

SYLLABUS – NRES 455
ADVANCED FIRE ECOLOGY
Spring, 2020

GENERAL COURSE INFO.:

Lecture: 2:00 -3:50, MON., TNR 252

Lab 4:00-5:50 MON., TNR 252 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 trees, 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 acquired will include: 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 experienced; 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 understand 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 a 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! Canvas **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	1/27	Fire History & Fire Regimes	Determination of fire history; Guyette et al. 2016	Y (complete in lab)
2	2/3	Fire effects on trees Reading: Barton 1999	Predicting tree mortality – FOFEM; CPS 105 Disc. presentation	Y
3	2/10	Fire effects – understories Reading: Nuzzo et al. 1996	Intro. Research & Data Analysis#1	N
4	2/17	In-depth study: ponderosa pine ecosystem: Kane et al. 2010	Data analysis#2 CPS 105	Y
5	2/24	FSS Findings; Reading: Nelson et al. 2008	Library time presentation; no formal lab. Available for disc.	N
6	3/2	Long-term fire effects. Reading: Romme et al. 2016	Determination of fire severity. Exam preparation	N
7	3/9	EXAM #1	Data Analysis#3-composition, CPS 105	N
8	3/23	Fire in grassland – 1; Reading: TBA; Brye et al. 2002 (ignore mirco-nutirents & ‘spatial’)	Fire in grassland - 2	N
9	3/30	Fire effects – avian assemblage. Guest lecture by Dr. Haney. Reading = Haney, A.S. et al. 2008	Fuel inventory methods*	N
10	4/6	Fire effects – amphibians. Guest lecture – Dr. Zani	Fuel load calculations CPS 105?	N
11	4/13	Habitat components; fire effects small mammals; Reading TBA	Monitoring fire effects*	N
12	4/20	Evaluate fire effects (field*)	Analyze fire effects data – CPS 105	combined
13	4/27	Fire history of, effects on, shrub ecosystems	No lab – prep for presentation	Y
14	5/4	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	=	20%
Participation	=	5%
Final exam	=	25% 5/14, Thur., 8:00-10:00

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, and c) there will be multiple explicit linkages between lecture and 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/ 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

This will be done individually (if you are graduate student) or in a group of two. You will thoroughly research the topic chosen and present the results of your analysis/evaluation to the class (~15-20 min) near the end of the semester. On the day you present, you must provide an outline for the class. Turn in a final, polished outline and your bibliography by May 6th. 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 birds adapt to fire?
- 4) How and why does the El Nino/La Nina cycle affect fire occurrence and behavior differently in different parts of the U.S.?

- 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.