

# Wildland Pest Management ~ Forest Health ~

FORS 4240 with Dr. Michael Remke

Spring 2024



*Image: Round headed beetle mortality in ponderosa pine forests, southwest Colorado*

Welcome to FORS 4240 – Wildland Pest Management. Pest management in wildland forests can be considered integrated forest health, and this is how we will frame this course.

This course will cover topics ranging from forest health to taxonomy of common forest pathogens and biotic disturbance agents in Northern New Mexico. We will explore relevant case studies locally and globally to learn about forest health topics.

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*Figure 1: Western redcedar, a culturally important tree, has been used to make canoes for thousands of years.*

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Course Information:

<b>Course Number:</b>		<b>Instructor:</b>
FORS 4240		Dr. Michael Remke
<b>Term:</b>	<b>Credits:</b>	<b>Office:</b>
Spring 2024	4	Ivan Hilton Science Building (IHS) 135
<b>Lecture Meeting Time:</b>	<b>Lecture Meeting Place:</b>	<b>Email:</b>
Monday, Wednesday 1:00-1:50pm	IHS 271A	<a href="mailto:mremke@nmhu.edu">mremke@nmhu.edu</a>
		<b>Phone:</b>
		(505)454-3320
<b>Lab Meeting Time:</b>	<b>Lab Meeting Place:</b>	<b>Teaching Assistant:</b>
Thursday 8:00-9:50am	IHS 361	Dhanu Jayanto <a href="mailto:hjayanto@live.nmhu.edu">hjayanto@live.nmhu.edu</a>
<b>Zoom information:</b>		
<a href="#">Zoom Room</a> ; Password: Pests		
Website: <a href="http://www.mycoremke.com/pest-management">www.mycoremke.com/pest-management</a>		

**Student Hours:**

~ Student hours are when my office door is open for any drop-in conversation.

Please use this time to discuss course material, career ideas, or anything else you really want to nerd out on.

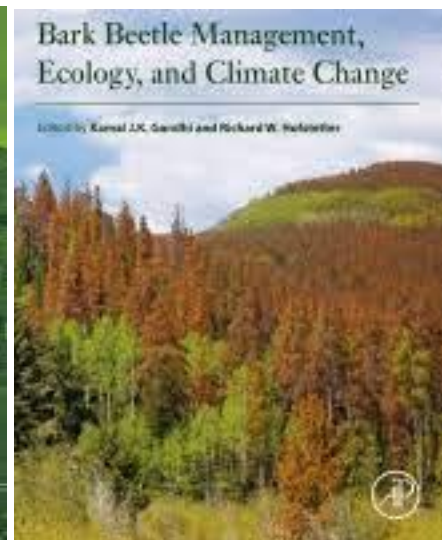
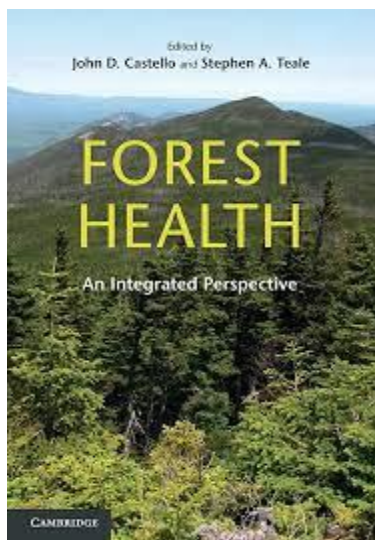
<b>Student Hours: Spring 2024</b>		<b>None of these times work?</b>	
<b>Day</b>	<b>Time</b>		
Monday	10:00am-12:00pm coffee hour	If none of these times work scan this QR Code to schedule an alternative time to meet	
Tuesday	2:00pm-4:00pm seltzer hour		
Wednesday	11:00am-1:00pm lunch hour		

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\*Please bring your own beverage to enjoy with our conversation, if you want

Textbook and readings: **Readings for this class will be uploaded to BrightSpace and no text book is required.**

**The books below are what many lecture materials and lab materials will be based on and are highly recommended for your personal forestry library for supplemental readings and future reference, but I will not require readings from these books.**



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Field Guide to  
**Diseases  
 & Insects**  
 of the  
**Rocky  
 Mountain  
 Region**

USDA  United States Department of Agriculture • Forest Service  
 Rocky Mountain Region, Forest Health Protection  
 Forest Insect and Disease Research Station  
 General Technical Report RMRS-GTR-111  
 December 2002

**IMPORTANT:** In addition, the [Field Guide to Disease & Insects](#) is required but is available for free as a pdf [here](#). Please consider having the pdf available in class or purchase the book. This book will be useful for assignments and exams.

This course will feature many peer-reviewed papers as required reading. These readings will be posted to Brightspace and will be foundational for discussions and in-class activities in lectures.



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**Learning Goals:**

**NMHU Learning Goals:**

1. Mastery of content knowledge.
2. Critical and reflective thinking skills.
3. Ability to communicate effectively.
4. Ability to use technology.

**Society of American Foresters Learning Goals:**

1. Understand the interdisciplinarity of forestry.
2. Critically think about how to sustain ecosystems for multiple objectives.
3. Students will understand the values offered by participants, landowners, communities, society, and the ecosphere.
4. Students will demonstrate an understanding of both scientific and traditional ecological knowledge systems.
5. Students will demonstrate professional and ethical behaviors and be able to critically think regarding ethics from diverse viewpoints.
6. Students will understand the value of diverse people, perspectives, and practices.
7. **Course Learning Objectives (CLOs):**

This course is focused on understanding common forest pathogens and insects and how to consider them in an integrated forest health lens.

