Instructor: Dr. Brian Oswald  
Email: boswald@sfasu.edu  
Office: FOR 200B  
Office Hours: Via email or cell phone (936-645-7990). Open door when in building.  
Department: Arthur Temple College of Forestry and Agriculture  
Class Meeting time and place: M,W 8-8:50, Room 222 Forestry Building  

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 337 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 337 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.


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!
Keep track of your grades when I return tests so you know how you are doing in the class!

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
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. As SFA transitions to being part of the UT System, there are changes in how academic dishonesty incidents are handled compared to the past. See https://www.sfasu.edu/docs/policies/10.4.pdf. A complete copy of the 2023-2024 Handbook to the Code is found on the D2L site for this class.

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. 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, cutting/pasting lecture material into tests, and using AI generated materials (Chat GPT, etc).

**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/](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
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