

SYLLABUS – NRES 455  
ADVANCED FIRE ECOLOGY  
Spring, 2019

GENERAL COURSE INFO.:

Lecture: 2:00 -3:50, MON., TNR 464

Lab 4:00-5:50 MON., TNR 464 or FIRE LAB or In-field

Instructor: Dr. James Cook Office: 242 TNR

Office Hours: Mon: 9-11; Tues. 10-11, 3-4; Wed: 9-10; Fri: 1-3

Prerequisites: **Summer camp or equivalent; FOR 324 or S-290; and FOR 332 or BIOL 305.**

COURSE OBJECTIVES:

My overall objective is provide a deeper understanding of fire effects and the roles of fire as a natural process in North American ecosystems.

*Learning Outcomes:* the student will learn 1) effects of fire on large woody vegetation, 2) effects of fire on forest understories, 3) effects of fire on grasslands; 4) how fire effects in shrub dominated systems compare/contrast with forests and grasslands, 5) how small mammal, amphibian and bird assemblages respond to fire, and 6) the foundational roles of fire in terrestrial ecosystems.

The skills a student will learn: 1) herbaceous and woody fuel inventory techniques, 2) how to efficiently utilize primary scientific literature on fire ecology, 3) how to analyze simple data sets of fire response variables, and 4) how to make a clear presentation and summarization of technical literature.

COURSE PHILOSOPHY & APPROACH:

My philosophy is that learning is a shared experience; it is not a one-way transfer of information. We must each shoulder our responsibilities for you to benefit the most.

- A. Lecture: A reading will be provided for each topic. You will be expected to have a solid understanding of the methods, results and conclusions of each paper when you walk into the classroom.
- B. Lab: For each topic, you will be given a handout that lists the specific objectives for the topic and an outline that lists the major sub-topics. You are expected to participate fully in all aspects of the labs.

B1. *Assignments.* There are several assignments associated with the labs. These collectively determine one-quarter of your grade; **THUS**, they should be given an appropriate level of attention and thought. You may discuss the general topic with your classmates; however, **each person is expected to write his/her own answers**. If two or more people turn in the same answer(s), this is considered academic misconduct. See the Student Rights & Responsibilities section below for more information.

Text: None. The readings take the place of a text.

NOTE!! **D2L is used** to provide: a) learning objectives and reading assignments; b) practice questions for exams; c) powerpoints and outlines used in lecture, d) outlines and handouts for lab, d) one way to submit assignments, and e) a venue for announcements of schedule changes.

**LECTURE/LAB SCHEDULE, TOPICS & READINGS:**

Week	Date	Lecture Topic & Reading	Lab Topic	Lab Assgn.
1	1/28	Fire History & Fire Regimes	Determination of fire history; Guyette et al. 2016	Y (complete in lab)
2	2/4	Fire effects on trees Reading: Barton 1999	Predicting tree mortality – FOFEM (in TNR 356); Disc. paper	Y
3	2/11	Fire effects – understories Reading: Nuzzo et al. 1996	Intro. Research & Data Anal#1	N
4	2/18	In-depth study: ponderosa pine ecosystem: Reading TBA	Data analysis#2 – TNR 356	Y
5	2/25	Fire in shrub-dominated systems Reading TBA	Presentation prep	N
6	3/4	Long-term fire effects	Determination of fire severity	N
7	3/11	EXAM #1	Open lab	N
8	3/25	Fire in grassland – 1; Reading TBA	Fire in grassland - 2	N
9	4/1	Habitat components; fire effects small mammals; Reading TBA		Y
10	4/8	Fire effects - amphibians (guest lecture); Reading TBA	Fuel inventory methods*	N
11	4/15	Fire effects – avian assemblage’ Reading TBA	Monitoring fire effects*	N
12	4/22	Evaluate fire effects	Evaluate fire ....	combined
13	4/29	Fire effects on soils OR student choice	Analyze fire effects data – TNR 356	Y (in lab)
14	5/6	Role of fire in temperate upland ecosystems; review	Presentations	N

\* = we will be outside so dress accordingly

**GRADE DETERMINATION**

Exam #1 = 20%  
 Lab assignments(5) = 20%  
 Quizzes on readings = 10% (will occur at random)  
 Presentation = 15%  
 Paper = 10%  
 Participation = 5%  
 Final exam = 20% 5/14, Tues., 12:30-2:30

I believe in curving individual assignments and exams, if warranted, but not course grades. Grades will be assigned as follows: > 92.4 = A; 89.5-92.4 = A-; 86.5-89.4 = B+; etc. Assignments which are turned in late will be assessed a **late penalty** per this schedule: 1) <= 1 day late = 5%; 2) > 1 and <= 3 days = 10%; 3) > 3 and <= 6 days = 20%; 4) > 6 and < 14 days = 30%, and 5) > 13 days, 40% reduction.

#### ATTENDANCE POLICIES:

**I. Attendance in LECTURE & LAB IS REQUIRED.** Normally, I would not require lecture attendance. However, this course is different because a) we have a relatively small number of lectures (13), b) if you are not present you can't take the quiz on a reading, c) there will be multiple explicit linkages between lecture and lab, and d) it is likely we will direct carry-over from lecture to lab. For each unexcused absence of a lab, 5% points will be subtracted from your laboratory assignment average; for lecture the penalty will be a 10% reduction in your quiz average.

#### STUDENT RESPONSIBILITY

- (1) To adhere to the University Student Rights and Responsibilities. These are fully described in Chapter 14 of U.W. System/UWSP Policies. This document can be found in the Dean's office, the Reserve desk in the LRC, in each residence hall and on line at: [www.uwsp.edu/admin/stuaffairs/rights/](http://www.uwsp.edu/admin/stuaffairs/rights/) Examples of inappropriate conduct include turning work that was done by someone else and getting an answer on an exam from another person.
- (2) To keep up with the readings, to get ALL notes if you miss a lecture and to turn in your assignments on time. If you have an emergency or are ill, extensions will be provided, but it is your responsibility to inform me, **in writing**, why you missed class. Also, if any material is not clear, YOU have to let me know; I will be happy to sit down with you one-on-one and discuss it as much as you need.

#### PRESENTATION/PAPER

This will be done individually or in a group of two. You will thoroughly research the topic chosen/assigned and A) write up an analysis of the topic in four pages or less, making substantial use of scientific (peer-review) articles; and B) present a summary of your analysis/evaluation to the class (12-15 min) near the end of the semester. More details will be provided in lab early in the semester. Here are *some potential* topics:

- 1) Mesophication of eastern forests.
- 2) Should fire be kept out of, or its use greatly curtailed, in many eastern hardwood forests?
- 3) Do small mammals adapt to fire?
- 4) Which plant traits are truly adaptations to fire, and why?
- 5) Under what conditions and in which type of ecosystems can use of prescribed fire have essentially neutral effects, or non-targeted effects that are contrary to the land management goals?
- 6) How do fire occurrence and severity interact with bark beetles in the western U.S.?

I am open to other topics; if you have an idea, let's discuss it. I will need to give an official "OK" so do not do much work until I do.