***Reedley College*** *– Natural Resources/Forestry/Wildland Fire Technology*



**Course:** NR 5 – Section 55687

**Title:** Wildland Fire Technology

Friday – 8:00 to 12:50 p.m.

**Dates:** January 13, 2020 to May 22, 2020

**Room:** FEM 12

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**Syllabus**

**Instructor:** Robert Betancourt

**Office Telephone:** TBD

**Email:** robert.betancourt@reedleycollege.edu

**Office Location:** FEM-10

**Office Hours:** By Appointment

**Drop Deadline: January 24, 2020** – Last day to drop for full refund

**January 31, 2020 -** Last day to drop to avoid a “W” on transcript

**March 13, 2020 –** Final Drop Date (Letter grade assigned after)

**Final Exam:** TBD

# Laboratory Handbooks (Provided)

#1 - NR-5 Lab Manual National Wildfire Coordinating Group, Contents:

1. S-130
2. S-190
3. L-180

#2 - Incident Response Pocket Guide (IRPG)

**Laboratory Guidebooks on the Internet (Download Required)**

1. **“**Wildland Fire Incident Management Field Operations Guide” (PMS 210) January 2014.
2. “National Incident Management System Emergency Responder Field Operations Guide” (October 2010)

\*\* Documents available on the Internet (google them) and will be useful for homework assignments. Other online guidebooks may be announced in class.

**Course Prerequisite:** Eligibility for ENGL 125, ENGL 126, and MATH 101. (A, CSU)

SPRING 2020 ACEDEMIC CALENDAR

**Course Description:**

Preparation for employment and advancement within a State or Federal wildland fire agency. This course will convey the most current information and training available for entry level wildland firefighters. Students will gain an understanding of the day to day operations and fundamental tactical expectations of “rookie” firefighters in order to better prepare them for employment in the wildland fire service. Students can expect to be structured in a disciplined fashion where success of the team and teamwork comes before the individual. This course will prepare students with the fundamental concepts of fire behavior, command and organization structure, tools and equipment, physical training, lessons learned and leadership.

**Course Objectives:**

This course is a wildland fire preparedness course comprised of four National Wildland Fire Coordinating Group (NWCG) and one Federal Emergency Management (FEMA) courses. It will prepare students for entry-level wildland fire suppression employment with State and Federal wildland fire agencies. NWCG and FEMA Certifications for S-130 Basic Firefighter, S-190 Introduction to Fire Behavior, L-180 Human Factors in Wildland Fire Service, IS-700 Introduction to the National Incident Management System, and I-100 Introduction to the Incident Command System will be offered.

This class also strives to develop physical skills that are necessary for arduous wildland firefighting work. Fire line construction, hand tool maintenance, fire shelter deployment, fire hose drills, fire engine operations, and foot travel in complex terrain are components of our lab exercises.

**Learning Outcomes:**

In the process of completing this course:

1. Students will understand the organization system used to manage wildfires and other emergency incidents, and how the Incident Command System fits into the Nation-Wide emergency management structure.

2. Students will be able to recite the factors which influence wildland fire behavior. They will comprehend basic wildland fire suppression tactics and strategy concepts and how the “Watch Out Situations” and “Standard Firefighting Orders” and “LCES” (Lookouts, Communications, Escape Routes, and Safety Zones) apply to these concepts.

3. Students will be able to identify factors that affect working relationships with co-employees during long stressful fire seasons and how these factors may lead to safety issues.

4. Students will satisfactorily perform line construction techniques in the field in accordance with fire physics and fire behavior elements.

5. Field performance will include an understanding of the safe use and maintenance of various tools and equipment for fire suppression and student engagement.

**Online:**

 Portions of this class will be online and will be announced by the instructor. **CANVAS** will be used for disseminating messages, information and assignments.

