Course Objectives
After taking this course, students should be able to enter a forest ecosystem and analyze its present state, make inferences about its past, and speculate about its future. The class goal is to provide students with the skills to interpret and contribute to the management of forests in the western United States. The class develops a set of field skills necessary to examine forest systems, and provides an introduction to many of the forest types of the West in a comparative context.

Students learn measuring techniques for forest research, how to plan and execute forest surveys working in teams, to accurately use traditional (compass, diameter tape, quadrats) and modern (Total Stations, lasers, GPS) equipment, an appreciation for measurement accuracy, and to document work and observations in a field notebook. Students learn to identify all woody species in the Sierra Nevada lower mixed conifer forests, and principal species from the montane and sub-alpine species of the Sierra Nevada and the White Mountains in a comparative context. Students learn to identify important factors associated with tree mortality (pathogens, insects, suppression, mechanical factors, and animal damage) as well as diagnose synergistic and contingent mortality scenarios. The overarching class goal is to provide students with the skills to interpret and contribute to the management of forests in the western United States.

This graduate section of the undergraduate course WILD 4560 will include all the requirements of the undergraduate course plus the submission of a term paper developing one of the ecological or management issues covered in the class.

Schedule
Pre-trip orientation and safety meeting: late April (3 hours)
Friday/Saturday: Deliver gear to NR 113
Sunday: Depart NR parking lot at 6:30 am. Arrive Hodgdon Meadows campground. Set up camp.
Tuesday: Agents of mortality
Wednesday: Beetle gallery identification
Thursday: Pathogenic fungi
Friday: Spatial processes
Saturday: Data collection considerations
Sunday: Fire ecology of Pinus ponderosa forests and Yosemite Valley
Monday: Day off, hiking in Yosemite National Park
Tuesday: Introduction to fuel and the collection of fuels data
Wednesday: Mortality and ingrowth
Thursday: Mortality and ingrowth
Friday: Mortality and ingrowth
Saturday: Mortality and ingrowth
Sunday: *Abies magnifica* forest; *Pinus jeffreyi* woodland. Management issues – National Park Service and US Forest Service. Camp at Tuolumne Meadows
Monday: Wilderness navigation. *Pinus contorta* forest. At Tuolumne Meadows
Tuesday: *Pinus albicaulis* forest. At Tuolumne Meadows
Thursday: Drive back to Logan

**Assigned Reading**


Lutz, J. A., A. J. Larson, M. E. Swanson, and J. A. Freund. 2012. Ecological importance of large-diameter trees in a temperate mixed-conifer forest. *PLoS ONE* 7(5): e36131. This study and the on-line appendices are a comprehensive background to the ecological processes active in the Yosemite Forest Dynamics Plot. All the authors will be at the plot during the class.


Lutz, J. A., J. W. van Wagendonk, A. E. Thode, J. D. Miller, and J. F. Franklin. 2009. Climate, lightning ignitions, and fire severity in Yosemite National Park, California, USA. *International Journal of Wildland Fire* 18(7): 765-774. This paper explores some of the climatological factors that help shape the fire season. Based on these data, what should we expect from the fire season this year?

Scholl, A. E., and A. H. Taylor. 2010. Fire regimes, forest change, and self-organization in an old-growth mixed-conifer forest, Yosemite National Park, USA. *Ecological Applications* 20(2): 362-380. This research was performed not too far from the YFDP, so its conclusions are quite relevant.


**Background Reading**


Eng, R.C. (editor). Navigation. Chapter 5 in *Mountaineering: The Freedom of the Hills*. 2010. The Mountaineers Books, Seattle. In this class we will learn how to use a mirror compass to collect field data and also to navigate in the wilderness. "Freedom" is by far the best reference book for outdoor adventuring in the high places of the world. I recommend you buy a copy and read it cover to cover. "For the modern alpine traveler, navigation is the key to wandering at will through valleys and meadows, up cliffs and over glaciers, earning the rights of a citizen in a magical land, a mountaineer with the freedom of the hills."

**Grading**

Students must participate in each day of the field activities and turn in all of the assignments to receive a grade. I will assess your understanding of field techniques and Sierra Nevada species in the field. You will document your learning and observations in a field notebook. Each component of your evaluations will earn up to the maximum number of points stated – your overall numerical score for the course is the sum of those components. Your grade for the class will be no lower than the following conversion.

- A 93-100
- A- 90-92
- B+ 87-89
- B 84-86
- B- 80-83
- C+ 77-79
- C 74-76
Components: Field notebook – 20, Reflection pieces – 20, Species identification – 20, Field techniques – 20, Term paper – 20. The field notebook, reflection pieces, and an outline of the term paper are due one week after our return to Logan. The term paper is due the last day of the summer term.

Course Fee
The course fee (approximately $500) covers transportation, camping fees, and most food expenses (food on the road is not included).

Students with Disabilities
The Americans with Disabilities Act states: "Reasonable accommodation will be provided for all persons with disabilities in order to ensure equal participation within the program. If a student has a disability that will likely require some accommodation by the instructor, the student must contact the instructor and document the disability through the Disability Resource Center, at least two weeks before the start of the course. Any request for special consideration relating to attendance, pedagogy, taking of examinations, etc., must be discussed with and approved by the instructor. In cooperation with the Disability Resource Center, course materials can be provided in alternative format--larger print, audio, diskette, or Braille."

Plagiarism
“Plagiarism includes knowingly representing by paraphrase or direct quotation, the published or unpublished work of another person as one’s own in any academic exercise or activity without full and clear acknowledgment. It also includes the unacknowledged use of materials prepared by another person or agency engaged in the selling of term papers or other academic materials” (Student Code page 10). I expect that all the work you do in this class will be your own.

Field Details
Details about equipment lists and logistics are posted on the course web site.