are due. They will NOT be accepted late. However, they can be submitted to the instructor in one of several ways: as hardcopy in class or in the instructor's mailbox in the Geology Department, or electronically by e-mail sent to the instructor. A check system will be used to grade homework. Here is how the check system will work: 0 points = not turned in or turned in late; check = 2 points = homework turned in on time and satisfactory; check-plus = 3 points = homework turned in on time and exemplary; check-minus = 1 point = homework turned in on time but less than satisfactory. Homework assignments will be posted on the class website.

Class attendance and class participation: To encourage participation in class discussions, students will be graded partly on attendance, and partly on their additional participation in class activities.

Neither of these can be "made up". Class attendance will be determined purely by the number of class meetings attended by a student, whereas class participation will be determined by the contribution that a student makes to discussions in class.

Grades: Grading is done on a straight scale although curves will be used at my discretion. Grades will be assigned based on scores as follows: 95% or above = A, 90-94.99% = A-, 87-89.99% = B+, 83-86.99% = B, 80-82.99% = B-, 77-79.99% = C+, 73-76.99% = C, 70-72.99% = C-, 67-69.99% = D+, 63-66.99% = D, 60-62.99% = D-, less than 60% = F. I generally do not give "I" grades. This class can be taken Pass/No Pass. If you elect to change your grading option, please inform me in writing. Letter grades will correspond to the standards given in the PSU course catalog.

Grade distribution:
Class attendance..... 10%
Class discussion..... 15%
Homework..... 25%
Mid-term Exam..... 20%
Final exam..... 30%

Tentative class schedule for topics & reading due dates (see separate reading list for identification of articles):

Week	**Monday**	**Wednesday**	**Friday**
1	1/9– Introduction (lecture)	1/11– *Overview 1, part 1*	1/13– *Overview 1, part 2*
2	1/16– MLK holiday, NO CLASS	1/18– Oxygen isotopes (lecture)	1/20– *Asteroid-meteorite connection 1*
3	1/23– *Asteroid-meteorite connection 2 & 3*	1/25– *Chondrules & CAIs 1*	1/27-- *Chondrules & CAIs 2*
4	1/30– *Chondrules & CAIs 3*	2/1– *Volatility & metal fractionation in solar nebula 1*	2/3– *Volatility & metal fractionation in solar nebula 2*
5	2/6– Lab & rock demos	2/8-- Review	2/10— **Mid-term Exam**
6	2/13– *Early timescales 1*	2/15— *Early timescales 2*	2/17– *Metamorphism and water 1*
7	2/20– *Metamorphism & water 2*	2/22– Stellar life cycles & nucleosynthesis (lecture)	2/24– *Pre-solar grains 1*
8	2/27– *Organic matter in meteorites 1,2*	2/29– *Differentiation 1*	3/2– *Differentiation 2*
9	3/5– *Thermal models 1*	3/7– *Impacts & collisions 1*	3/9– *Impacts & collisions 2*
10	3/12– *Basaltic & related meteorites 1, part 1*	3/14–*Basaltic & related meteorites 1, part 2*	3/16– Review

Italicized items include readings and associated homework.

ACKNOWLEDGMENT OF SYLLABUS RECEIPT:

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I have received a copy of the course syllabus for this class, and the instructor has discussed the contents of this syllabus.

NAME (please print)

_____
Last First MI

Signature _____

Date_____

A phone number where you can be reached: _____

And/or an e-mail address:_____

Have you had any previous Geology classes. If so, what and where?

What field are you majoring (planning to major, have you majored) in?

Why did you choose to take this particular class?