Course Syllabus for

WILDLAND FIRE ECOLOGY

Cross-listed as:
FOR 446
FW 446
RNG 446

3 Credits

Instructor

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Principal Lecturers:

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Dr. Richard F. Miller, Department of Rangeland Resources and EOARC
Dr. Bruce A. Shindler, Department of Forest Resources
Dr. John C. Tappeiner, Department of Forest Resources
Dr. John D. (Jack) Walstad, Department Head, Forest Resources

Course Goals and Objectives

Wildland fire is center stage in many communities and regions in the western U.S. Issues range from the unwanted destruction of valuable natural resources by uncontrolled wildfires to the important role that fire plays in the natural cycle of forest and rangeland renewal. Interwoven with these issues are increasing dilemmas surrounding fire at the urban and rural interface and the use of prescribed fire as a management tool. The overarching goal of this course is to provide a broad understanding of wildland fire in an ecological context. Key ecological aspects to be examined and integrated include biological, physical, chemical, environmental, and social components.

Student Learning Outcomes: The basic objective of this course is to understand the principles, concepts, and issues surrounding wildland fire ecology, and to integrate this information into the context of natural resource management, protection, and stewardship. Specific learning outcomes:

- Explain why an understanding of wildland fire ecology is important.
- Describe the history (and pre-history) of wildland fire.
- Assess important determinants of wildland fire occurrence and behavior.
- Evaluate fire’s effects on, and interactions with, ecosystem properties, processes, and components.
- Analyze the social and political forces that affect wildland fire, and explain how they can be incorporated into land management decisions.

Student mastery of the above outcomes will be demonstrated through a combination of graded quizzes, a final exam, a term project, class participation in online discussion forums, and other relevant techniques.
Prerequisites: Prior coursework in ecology and natural resource management.

Course Format

Learning resources consist of videos (VHS format), lecture guides or outlines and PowerPoint supplements, reference books, directed readings, supplemental references, glossaries, and website links. Most material will be provided electronically through the Oregon State University “Blackboard” system – log in at http://my.oregonstate.edu. You should be able to read and write MSWord files.

No textbook is required, but an optional text is:


Students are expected to complete all coursework within the 11-week academic term for which they have enrolled.

Grading Policy

Structure: A-F. A minimum of 180 points is needed to earn an A; a minimum of 160 points for a B; a minimum of 140 points for a C; and a minimum of 120 points for a D.

Basis:

- Performance on 3 open-book quizzes @ 15 points each 45 points
- Performance on closed-book, proctored final exam 50 points
- Term project: topic/outline 5 points
- Term project: article abstract and citation 5 points
- Term project: rough draft 5 points
- Term project: peer review 10 points
- Term project: final version 50 points
- Participation in course activities such as discussion groups, etc. 30 points
- Total: 200 points

Late work: At the discretion of the instructors, late work may be penalized one full letter grade for each day an assignment is late. Extensions may be granted ahead of time, but not retroactively, for extenuating circumstances.

Academic integrity (OSU policy): Students are expected to be honest and ethical in their academic work. Intentional acts of academic dishonesty, such as cheating or plagiarism, may be penalized by imposition of an “F” grade in the course.

Incompletes: You should take this course only if you plan to finish it in a timely manner (during this term). I assign an "I" or incomplete only when you have communicated to me a strong and compelling case for doing so (e.g., health reasons, military commitment). I will not consider assigning an incomplete unless you have completed over 50% of the course tasks. Please note that students receiving incompletes are subject to assignment weight reduction (and consequently may not be eligible for A or A- grades) because some of their work will be submitted late.