**Participation in Laboratory work:** Field exercises (labs) are scheduled regardless of weather. At times temperatures may be over 100 degrees or rainy conditions may be present. Students need to be prepared to hike continuously for 3 miles over rough terrain at a moderate pace under the weather conditions of the day. Students will learn and demonstrate how to use hand-tools (shovels, Pulaskis, and Mcleods) to construct fire control line and use fire hose and appliances to construct hose lays. It is strongly recommended that students be in good physical condition to perform arduous tasks. The intent of the field exercises is to prepare the students for what can be expected of them as a wildland firefighter both technically and physically.

Firefighting is a particularly labor-intensive task. Safety and success depend on every person’s full participation. In this class you will be practicing actual fire-line work. For the safety of others, and yourself, you must perform in a responsible manner. You must have your own PPE in order to participate in laboratories. **You will be charged an absence and not be allowed to participation if you are not prepared for field tasks.**

Your performance in the physical laboratory training is assessed for a grade. If you cannot safely carry out the tasks for any reason, including a health condition, you should notify the teacher. Consideration will be given to modify the requirements on an individual basis.

**Class Notification:** Class notifications will be made by your instructor through **CANVAS.** you are ***required*** to monitor **CANVAS** for course updates, information sharing and assignments.

**Cancelled Class Notification:** Communications for class cancellations will be made by your instructorthrough **CANVAS.**

**Academic Dishonesty, Plagiarism and Cheating:**

Students at Reedley College are entitled to the best education that the college can make available to them, and they, their instructors, and their fellow students share the responsibility to ensure that this education is honestly obtained. Because cheating, plagiarism, and collusion in dishonest activities erode the integrity of the college each student is expected to exert an entirely honest effort in all academic endeavors. Academic dishonesty in any form is a very serious offense and will incur serious consequences. Refer to the college catalog for further details surrounding actions that will be implemented regarding academic dishonesty.

Plagiarism is the adoption or reproduction of the ideas or words or statements of another person without due acknowledgment. Cheating is the act or attempted act of taking an examination or performing an assigned, evaluated task in a fraudulent or deceptive manner, such as having improper access to answers in an attempt to gain an unearned academic advantage. Cheating can take the form of the storing of information in graphing calculators, pagers, cell phones, and other electronic devices. Therefore, no items of any kind may be on the desktop, including water bottles, during testing. Students may not wear hats/caps during testing. Incidents of cheating and plagiarism may result in a variety of sanctions and penalties, which may range from a failing grade on a particular examination, paper, project, or assignment in question to a failing grade in the course at the discretion of the instructor and depending upon the severity and frequency of the incidents.

**Accommodations for students with disabilities**:

 If you have a verified need for an academic accommodation or materials in alternate media (e.g., Braille, large print, electronic text, etc.) per the Americans with Disabilities Act (ADA) or Section 504 of the Rehabilitation Act please contact me as soon as possible. **A formal counseling assessment to determine the appropriate accommodation is required before any accommodation(s) can be made. The counseling center facilitates the process.**

**Field Trip**: Do Be Determined

**Grading Policy and Certificates**:

To receive a certificate of successful completion a student must pass all S-190, L-180, S-130 and I-100 unit exams with a satisfactory score (specified for each unit) and pass the final exam for each course. Final exam passing grade for NWCG & FEMA courses is 70% (NWCG and FEMA requirement).

Students who pass the S-190 **mid-term**, S-130, and L-180 unit **final exams** but fail the overall class (end of semester grade of “F”) will not be given the certificates. In-other-words students must pass the class with a grade of “D” or better in order to receive the certificates.

