UNIVERSITY OF CALIFORNIA, MERCED

ENVE 181
Field Methods in Snow Hydrology
Spring 2019

Instructor: Robert Rice, rrice@ucmerced.edu, (209) 228-4397

Lectures
Wednesday, 8:30 -10:20AM, COB1 266

Course Description

The class covers the basics of snow formation in the atmosphere, distribution on the land surface, metamorphosis through the season, water supply issues, and streamflow generation. The course will meet every Wednesday during the first half of the semester and then convene for the weekend in Yosemite National Park where we will study snow first-hand, as well as participate in a snow survey.

Note: This course will be physically demanding, requiring winter backcountry travel using skis or snowshoes and digging snow pits (up to 3 m deep).

Office Hours
Robert Rice- Tuesday 12:30-1:30PM, or by appointment. COB1 365.

Credit: 2

No Textbook (required)

Required Reading

Will be assigned periodically and posted to CatCourses (https://canvas.ucmerced.edu/courses/12955)

Course Goals and Outcomes:

Course Goals

This course is an introduction to field methods in snow hydrology as practiced by operational snow hydrologists and scientists.

1. A successful student will be able to measure snowpack properties and estimate the error associated with the measurements, collect snowpack field data, and understand snowpack processes.

2. Effectively measure, communicate, synthesize, and comprehend scientific and operational field data quantitatively and qualitatively, as well as use the skills to participate and contribute to snow measurement campaigns. For example, you will have the skills necessary to measure and record the Snow Water Equivalent and the

physical snowpack properties for state and federal agencies, as well as scientific research groups.

Course Structure

Look in this section for detailed information on what to expect from lectures, homework, and technical paper. In general, the course is structured on a points system so that you are always in control of your grade.

Lectures (preparation & participation)

Lectures will be very interactive—ask questions throughout the lecture. Lectures will be designed to encourage discussion on selected topics. Lectures will include a combination of Power Point and whiteboard. All Power Point slides will be posted to the UCMCORPS before the lecture. Attendance is expected and class participation grade will reflect attendance. Attendance at all field sessions is mandatory.

Homework

- Homework assignments will be posted to UCMCROPS prior to Friday class lectures and due at the beginning of lecture on Friday of the following week.
- Each homework assignment will be interesting and relevant real world problems utilizing current and available data sets.
- Work together on homework, but the work you hand in should be your own. Academic integrity rules apply, so please do not copy solutions from peers or a solutions manual.
- Homework solutions will be posted to UCMCROPS in a timely manner.
- No late homework will be accepted and there will be no make-up quizzes.

Technical Paper

There is no exam. You will be required to write a technical paper that will be both qualitative and quantitative analysis of the field sessions in Yosemite National Park.

Grades

The final course grade will be determined on the basis of a weighted average of the homework, class participation, and technical paper. The technical paper will consist of 50% of the total point score, the homework 30%, and class participation 20%. In additional, attendance at all field sessions is mandatory, and is required for a grade. The final grade will be based on the following total point score for the class,

A	**>=90%**
B	**80-89%**
C	**70-79%**
D	**60-69%**
F	**<60%**

The flavor of letter grade (+, even, -) will be decided by the instructor when mid-semester and final grades are assigned.

Additional Resources

Please take advantage of the resources available, if you need help. Beyond my regular scheduled office hours I will maintain an *open door policy.*

Academic Integrity (summarized)

Each student in this course is expected to abide by the University of California, Merced's Academic Honesty Policy.

- *Any work submitted by a student in this course for academic credit will be the student's own work*. Collaboration is allowed in discussions, labs, and on homework. (See the relevant sections above.)
- You are encouraged to study together and to discuss information and concepts covered in lecture and the sections with other students. You can give "consulting" help to or receive "consulting" help from such students. However, this permissible cooperation should never involve one student having possession of a copy of all or part of work done by someone else, in the form of an e-mail, an e-mail attachment file, a diskette, or a hard copy. Should copying occur, both the student who copied work from another student and the student who gave material to be copied will both automatically receive a zero for the assignment. Penalty for violation of this policy can also be extended to include failure of the course and University disciplinary action.
- During examinations, you must do your own work. Talking or discussion is not permitted during the examinations, nor may you compare papers, copy from others, or collaborate in any way. Any collaborative behavior during the examinations will result in failure of the exam, and may lead to failure of the course and University disciplinary action.
- Full policy at UCMerced Academic Honesty Policy (follow link).

Accommodations for Students with Disabilities

The University of California Merced is committed to ensuring equal academic opportunities and inclusion for students with disabilities based on the principles of independent living, accessible universal design and diversity. I am available to discuss appropriate academic accommodations that may be required for student with disabilities. Requests for academic accommodations are to be made during the first three weeks of the semester, except for unusual circumstances. Students are encouraged to register with Disability Services Center to verify their eligibility for appropriate accommodations.

Tentative Weekly Schedule:

This is subject to change. Any changes to the schedule will be announced in lecture and on the course UCMCROPS site.

Lecture	Dates	Topic
1	January 23	Importance of Snow
2	January 30	Snow Geography
3	February 6	Snow Metamorphism
4	February 13	The Mountain snowpack
5	February 20	Snow Energy Exchanges
6	February 27	Measurement of Snow
7	March 1 - 3	Field Trip – S. Lake Tahoe

	March 6	Use of Snow data and products
	May 8	Technical Paper due