Topical Outline
A. Introductory Information
   1. Importance of wildland fire in today’s world
   2. Role of fire in resource management and restoration
   3. Scale of costs, acreage, and impacts involved
   4. Course logistics

B. Fire History
   1. Pre- and post-European settlement
   2. Regional and temporal variations
   3. Fire regimes and biomes
   4. Emerging trends

C. Fire Behavior
   1. Fire intensity, severity, and frequency
   2. Fuels and fuel management
   3. Climate and weather
   4. Aspect and topography

D. Fire Effects
   1. Plants and succession
   2. Wildlife
   3. Aquatic ecosystems
   4. Microflora, microfauna, and microorganisms
   5. Soil, water, and air
   6. Communities, watersheds, and landscapes
   7. Alternatives and tradeoffs

E. Social Considerations
   1. Public policy questions and socio-political issues surrounding wildland fire
   2. Protection of human life and property
   3. Protection of resources (e.g., air and water quality, timber, recreation areas, habitat)
   4. Risk aversion, public trust, social acceptability, decision making
   5. Wildland/urban interface problems
   6. Evolution of fire policy

F. Case Studies and Special Topics
   1. Low severity fire regime: e.g. ponderosa pine
   2. Moderate severity fire regime: e.g. pinyon pine/western juniper/sagebrush
   3. High severity fire regime: e.g. coastal Oregon forests
   4. Other important fire types/regions: e.g. lodgepole pine, chaparral, southeastern U.S., tropical
   5. Use of prescribed fire
   6. Effects of fire on carbon cycling and climate change
   7. Other topics

Description of assignments

Videotaped lectures: The videotapes convey the majority of factual information in this course. Watch and
review as necessary, according to the class schedule.

**Website:** PowerPoint slides used in the videotapes, outlines, study guides, additional readings, and links to online reference materials may be accessed through Blackboard. The intent is to reinforce your understanding of the material presented in lecture, and to help you further explore content areas of particular interest.

**Participation in discussions:** A new discussion topic will be posted on Blackboard each week, with instructions for posting messages and for responding to fellow students’ messages. Just click on the “Discussion Board” button in the left-hand column and select the appropriate forum for each week. In a distance course such as this, the discussion forum is one of the most important vehicles for learning. Regular, timely and meaningful participation during the entire term counts for 30 points toward your grade (out of 200). For informal communication with classmates, please use the “Hallway” discussion forum.

**Quizzes:** There will be three graded quizzes, during the 1\(^{st}\), 2\(^{nd}\), and 5\(^{th}\) weeks of class (see schedule for exact dates). Each is to be taken online (Blackboard), is “open-book,” and is worth 15 points. Ungraded practice quizzes will also be available on Blackboard to help you determine whether you are prepared for the graded quizzes and the final exam.

**Final Exam:** The final exam is given during the 7\(^{th}\) week of class (see schedule for exact dates). You need to **specify a proctor for your exam.** If you have not already done so, please provide the name, title/position, address, phone, fax, and email (if available) to Extended Campus by the end of the first week of classes. Students usually locate proctors at community college testing centers, OSU Extension offices, or local libraries. A work supervisor is acceptable only if you are not within reasonable distance of another suitable proctor. We mail the exam to the proctor, along with a stamped return envelope. The final exam is “closed-book” and is worth 50 points.

**Term Project:** You will complete a written report, 10-20 pages in length (double-spaced) that demonstrates your understanding and integrative knowledge of the subject.

In order to assure timely completion, you will receive 5 points for submitting a topic and outline by Sunday following the 3\(^{rd}\) week of class, 5 points for submitting a summary abstract and properly-formatted citation of a peer-reviewed reference article by Sunday following the 4\(^{th}\) week of class, 5 points for submitting a rough draft of the report by Sunday following the 8\(^{th}\) week of class, and up to 10 points for peer reviewing a classmate’s rough draft by Sunday following the 9\(^{th}\) week of class. The final version is due by Sunday following the 10\(^{th}\) week of class (see schedule for exact dates). The final version of the report will be graded on the merits of its content, for a maximum of 50 points.