# Course Unit Points Available Certificate Acquired

# ICS-100 30 Points NWCG, ICS-100

# IS-700 30 Points FEMA, IS-700

# S-190 Mid-term 80 Points NWCG, S-190

# S-130/L-180 Final 80 Points total NWCG, S-130, S-133, L-180

Field Participation 30 Points

Assigned work/quizzes 20 Points

Grading will be based on the results of 5 Unit Tests /quizzes and Field participation. Assignments must be submitted on the due date or earlier. **Assignments and exams will be based on lectures, in-class labs, and reading assignments. Please read all assigned readings!**

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| **Grade Distribution** |
| A = 243-270 Pts. | 90-100% |
| B = 216-242 Pts. | 80-89% |
| C = 189-215 Pts. | 70-79% |
| D = 162-188 Pts. | 60-69% |
| F = Below 162 Pts | Below 60% |

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| **Assignment Type** | **Possible Points** |
| Course units ICS-100, IS-700 | 2 @ 30 Pts ea. = 60 |
| Mid-Term Exam S-190 | 80 |
| Final Exam S-130, L-180 | 80 |
| Field /Participation  | 30 |
| Assigned Work/Quizes | 20 |
| **TOTAL Points Possible** | **270** |

**Student Required PPE for Field Trips:**

*Each student must have the following items during each class in order to be allowed to participate and earn credit for field trip.*

- Hardhat

- Leather Gloves

- Water container (1-quart canteens or water bottles)

- Leather Boots (minimum 8” high uppers, nonskid soles preferably Vibram, no steel) (estimate $200)

- Long Pants w/ Belt (no cuffs, NO HOLES)

- Long Sleeve Cotton Work Shirt (NO HOLES)

- Backpack sufficient to carry hardhat, gloves, safety glasses, water, and food (needs to be in addition to your regular school backpack). Chest and waist straps are advisable.

\*\*\* Details will be given during the first class meeting\*\*\*

**Behavioral Standard Operating Procedures:** \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

***Respect and Common Courtesies:*** Students and teachers greatly appreciate attention to appropriate classroom courtesy. Please take care of personal needs (e.g., using the restroom, getting a drink, sharpening a pencil) before class begins. Foul language or disruption to the instruction will not be tolerated. All class attendees will treat and be treated with respect or will be asked to leave the class by the instructor. There will be no tobacco use in any building or school farm.

KEEP IT TIGHT: Seating arrangement must be in a close-knit cluster

***Attendance and Punctuality:***I start class on time and take roll. Please do not be late. If you are late, it is your responsibility to ensure that you are counted for attendance **after** class. To be considered present, students should be in class, attentive, properly attired, and ready for classroom or field activities regardless of weather or other factors. ***Two tardies will count as one absence.* *Roll will be taken at each session and students will be dropped if two absences are accrued unless specific arrangements are made.*** Field trips/exercises missed cannot be made up.

Because the job of a Wildland Firefighter is inherently risky, you are expected to put forth nothing less than complete focus while you are in this class. As your instructor, I cannot permit distractions that takes focus away from the rest of the class as the concepts that we cover may one day keep you or others safe on the fireline. I will not allow any interruptions that take away learning opportunities from others. Students are allowed to miss only 10 hours of class *(equivalent to 2 class sessions plus a cushion)* during the semester including absences and tardies. Any absences beyond 10 hours will be grounds to be dropped from the program. If you have other commitments that may impact your ability to show up on time or will impact your ability to attend class, you may want to enroll at another time.

IF THERE IS ANYTHING I NEED TO KNOW: about your situation that may create challenges for you this semester you need to let me know as soon as possible, that way I can have awareness.

SLEEPING IN CLASS: If you are observed to be sleeping in class you will be excused until you can come back attentive. If you If you are tired while in class you may stand up at your discretion in order to maintain focus. If your tiredness becomes a problem/distraction, the instructor may excuse you for the day and you may be marked absent.

***Technological Gadgets:*** Please turn off or silence cell phones when entering the class.

PHONE USE WILL NOT BE ALLOWED IN CLASS: If you are observed using your phone during class time you will be asked to leave class, you will be marked as absent and will lose credit for the entire day. Phones will not be out while you are in the class room. All texting and electronic device activities must be done outside of class. You will get breaks on the hour, do what you need to do then outside of the class room. If you expect something to come up during class that requires phone use let me know and I will allow you to use/monitor it at my discretion.

