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GEO 488.01: Snow, Ice and Climate

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Snow, Ice and Climate (GEOS 488)

Tuesdays and Thursdays, 11:10-12:25, SC304

Note: *This Course has a Moodle Site. Information and assignments will be posted there with frequent updates and homework assignments, so check the site often.*

Instructor information

Joel Harper

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Emailing

I may occasionally conduct email correspondence with class members and I will use official UM email addresses. All email sent to me must originate from your official UM email address (email originating from non-UM addresses will not be read or responded to). Sorry, but this is the law I am required to follow.

Motivation for this course

Glacier ice permanently covers about 10% of Earth's land surface, and during ice ages close to 30% of Earth's land surface is covered by ice. Seasonal snow blankets about one third of Earth's total land surface each winter season. Snow and ice are thus an integral component of many earth systems. For example, large feedbacks exist between snow and ice and the climate system, and sea level is strongly controlled by processes related to the snow and ice. Water resources in many regions (i.e. the mountainous western U.S.) are intimately tied to snow and ice processes. Basic understanding of the processes related to snow and ice are thus important to many different fields of study.

Course objective

The primary goal of this course is for students to gain a broad understanding of the cryosphere and its many components. Participants in this course will improve their ability to: comprehend evolving issues related to snow, ice and cold regions processes; make inferences based on scientific observations; and, interpret scientific data presented in graphs and figures.

Course text

Glaciers and Glaciation, Benn, D., and D. Evans, 2010 (2nd edition), New York, Oxford University Press, 831 p, ISBN-10: 0340905794 | ISBN-13: 978-0340905791.

Prerequisites

At least Math 121, preferably Math 150 or above: students must have the ability to solve algebraic and other pre-calculus level math problems. Familiarity and comfort with computers (i.e., Excel) will be necessary. Students must have an ability to read, comprehend, discuss, and present scientific material at a level commensurate with an upper division science course.

Format

Classes will consist of lectures and discussions related to the assigned reading. A major component of this course is doing assigned reading and preparing for class discussions. Lectures will generally not cover the same material as the reading. Exams will cover material from both the lectures and assigned reading.

Evaluation criteria for letter grade

- Two exams (midterm and a final, equally weighted): 35%
- One research proposal and presentation: 15%
- In-class assignments and course participation: 10%
- Homework exercises: 40%

The total of the Problem Sets (PS) are worth two-times the total of Work Activities (WA).

Other Policies

>All homework assignments are due at the start of class on designated due date.
>Because this course has a relatively large enrollment, and because we will attempt to grade and return homework assignments rapidly, late work cannot be accepted.
>The format of this course requires class attendance. Substantial course content and information transfer will only occur in class. Because of the relatively large enrollment, we cannot accommodate individual make-ups for missed classes. If always coming to class is not possible, this is not a good course for you.

Schedule

A tentative schedule has been posted on the Moodle site. Note that this schedule is subject to change as the course progresses. The course topics and dates of homework assignments in particular may be adjusted. However the following dates will not be changed.

- Midterm Exam: *Tuesday March 11*
- Field Trip: *Saturday April 12*
- Final Exam: *Monday May 12, 2014, 8:00-10:00 AM*

All students must practice academic honesty. Academic misconduct is subject to an academic penalty by the course instructor and/or a disciplinary sanction by the University. All students need to be familiar with the Student Conduct Code. The Code is available for review online at: http://life.umt.edu/vpsa/student_conduct.php