The format of the term project may follow any of the following options:

1. prepare a fire management assessment for a particular area, e.g. an environmental assessment or silvicultural prescription;
2. conduct a retrospective analysis of a wildland fire incident, e.g. the Yellowstone fires;
3. develop a case study for a region of interest, e.g. the Sierras;
4. compare and contrast scenarios that might occur in a given area under different fire policies, e.g. fire use vs. fire exclusion;
5. prepare a briefing paper for a Congressional committee wrestling with a wildland fire issue, e.g. “let burn” policy for the National Park Service.

Regardless of format, elements common to the written report should include

- a description of the biome,
- fire regime,
- history,
- fire behavior and effects,
- social and policy considerations.
Grading criteria for term project:

**Appropriate length and format:** minimum of 10 pages text, typed, double-spaced (or 5 pages single-spaced), not counting illustrations or references; maximum length 20 pages.
- Clearly identified with title, name, and page numbers.
- Font size 12, margins 1”, Times New Roman or equivalent font.

**Writing Style and Organization** - well-organized, succinct, good sentence construction, correct spelling (use a spellchecker, but watch out for homonyms)

**Content** - clear thesis statement, full coverage of topic (common elements outlined above)

No “Filler” - Restatement of general information learned in this course will not count toward page requirements for this report.

Include at least 1 map and 1 chart that support the topic and help illustrate main ideas.

**Utilize at least 3 articles from peer-reviewed journals**, and a total of at least 8 sources of information.

Cite all sources used for the report in reference section at the end of report and within the text, including maps, charts and Internet sources, using CBE (Council of Biological Editors) name-year format. For more info on CBE format, see [http://www.bedfordstmartins.com/online/cite8.html](http://www.bedfordstmartins.com/online/cite8.html). For citations within the text, use the (author, date) format.

Demonstrate academic integrity (Absolutely no copying from sources without quotes and proper citation!).

For help with the term project, OSU librarian Bonnie Avery has put together an excellent reference page: [osulibrary.oregonstate.edu/instruction/classign/for446.htm](osulibrary.oregonstate.edu/instruction/classign/for446.htm)

**Schedule of assignments**

**Week 1):**

Learning Unit A: Introductory Information
- Videotape #1, lecture #1: Walstad, Introduction (37 min.)

Learning Unit B: Fire History
- Videotape #1, lecture #2: Kauffman, Fire Regimes of Pacific Northwest Landscapes (51 min.)
- Videotape #1, lecture #3: Miller, Fire Regimes & Fire History (30 min.)

Introduce yourself on the Blackboard discussion forum by Wednesday, and respond to at least three of your colleagues' posts by Sunday.

Quiz #1 on Learning Units A&B – open book, on Blackboard by Sunday.

**Week 2:**

Learning Unit C: Fire Behavior
- Videotape#2, lecture #4: Kauffman, Fuels - Ecology & Management (41 min.)
- Videotape #2, lecture #5: Kauffman, Weather & Topographic Influences (43 min.)
- Videotape#3, lecture #6: Kauffman, Fire Behavior (41 min.)

Contribute to the Week 2 Blackboard discussion forum by Wednesday; and respond to at least three of your colleagues' posts by Sunday.
Quiz #2 on Learning Unit C – open book, on Blackboard by Sunday.

Week 3:

Learning Unit D: Fire Effects
   Videotape #3, lecture #7: Doescher, Fire Effects / Tappeiner, Plant Responses to Fire (50 min.)
   Videotape #4, lecture #8: Doescher, Understanding Plant Succession (1 hr.)

Term project topic selection and outline due by Sunday – post in appropriate Blackboard discussion forum.

Contribute to the Week 3 Blackboard discussion forum by Wednesday; and respond to at least three of your colleagues’ posts by Sunday.

Week 4:

Case Study (Learning Unit F)
   Videotape #8, lecture #17: Tappeiner, Pine Case Studies (55 min.)

Learning Unit D: Fire Effects (continued)
   Videotape #4, lecture #9: Cromack, Fire Effects on Forest Ecosystems (59 min.)

Summary abstract and citation for one peer-reviewed reference for your term project due by Sunday – post in appropriate Blackboard discussion forum.