***Assignments:***

WRITING ASSIGNMENTS: All writing assignments will require that you visit the Writing center in order to receive a full grade.

MODULE TAKE-AWAYS: After each class session you will be required to write down 5 main points that you took away from class.

YOU ARE REQUIRED TO TAKE NOTES, IT WILL BE A PART OF YOUR GRADE: Much of the concepts and information you will be required retain will be passed along through lectures. You must take good notes to ensure that you have the required material for study purposes. If you miss class you will need to find a class mate and obtain the notes for the day you missed. Lecture information will not always be formatted to be posted on canvas.

COMMUNICATION IS REQUIRED: Unless previously arranged with the instructor, if you miss a deadline on an assignment without contacting me ahead of time you will not get an opportunity to make it up, which means you will get a zero. You need to be a responsible adult; this program will not enable irresponsibility.

MISSED EXAM: In the event you are going to miss an exam OR assignment you must:

o Contact me at least 1 day ahead of time to let me know your special situation.

o Notify me ahead of time to not be penalized.

TEAM WORK: The only way we get through this is together. We need to help one another. Work as a team, pick each other up, help one another get through the academic and physical challenges, we need to have regular study groups, hold each other accountable and hold yourself accountable.

PERSONAL GROWTH AND EFFORT: You are here by choice and you are going to do it anyway, might as well do it right. Have some integrity to do the right thing when no is looking.

READING AND WRITING IS REQUIRED: During this course you should expect to have to communicate through reading, writing and oral briefings.

***Preparedness:***

YOU ARE RESPONSIBLE FOR YOUR LEARNING: If you don’t understand you need to ask. You are here by choice so, strive to do well. If you don’t ask, I cannot help you.

PARTICIPATION GUIDELINES: participation is considered active involvement in all class room or lab activities. Participation requires you to engage in lecture topics. You will be graded on your participation.

CLASS ROOM PREPAREDNESS: You will be docked preparedness/participation points for not having your required materials. You must always bring to class your Lecture/Lab Manuals

* YOU MUST ALWAYS BE PREPARED FOR CLASS:
	+ If you do not have your proper PPE you will be excused from class and will lose credit for the day.
	+ If you do not have your lab manual or notetaking materials you will be considered unprepared, will be excused from class and will lose credit for the day.
* Personal Protective Equipment (PPE) is mandatory for all field exercises. Safety rules must be strictly followed including the use of personal protective equipment (PPE) and cautious behavior. Students who fail to have in possession all PPE for field trip/exercises will not be allowed to participate, will be dismissed from the day’s exercise, and will be charged an absence for the day. ***SEE STUDENT REQUIRED PPE listed items at the end of this document.***
* ***Classroom Visitors:*** It is not acceptable to bring guests to class.
* ***Late Work:*** Work that is turned in late will lose 10% percentage grade points for each class session that is missed. (one class session late = -10% two class sessions late = -20%. Make up work ***will not*** be accepted after 3 missed sessions)
* ***Make-ups:*** Make up work will be accepted at the discretion of the instructor. All make up work must be discussed and approved by the instructor. Do not assume that make up work will be made available to you.
* ***Extra Credit:*** Extra Credit opportunities may be made available throughout the semester. Opportunities will be communicated as they arise.

Course Outline:

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| **Mastery SKILLS** | * **Belt Weather Kit**
* **Probability of Ignition**
* **Tool Maintenance & Sharpening**
* **6 Minutes for Safety**
* **Hanford Fire Weather**
* **Helicopter Loading and unloading**
* **After Action Review**
 | * **MRE preparation**
* **Progressive Hose lay**
* **Line Construction & Trenching**
* **Briefings**
* **Pack Test Orientation**
* **Minor Medical Scenario**
* **Progressive Hose lay**
* **Downhill Line Construction**
 |
| **MODULE** | **TOPIC** | **SCHEDULE & ASSIGNMENTS** | **LEARNING OBJETIVES** |
| **1** | **Introduction****S-130-Unit 0** | * **LECTURE 1:** Introduction to wildland fire and historical interaction of fire on the landscape.
* **PPT-**
* **VIEW and DISCUSS**: \*\****YouTube***-The Big Burn of 1910, The heart of a firefighter.
 | * Explore history of Fire in the western US.
* Gain an understanding of the various fire organizations and missions & LMA’s
* Define what a wildland firefighter is.
* Explore the culture and requirements for the job.
 |
| **2** | **Basic Terminology and Preparedness****S-130-Unit 1 & 2*****Home Work- Risk Management, 10’s & 18’s*** | * \*\* Line construction drill
* **LECTURE 2a:** Fire Basics, terminology and Incident Command Structure
* **LECTURE 2b:** Wildland Firefighter Preparedness.
* **PPT-**
* **VIEW and DISCUSS:** \*\****YouTube*** – Meet the Warriors of the west
 | * Identify components of the fire and understanding of basic fire behavior elements & Suppression basics.
* Introduction to the Incident Command Structure & Span of control.
* Understanding of the WLF Lifestyle, fire camps and available logistics.
* Understanding the demands of the job. (Blood, Sweat, Tears)
* Introduction to fireline gear equipment and personal gear.
 |
| **3** | **INTRO-Pack-test****Organizational Structure and Resource types****S-130-Unit 3, 4a, 4b, 4c & 6****HOMEWORK****IS-100****IS-700b** | * **LECTURE 3a:** Wildland Fire resources and types.
* **LECTURE 3b:** Risk Management
* **PPT-**
* **VIEW and DISCUSS:** \*\****YouTube*** – South Canyon Revisited
* **IN CLASS ASSIGNMENT:** **1)** South Canyon Worksheet. **2)** Study Guide Worksheet
 | * Introduction to the pack test.
* Demonstrate proper maintenance of hand tools.
* Define what a WLF resource is.
* Define the different type of fire suppression crews.
* Identify the concepts of Risk Management and the WLF rules of engagement.
 |
| **4** | **FIELD STUDY** | TBD FIRE SCENARIO* **ASSIGNMENT:** Wildland fire Scenario-Functional application of concepts and skills.
* **HOMEWORK:** Lessons learned assignment:

**-** Communication- Suppression Principals- Risk Management- ICS | * Make connections of Learning Objectives to date.
* Demonstrate how to use a belt Weather Kit
* Communication
* Risk Management

- 10 Standard orders- 18 Watch Out Situations- LCES* Suppression Tactics

- Line construction- Gridding* Incident Command Structure

- Chain of Command- Span of Control |
| **5** | **Intro to Human Factors S-130 Unit 4d****QUIZ** | * **LECTURE 5:**
* **PPT**- L-180
* **VIEW and DISCUSS**: ***YouTube*** –
* **Assignment:** Quiz (Content: S-130 – Unit 1, 2, 3, 4, & 6
* ***Home Work-*** *Reading: Carl Weick: South Canyon Revisited*
 | * Define what Human Factors are.
* Understand how human factors effect firefighter performance and safety.
* Define situational awareness
* Gain understanding of leadership and effect on group performance and moral.

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| **6** | **Introduction to Fire Behavior****S-190- Unit 1, 2a, 2b, & 2c** | * **LECTURE 6a:** Basic Concepts of Wildland Fire Behavior.
* **LECTURE 6b:** Topography Influences
* **LECTURE 6c:** Fuels
* **LECTURE 6d:** Weather
* **PPT-** S-190
* **VIEW and DISCUSS:**

