Instructor: Monique Rocca, Department of Forest, Rangeland, and Watershed Stewardship, NESC A114, 970-491-2112, rocca@warnercnr.colostate.edu
Office Hours: Mondays 11:30 – 1:00; Thursdays 12:30 – 2:00
Class Time & Place: Tuesday & Thursday, 11:00 – 12:15, Eddy 113
Texts: original research articles and other references (available electronically on RamCT)
Prerequisites: General ecology, graduate status

Course Description:
Fire is a fundamental ecological process in terrestrial ecosystems around the world, affecting individual organisms, populations, communities, and ecosystems. Fire effects vary immensely over time and space, depending on conditions of weather, topography, fuels, and species. Plants, animals, and microbes exhibit an amazing variety of adaptations that allow them to survive – even thrive – in the presence of fire.

In this course, we will examine in depth several fundamental questions about the role of fire in ecosystems around the world. Class sessions will emphasize discussion and critical evaluation of papers in the primary ecological literature. Some of the key themes of the course include: scale, spatial & temporal heterogeneity, evolutionary context, interacting effects & influences, methodology, limits of our knowledge, and human influences on “natural” fire processes.

Course Organization:
This is mainly a literature reading and discussion course; therefore, I will keep my lecturing to a minimum. However, I will introduce key concepts in an informal lecture format.
A class member will be assigned to present and lead the discussion on each paper that we read in class. There are five major sections of the course, and you can expect to lead the discussion on roughly one paper per section. Most days there will be more than one paper discussed, so you may choose to coordinate your discussion with the other person/people presenting that day, or lead separately. I do not expect you to bring slides or handouts, but should you choose to do so, please let me know ahead of time so I can arrange for any necessary AV equipment and/or copying. It is your choice whether to post discussion questions ahead of time on RamCT.

Paper assignments will be made randomly, however you may trade papers amongst yourselves, keeping within a course section, if you so choose. (Please let me know if you do this).
We will schedule an all-day Saturday field trip to a to-be-determined location near Ft Collins.

Assignments/Student Evaluation:
Three writing assignments will be distributed throughout the semester. These essays should be written in the style of a formal review article, with appropriate attention to good scholarship including complete literature citations. One or more class members may also be assigned to present her/his essay to the class.
Your final course grade will be based on class participation (25 %) and on your essays (75%).

Course Objectives: At the end of this course, you should be able to do the following:
(1) Identify and describe the significance of some of the key questions in fire ecology today.
(2) Identify and summarize relevant literature in fire ecology, both classic and contemporary.
(3) Incorporate concepts and facts about the role of fire in ecosystems into your ecological thinking and research.
Course Topics, Assignments, and Tentative Schedule:

NOTE: This is NOT the final course schedule! Please check RamCT regularly throughout the semester for updates to the schedule and reading assignments.

I. Course Overview: Fire as a Physical, Ecological, and Cultural Process
1-19 ... course introduction; fire as a physical process
1-21...history of fire ecology and fire management

II. Historical or "Natural" Fire Regimes: Applications and Methodology
1-26 ... concepts of fire regimes and HRV
1-28 ... concepts of fire regimes and HRV
2-2 ... methods for reconstructing fire history
2-4...(TBA) methods for reconstructing fire history
2-9 ... methods for reconstructing fire history
2-11 ... restoration of fire regimes: overview
2-16 ... fire management and restoration of ponderosa pine forests

III. What Controls Fire Regimes: fuel, ignitions, weather and climate
2-18 ... Influence of ignition source and frequency
2-23 ... Influence of weather and climate
2-25 ... Influence of fuels

2-26 (Friday) 5pm. 1st paper Due
3-2... Case study: Ponderosa
3-4 ... Case study: S. California

IV. Fire as an Evolutionary Force
3-9 ... Overview and concepts
3-11 ... Fire and species life history strategies
3-16 & 3-18 ... No Class (Spring Break)

3-23 ... Serotinous cones and similar structures

3-25 ... Evolution of flammability

V. Fire Effects on Communities, Ecosystems, and Landscapes

3-30 ... Fire, community structure, and biodiversity

4-1 ... Impacts of fire on soils and biogeochemistry

4-2 (Friday) 5pm. 2nd paper Due

4-6 ... Fire and landscape dynamics

4-8 ... Fire and landscape dynamics

4-13 ... Disturbance interactions

VI. Fire and Ecosystem Management

4-15 ... Fuel treatment ecology and effectiveness

4-20 ... Postfire rehabilitation

4-22 ... Fire and invasive species

4-27 ... Post-fire salvage issues

4-29 ... Fire and carbon management

5-4 ... Future fire regimes

5-6 ... Concluding thoughts

5-10 (Monday) 5pm. 3rd paper Due

TBA ... All-day Saturday field trip