Contribute to the Week 4 Blackboard discussion forum by Wednesday; and respond to at least three of your colleagues’ posts by Sunday.

Week 5:

Learning Unit D: Fire Effects (continued)
   Videotape #5, lecture #10: Edge, Fire Effects on Wildlife (57 min.)
   Videotape #5, lecture #11: Gresswell, Fire & Aquatic Ecosystems (53 min.)

Contribute to the Week 5 Blackboard discussion forum by Wednesday; and respond to at least three of your colleagues’ posts by Sunday.

Quiz #3 on Learning Unit D – open book, on Blackboard, by Sunday.

Week 6:

Learning Unit E: Social Considerations
   Videotape #6, lecture #12: Shindler, Social Context (34 min.)
   Videotape #6, lecture #13: Shindler, Public Acceptance of Fuels Reduction – Part 1 of 2 (49 min.)

Contribute to the Week 6 Blackboard discussion forum by Wednesday; and respond to at least three of your colleagues’ posts by Sunday.
Week 7:

Learning Unit E: Social Considerations (continued)
   Videotape #7, lecture #14: Shindler, Public Acceptance of Fuels Reduction – Part 2 of 2 (48 min.)
   Videotape #7, lecture #15: Agee, Development of Fire Policy in the Pacific Northwest (57 min.)

Contribute to the Week 7 Blackboard discussion forum by Wednesday; and respond to at least three of your colleagues’ posts by Sunday.

Final Exam (proctored) – Exams will be mailed to proctors ahead of time. Exam may be taken anytime during Week 7. Returned exam must be postmarked no later than Monday of Week 8.

Week 8:

Case Studies (Learning Unit F)
   Videotape #8, lecture #18: Doescher, Ecological Role of Fire in the Sagebrush Biome (37 min.)
   Videotape #9, lectures #19+20: Miller, Role of Fire in the Mountain Big Sagebrush Zone – Parts 1&2 (1 hr)

Term project rough draft due by Sunday – post in appropriate Blackboard discussion forum.

Contribute to the Week 8 Blackboard discussion forum by Wednesday; and respond to at least three of your colleagues’ posts by Sunday.

Week 9:

Case Studies (Learning Unit F)
   Videotape #9, lecture #21: Swanson, Fire History Studies & Landscape Management in Western Oregon (48 min.)
   Videotape #10, lecture #22: Keeley, California Shrublands Fire Regime (42 min.)

Read and critique at least one classmate’s term project rough draft, using the form provided on the course web site. Post your critique in the appropriate Blackboard discussion forum by Sunday.

Contribute to the Week 9 Blackboard discussion forum by Wednesday; and respond to at least three of your colleagues’ posts by Sunday.

Week 10:

Case Studies (Learning Unit F)
   Videotape #10, lecture #23: Heyerdahl, Historical Fire Regimes in the Blue Mountains (28 min.)
   Videotape #11, lecture #24: Kauffman, Perturbed Neotropical Landscapes (1 hr. 5 min.)

Conclusion
   Videotape #8, lecture #16: Walstad, Course summary (15 min.)

Contribute to the Week 10 Blackboard discussion forum by Wednesday; and respond to at least three of your colleagues’ posts by Sunday.
Final version of term project **due by Sunday** – use the Blackboard “digital drop box” (click on “Tools” button in left-hand column).

Fill out an online Student Evaluation of Teaching form **by Sunday**.

**Accommodations for disabilities**

Accommodations are collaborative efforts between students, faculty and Services for Students with Disabilities (SSD). Students with accommodations approved through SSD are responsible for contacting the faculty member in charge of the course prior to or during the first week of the term to discuss accommodations. Students who believe they are eligible for accommodations but who have not yet obtained approval through SSD should contact SSD immediately at (541) 737-4098.

**Questions?**

We encourage your constructive criticism, suggestions, ideas, and other feedback for improving the course! Please refer to contact information on the first page.