

COURSE SYLLABUS
NRES 454 - FIRE BEHAVIOR AND FUELS
Fall 2019

Meeting Time and Location:

Section 1: **Lecture:** Mondays: 11:00 – 11:50 **Room:** TNR 320

Mid Term Exam: October 21st 11:00AM-11:50PM

Final Exam: Last Day of Class Dec 9th 11:00AM-11:50PM

Instructor:

Dr. Elias Anoszko

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Course Purpose & Description: The purpose of this course is to provide you with an intermediate understanding of fire behavior and the fire environment. This course will be a hybrid class with 75% of instruction online and 25% in person. The course is divided generally into 3 units; fuels, weather, and behavior. Note that elements of weather relationships will be incorporated into the units on fuels and fire behavior as well. The unit on fuels will cover sampling for fuel characterization (ground and canopy), live and dead fuel moisture, determining weather relationships, and have some emphasis on fuel model determination and fuel modeling. The unit on weather will cover basic processes, atmospheric stability, wind systems and sources of weather data. The unit on fire behavior will explore the combustion process, properties of fire and how the fire environment affects spread and behavior. It will also cover estimation methods and basic calculations for characterizing and predicting fire behavior.

Course Objectives, Learning Outcomes and Dispositions:

Objectives:

To facilitate student learning and understanding about the fire environment – fuels, weather and topography and their respective contribution to varying fire behavior. To give students practical experience in measuring and characterizing fuels, weather conditions and resulting fire behavior. To equip students with an understanding of fuel models and their use in fire behavior modeling. To develop understanding of factors that contributes to extreme fire behavior and how that impacts safety and tactical approaches to wildland firefighting.

Learning Outcomes:

Students will; 1) be able to identify and describe the characteristics of the fire environment: topography, fuels and weather and how these elements interact and influence wildland fire behavior, 2) learn to assess fuel characteristics and describe how weather interacts with fuels to influence fire behavior, 3) be able to characterize, calculate and predict wildland fire behavior, 4) learn how fire behavior models work and how to , 5) be able to apply fire behavior models to wildland situations and know the limitations of models, and 6) learn the causes of extreme fire behavior in relation to the fire environment

Dispositions:

Students will appreciate the variability in the fire environment and thus the complexity of fire behavior and its prediction. Students will value data accuracy and the best methods to achieve accuracy for behavior prediction. Students will respect the situations that lead to propagation of extreme fire behavior.

Required Textbook(s):

A number of National Wildfire Coordinating Group publications will be required. PDFs of these publications and other required readings will be provided on Canvas or e-Reserve.

Canvas: This course will use a Canvas site to provide assigned readings, turn in completed assignments (lab reports, projects), provide access to your grade, rubrics, and other as appropriate.

Assignments and Class Activities:

S-290 Online Class: Completion of the online S-290 Course is a basic requirement of this class. You will not pass this class unless you complete all units and quizzes and send your scores to me. This will count for 20% of your grade. Register for the course online at <https://www.nwcg.gov/publications/training-courses/s-290/online-delivery> As part of S-290 you will take 12 online quizzes one for each unit of the class, you may retake them as many times as you would like but must share your grades with me prior to class each week You should work on them individually.

Homework Assignments: will be assigned during class and turned in either with Canvas or in class the following week. Several in class pop quizzes will also be given and included in your homework grade.

Burn Report/Lab Report: If observation of a prescribed fire can be arranged, we will take a field trip to observe the fire and collect fuels measurements before and after the fire from which you will write a report describing the fire behavior. Otherwise we will collect some pre-fire data and then conduct a simulated burn and you will be provided with post-fire output to analyze.

Grading Policies / Procedures / Scale:

Two exams will be given. Each exam will cover **primarily** material since the previous exam. However, note that each unit will build on the previous material; therefore, each exam will have a comprehensive element. The last exam will be given on **December 9th**. The exams over each of the units will compose 50% of the final grade. Exams will be a combination of multiple choice, short answer and at least one or more short essay question.

Grading

Mid Term Exam	25% (75 pts)
Final Exam	25% (75 pts)
S-290 Weekly Quizzes	20% (60 pts)
Homework+ In class quizzes	15% (45 pts)
Burn Report/Lab Report	15% (45 pts)

Grading

<u>Score</u>	<u>Letter Grade</u>	<u>Score</u>	<u>Letter Grade</u>
100-93	A	77-73	C
92-90	A-	72-70	C-
89-88	B+	69-68	D+
87-83	B	67-60	D
82-80	B-	<60	F
79-78	C+		

Student Responsibilities:

UWSP values a safe, honest, respectful, and inviting learning environment. In order to ensure that each student has the opportunity to succeed, we have developed a set of expectations for all students and instructors. This set of expectations is known as the *Rights and Responsibilities* document, and it is intended to help establish a positive living and learning environment at UWSP. Click here for more information:

<http://www.uwsp.edu/stuaffairs/Pages/rightsandresponsibilities.aspx>

Academic integrity is central to the mission of higher education in general and UWSP in particular. Academic dishonesty (cheating, plagiarism, etc.) is taken very seriously. **Don't do it!** The minimum penalty for a violation of academic integrity is a failure (zero) for the assignment. For more information, see the UWSP "Student Academic Standards and Disciplinary Procedures" section of the *Rights and Responsibilities* document, Chapter 14, which can be accessed here:

<http://www.uwsp.edu/stuaffairs/Documents/RightsRespons/SRR-2010/rightsChap14.pdf>

Materials that you use in your report that are not your own must be credited with a source. This includes photo credit for photographs that are not your own.

Students With Disabilities:

The Americans with Disabilities Act (ADA) is a federal law requiring educational institutions to provide reasonable accommodations for students with disabilities. For more information about UWSP's policies, check here:

<http://www.uwsp.edu/stuaffairs/Documents/RightsRespons/ADA/rightsADAPolicyInfo.pdf>

If you have a disability and require classroom and/or exam accommodations, please register with the Disability and Assistive Technology Center and then contact me at the beginning of the course. I am happy to help in any way that I can. For more information, please visit the Disability and Assistive Technology Center, located on the 6th floor of the Learning Resource Center (the Library). You can also find more information here: <http://www4.uwsp.edu/special/disability/>

EMERGENCY SITUATIONS:

The following guidance for appropriate response in *Emergency Situations* is excerpted from the Risk Management Preparedness web page:

“In the event of a *medical emergency*, call 911 or use red emergency phone located (list location). Offer assistance if trained and willing to do so. Guide emergency responders to victim.

In the event of a *tornado warning*, proceed to the lowest level interior room without window exposure at (list primary location for shelter closest to classroom). See www.uwsp.edu/rmgt/Pages/em/procedures/other/floor-plans for floor plans showing severe weather shelters on campus. Avoid wide-span rooms and buildings.

In the event of a *fire alarm*, evacuate the building in a calm manner. Meet at (state logical location to meet 200 yards away from building). Notify instructor or emergency command personnel of any missing individuals.

Active Shooter – Run/Escape, Hide, Fight. If trapped hide, lock doors, turn off lights, spread out and remain quiet. Follow instructions of emergency responders.

See UW-Stevens Point Emergency Management Plan at www.uwsp.edu/rmgt for details on all emergency response at UW-Stevens Point.”

University of Wisconsin-Stevens Point College of Natural Resources

Principles of Professionalism

The College of Natural Resources at the University of Wisconsin – Stevens Point prepares students for success as professionals in many fields. As a professional, there are expectations of attainment of several personal characteristics. These include:

Integrity

Integrity refers to adherence to consistent moral and ethical principles. A person with integrity is honest and treats others fairly.

Collegiality

Collegiality is a cooperative relationship. By being collegial you are respecting our shared commitment to student education through cooperative interaction. This applies to all involved in the process: students, staff, faculty, administration and involved community members. You take collective responsibility for the work performed together, helping the group attain its goals.

Civility

Civility refers to politeness and courtesy in your interactions with others. Being civil requires that you consider the thoughts and conclusions of others and engage in thoughtful, constructive discussion to express your own thoughts and opinions.

Inclusivity

Inclusivity requires you to be aware that perspective and culture will control how communication is understood by others. While many values are shared, some are quite different. These differences in values should be both considered and respected.

Timeliness

Timeliness is the habit of performance of tasks and activities, planned in a way that allows you to meet deadlines. This increases workplace efficiency and demonstrates respect for others' time.

Respect for Property

Respect for property is the appreciation of the economic or personal value an item maintains. Maintaining this respect can both reduce costs (increase the operable life of supplies and equipment) as well as demonstrate respect for others rights.

Communication

Professional norms in communication require that you demonstrate the value of your colleagues, students, professors or others. The use of appropriate tone and vocabulary is expected across all forms of communication, whether that communication takes place face to face, in writing or electronically.

Commitment to Quality

Quality is the ability to meet or exceed expectations. By having a commitment to quality, we intend to provide a learning environment that is conducive to learning. Intrinsic to this commitment to quality is defining expectation (committed to in a syllabus through learning outcomes), implementation (with quality control in place) and assessment (where meeting of learning outcomes is determined).

Commitment to Learning

Learning is a lifelong process. By being committed to learning you are providing a model for all to follow. This model is not only professor to student but involves all combinations of people within our university and broader community

Adherence to this compact is required of the faculty and staff of the College of Natural Resources and of all students enrolled in College of Natural Resources courses.