INTRODUCTION TO FIRE MANAGEMENT
FORESTRY 3237

Instructor: Dr. Brian Oswald
Email: boswald@sfasu.edu
Office: FOR 201B
Office Hours: Via email or cell phone (936-645-7990). Most afternoons-see posted sign on door. Open door policy when in building.
Department: Arthur Temple College of Forestry and Agriculture
Class Meeting time and place: M,W 8-8:50, Room 222

SFASU values students’ mental health and the role it plays in academic and overall student success. SFA provides a variety of resources to support student’s mental health and wellness. Many of these resources are free, and all of them are confidential.

On-campus Resources:
SFASU Counseling Services www.sfasu.edu/counselingservices_3rd Floor Rusk
Building 936-468-2401

SFASU Human Services Counseling Clinic:
www.sfasu.edu/humanservices/139.asp
Human Services Room 202 936-468-1041

Crisis Resources:
Burke 24-hour crisis line 1(800) 392-8343  Suicide Prevention Lifeline 1(800) 273-TALK (8255) Crisis Text Line: Text HELLO to 741-741

Course Description: Explore fire history in the U.S., fire occurrence, effects and behavior, detection and control. The integration of fire in land management planning and policy will also be stressed. Prerequisite: FOR 209 or permission of instructor.

Program Learning Outcomes (PLO’s):

Forestry 3237 is one of the forestry core courses required of all forestry majors and thus competency is required. A minimum grade of a “C” must be attained or the course will have to be repeated. The following course learning outcomes (PLO’s) have been approved for the Bachelor of Science in Forestry (BSF) degree program:

1. Demonstrate understanding and competency of forest ecology and biology (PLO1);
2. Demonstrate understanding and competency in the measurement of forest resources (PLO2);
3. Demonstrate understanding and competency in managing forest resources (PLO3);
4. Demonstrate understanding and competency of forest resource policy, economics, and administration (PLO4);
5. Demonstrate understanding and competency in oral and written communication skills (PLO5).

**Student Learning Outcomes:**
1: Demonstrate knowledge of the importance of fire as a factor in forest and range environments (I, PLO 1).
2: Demonstrate understanding of the basic principles of combustion of forest and range fuels, (I, PLO1).
3: Demonstrate knowledge of fire behavior and fire ecology under various conditions (I, PLO1).
4: Demonstrate the ability to identify current problems/trends in fire management prevention, detection and suppression (A, PLO4).
5: Demonstrate the ability to describe the use of fire in land management (A, PLO3).
6: Demonstrate the ability to critically think about Wildland fire issues as well as communicate in both written and oral forms (I, PLO5).

**A:** Advanced – FOR 3237 supports Program Learning Outcome by providing students with transitional, high level topic-specific information, activities, and opportunities that enable the students to apply their critical thinking and tactical skills to resolved increasingly challenging strategic situations.

**I** – Intermediate – course supports Program Learning Outcome by providing students with topic-specific information, concepts, applications, and lab activities that increase the students’ skills in making tactical implementation decisions relative to the expected outcomes.

**References:** Pyne, Andrews and Laven, 2nd Ed. Introduction to Wildland Fire. **Not required.**

**Course Requirements:**
- 4, 100 point semester exams
- Final is optional for those with C or better from 4 exams; required for those with D or F. Will replace lowest test grade BUT CAN’T LOWER YOUR TOTAL POINTS!

**Tentative Course Calendar:** See schedule provided.

**Grading Policy:**
Each semester exam is worth 25% of final grade. Since the weight of each assignment is listed, a student should be able to determine their own performance in the class. **Do not expect me to do this for you!**

**Attendance Policy:**
Class attendance and participation is expected except for valid excuses. Being late regularly during synchronous sessions is not acceptable and will result in loss of points.

**Academic Integrity (A-9.1)**
Academic integrity is a responsibility of all university faculty and students. Faculty members promote academic integrity in multiple ways including instruction on the
components of academic honesty, as well as abiding by university policy on penalties for cheating and plagiarism.

Definition of Academic Dishonesty
Academic dishonesty includes both cheating and plagiarism. Cheating includes but is not limited to (1) using or attempting to use unauthorized materials to aid in achieving a better grade on a component of a class; (2) the falsification or invention of any information, including citations, on an assigned exercise; and/or (3) helping or attempting to help another in an act of cheating or plagiarism. Please read the complete policy at http://www.sfasu.edu/policies/academic_integrity.asp. Cheating or plagiarism may result in a least a “zero” on the assignment in question, and possibly an “F” for the course. This includes texting friends during tests and cutting/pasting lecture material into tests.

Acceptable Student Behavior
Classroom behavior should not interfere with the instructor’s ability to conduct the class or the ability of other students to learn from the instructional program (see the Student Conduct Code, policy D-34.1). Unacceptable or disruptive behavior will not be tolerated. Students who disrupt the learning environment may be asked to leave class and may be subject to judicial, academic or other penalties. This prohibition applies to all instructional forums, including electronic, classroom, labs, discussion groups, field trips, etc. The instructor shall have full discretion over what behavior is appropriate/inappropriate in the classroom. Students who do not attend class regularly or who perform poorly on class projects/exams may be referred to the Early Alert Program. This program provides students with recommendations for resources or other assistance that is available to help SFA students succeed.