***- YouTube:*** New Generation fire Shelter* **IN CLASS GROUP ASSIGNMENT:** Answer study guide questions. ***Come up with 5 questions to ask in class.***
 | * Discuss concepts surrounding basic fire behavior principals.
* Describe how topography and specific landscape shapes affects fire behavior.
* Identify how Fuels and Fuels characteristics influence fire behavior.
* Identify basic weather concepts that affect fire behavior
* Introduction to the Fire Shelter
 |
| **7** | **Introduction to Fire Behavior****S-190 Unit 3****MID TERM REVIEW** | * **LECTURE 7:** Wildland Fire Behavior and Safety
* **PPT-** S**-**190
 | * Identify Indicators that tell us that fire behavior is increasing.
* Describe the combined influences that may cause extreme fire behavior.
* Identify 7 environmental factors to be aware of when monitoring fire behavior.
* Reinforce concepts
 |
| **8** | **MID TERM** |  |  |
| **9** | **Human Factors on the Fireline****L-180*****Introduction to Progressive Hose lay***  | * **LECTURE:** Human Factors on the fire line
* **VIEW and DISCUSS:** Recap South Canyon Fire, Review Mann Gulch
* **IN CLASS GROUP ASSIGNMENT:**
 | * Define what Human Factors are.
* Understand how human factors effect firefighter performance and safety.
* Gain understanding of leadership and effect on group performance and moral.
 |
| **10** | **Human Factors on the Fire Line****L-180****Medical Evacuation Protocol** | * **LECTURE 10a:** Human Factors on the fire line.
* **LECTURE 10b:** Aviation Resources
* **PPT-** L-180
* **VIEW and DISCUSS:** YouTube: Aviation -Load and Return **ASSIGNEMNT-** Complete in class work sheet-Pick the Resource
 | * Define an **After Action Review**, how is it used and why it is an important tool.
* Describe how human factors effect decision making and communication.
* Develop and apply Medical evacuation protocols
* Utilize 9 line reporting system to communicate an emergency.
 |
| **11** | **FIELD STUDY****S-130- Unit 5, 7, 8, 9, 10, 11 & 12** | TBD FIRE SCENARIO* **ASSIGNMENT:** Wildland fire scenario
* **HOMEWORK:** Lessons learned assignment:

**-** Line Construction**-** Shelter Deployment- Application of Rules of Engagement | * Make connections of Learning Objectives to date.
* Gain an understanding of Suppression Principals.
* Application of 10’s, 18’s & LCES
* Demonstrate Fire Shelter Deployment under simulated conditions
* Demonstrate effective patrolling and Radio Communication
* Demonstrate mop up and securing strategies
 |
| **12** | **Wildland Urban Interface****S-130 Unit 14****Yarnell Hill-Case study** | * **LECTURE:** Fighting Fire in the Wildland Urban Interface
* **VIEW and DISCUSS:**

**- YouTube- #1** Urban Interface Videos, **#2** Yarnell Hill | * Gain understanding of how fighting fire in the urban interface can add additional complexities to suppression activities
* Review and Assess Yarnell Hill fire, identify likely factors of the outcome.
 |
| **13** | **Hazmat Awareness****S-130 Unit 13****Aviation Resources** | * **LECTURE 13a:** Hazardous material awareness on the fire line.
* **LECTURE 13b:** Aviation Resources.
* **VIEW and DISCUSS:** YouTube- **#1** Load and return **#2** National Geo-Fire Bombers
 | * Develop a working definition of Hazardous Materials
* Explain the general guidelines to reacting to a Hazmat emergency.
* Basic utilization of Hazmat guidebook.
* Define the typical resources and their uses.
* Introduction to Aviation resources and how they are used during fire suppression.
 |
| **14** | **FIELD STUDY****Dispatch Center Tour****Meet and Greet** | * **ASIGNMENT:** Program Orientation
* **HOMEWORK:** Answer Study Guide Questions
 | * Familiarization with the Emergency Command Center Operations
* Assess how managing for species and forest restoration create complexities.
 |
| **15** | **FINAL REVIEW** | * **LECTURE:** Open Discussion and Review
 | * Reinforce concepts
 |
| **16** | **FINAL EXAM** |  |  |