Withheld Grades Semester Grades Policy (A-54)
Ordinarily, at the discretion of the instructor of record and with the approval of the academic chair/director, a grade of WH will be assigned only if the student cannot complete the course work because of unavoidable circumstances. Students must complete the work within one calendar year from the end of the semester in which they receive a WH, or the grade automatically becomes an F. If students register for the same course in future terms the WH will automatically become an F and will be counted as a repeated course for the purpose of computing the grade point average.

Students with Disabilities
To obtain disability related accommodations, alternate formats and/or auxiliary aids, students with disabilities must contact the Office of Disability Services (ODS), Human Services Building, and Room 325, 468-3004 / 468-1004 (TDD) as early as possible in the semester. Once verified, ODS will notify the course instructor and outline the accommodation and/or auxiliary aids to be provided. Failure to request services in a timely manner may delay your accommodations. For additional information, go to http://www.sfasu.edu/disabilityservices/.

TENTATIVE COURSE SCHEDULE
INTRODUCTION TO WILDLAND FIRE FUNDAMENTALS

Fire as Chemical and Physical Event
Regulated Fires
Free-burning Fires
Fire
Combustion
Fuel
   Cellulose
   Hemi-cellulose
   Lignin
   Extractives
Phases of Combustion
   Pre-ignition
   Pre-heating
   dehydration
   Pyrolysis
   Moisture of Extinction
   Thermal Conductivity/Diffusivity
   Surface/Volume Ratio
   Combustion
   Ignition
   Extinction
Heat Transfer
   Convection
   Conduction
   Radiation
Flaming Combustion
   Flame Height
   Flame Length
   Flame Depth
Fireline Intensity
Rate of Spread
Glowing Combustion
Head Fires
Back Fires
Flank Fires
Products of Wildland Fires-Burning, not ecological effects

FIRE BEHAVIOR

Fire Growth
   Intensity and Growth
Self-sustaining fires
Large fires/Fire Complexes
Rate of Spread
Intensity
Fireline Intensity
Fire Intensity
Fire Shape and Growth
Ground Fires
Surface Fires
Crown/Canopy Fires
Rate of Spread Factors
   Fuels
   Wind
   Topography
Modes of Propagation
   Head
   Convection
   Crown Fire-Torching
   Spotting
   Fire Whirls
Erratic Fire Behavior
   Spotting
   Ignition Sources
   Torching
   Effective Wind Speed
   Flame Reach
Crown Fire Factors
Fire Vortices/Fire Whirls

**TEST 1**

**FUELS**

Fuel Moisture
   Live Fuels
   Dead Fuels
Fuel Models
Appraising Fuels
Fuel Loading
Moisture Content
Fuel Models
Fuel Complexes

**FIRE WEATHER**

Atmospheric Stability
Indicators of Stability/Instability
Inversion Layers
Haines Index
Atmospheric Stability effects on Fire Behavior
Moisture
Wind
Fire Danger Rating
Burn Period
Critical Fire Periods
Fire Season
Fire Climates

**TEST 2**
Fire and Humans

Fire Regime
Fire History
  How to measure
Fire Cycle
Mean Fire Interval
Fire and Native Americans
Fire and European Settlement
Major Fires (see handouts)
Fire and Regulations/Laws
  Timber Culture Act
  Transfer Act
  Clark-McNary Act
History of Fire Attitudes
  Frontier Fire
  Backcountry Fire
  Mass Fire
  Wilderness Fire
  Today?
Commonalities of Large Fires
  Weather
  Fuels
  Timing
  Cause

FIRE MANAGEMENT

Objectives of Fire Management
Considerations/Perspectives when looking at Fire Management in US
  Historical
  Political
  Administration
  Economic
Fire Management Structure
  Federal
  State
  Private Sector
  International
Fire Prevention
  Education
  Engineering
  Enforcement
  Weather Modification
Problem Fires
Detection and Communication
Fuels Management
  Reduction
  Conversion
  Fuel Isolation
Fire Suppression
  Wildfire
  Escaped Fire
  Prescribed Fire
Control
  Direct
  Perimeter
  Prescription
Fire Fighting Orders

TEST 3

FIRE ECOLOGY

Species survival after fire
  Adaptability
  Survival
General Effects on Soil
  Physical Changes, texture, water repellency
  Chemical Changes
    Ph
    Nitrogen
    Sulfur
    Phosphorus
    Potassium
    CEC
    Calcium/Magnesium
Microorganisms
General Effects on Watersheds, Water
  Interception
  Infiltration
  Runoff
Soil Movement
Water Quantity and Quality
General Effects on Air
  Smoke Management
General Effects on Vegetation
  Direct vs. Indirect
  Growth stimulation/stress
  Foliar damage-scorch
  Grass/Shrubs
Bark vs. Cambium
Specific Communities
  Grasslands
    Shortgrass
    Mixed-grass
    Tallgrass
  Semi-desert shrub-grasslands
  Chaparral
  Sagebrush
  Pinyon-Juniper
Western Conifers
Southeast Forests
Northeast/Northern Forests

TEST 4