Knowledge	Skills
1. Ecology of forest organisms and their interaction with common pathogenic agents	5. Identify common fungi, insects, and other pathogenic agents using keys and other tools
2. Understanding of climate interactions with disturbance agents	6. Be able to model and interpret patterns of mortality
3. Taxonomy of biotic disturbance agents	7. Recognize signs and symptoms of forest health agents
4. Available resources for consulting with pest experts	8. Independent research and critical thinking

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Course Structure:

**Classroom Format:** This course will be a mix of lectures, interactive activities, and hands-on learning in the laboratory format.

Course Attribute	Description
Lecture	<p>The lecture will emphasize material content from readings and focus on concepts, theories, and principles of forest health. The lecture will be interactive, and participation is mandatory (see grades)</p> <p>In person attendance during lecture is required if you are in Las Vegas.</p> <p>Attendance via Zoom is acceptable if: you provide advance communication of a need to attend remotely OR you live somewhere besides Las Vegas</p>
Lab	<p>Lab will focus on taxonomy of common disturbance agents and will consist of learning how to identify and recognize these organisms. A short portion of Lab will have lectures; labs will be interactive and consist of a combination of taxonomy, excel (or R), and field based activities.</p> <p>Attendance for lab is required to be in person with no option to attend via Zoom.</p> <p>The Teaching Assistant, Dhanu, will be the primary lab instructor and will be available to answer questions, but of course, I will also be present to support and answer questions.</p>

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## Assessments and Grading:

This class will be graded based on the following categories: **participation, examination, lab, and final project**. These categories are outlined in terms of their total points towards your final grade below.

Category	Points	Percent of total	Description
Participation	350	30%	10 points / lecture = 320 points + 30 points overall grade and professionalism
Examination	300	26%	3 x exams @ 100 points each
Lab	300	26%	15 labs @ 20 points each
Final Project	200	18%	Final paper and self-assessment
<b>Total:</b>	<b>1,150</b>	<b>100%</b>	

**Grades** are reported to the university using the standard grading scale outlined below based on the percentage of your total grade. Please consider the rubric categories as opportunities for growth rather than focusing on your grade alone. Since your participation grade is a daily grade, you always have opportunity to improve in the next class.

Grade	Percent Range	Rubric Category
A	>90%	Excelling (4)
B	80-89.0%	Sufficient (3)
C	70-79.9%	Developing (2)
D	60-69.9%	Needs Improvement (1)
F	<60%	Absent



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<b><u>Policy</u></b>	<b><u>Description</u></b>	<b><u>Resources</u></b>
<p><b>Late assignments</b></p>	<p>Assignments will be posted to BrightSpace and will always be due at the beginning of the class period for which their due date is listed.</p> <p>Late assignments will result in a 10% grade deduction for every day they are late. Professional settings mandate proactive communication for missing deadlines, so this late assignment penalty can be waived with reasonable proactive communication.</p>	<p><a href="#">How to communicate with your professor</a></p> <p><a href="#">How to email your professor</a></p>
<p><b>Attendance</b></p>	<p>Attendance is mandatory. If you live in Las Vegas and are not ill, then I expect you to attend in person. If you live outside of the Las Vegas area, are ill, or have an extraneous circumstance, attending via Zoom is acceptable. Discussions will be much more meaningful in person, and I will do my best to make Zoom and equally inclusive learning experience.</p> <p>Should you miss class – Well shoot. Every day is special. The biggest consequence in my opinion is FOMO (Fear of Missing Out). In professional settings, missing an obligation is acceptable with proactive communication and a dedication to making up missed material independently. Interpret this for how you wish in your self-assessment.</p>	<p><a href="#">How to catch up</a></p> <p><a href="#">What to do when you miss class</a></p>

In addition to the above policies, we will collaboratively develop the [Rules Of Engagement](#) as a class. This space is our community, so let us prioritize making our community a place that is inclusive and enjoyable for everyone.

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## Rules of Engagement:

We develop these rules as a group on the first day of class. The point is to ensure we have a respectful classroom setting everyone can agree with and feel comfortable with. If someone is violating these rules, we can politely point out the situation and remedy the problem as a group or as individuals within the group. The point is to ensure we are all empowered and supported rather than me, the professor, holding disproportionate rule-making and enforcing authority.

### Example Rules:

1. Be present
2. Assume positive intent
3. Critique ideas, not people
4. If you identify a problem, present a solution as well
5. Make mistakes
6. If you take space, make space

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Tentative Schedule:

Page 1/4	<u>Day</u>	<u>Date</u>	<u>Class Type</u>	<u>Topic</u>	<u>Readings and Assignments Due</u>
Week 1	Monday	1/15	Lecture	NO CLASS	NO CLASS
	Wednesday	1/17	Lecture	What is Pest Management 🐛	
	Thursday	1/18	Lab	Lab overview and introduction	
Week 2	Monday	1/22	Lecture	Mortality and Health 🐛	
	Wednesday	1/24	Lecture	Mortality and Health 🐛	
	Thursday	1/25	Lab	Modeling mortality	Modeling mortality homework due next week
Week 3	Monday	1/29	Lecture	Regulators and Terminators 🦠	<a href="#">Microbes as Regulators: van der Heijden et al 2008</a>
	Wednesday	1/31	Lecture	Regulators and Terminators 🦠	<a href="#">Hot drought terminator: Hammond et al. 2023</a>
	Thursday	2/1	Lab	Case Study: Alaska White Spruce	Submit answers to questions and produced graphs (due next week)
Week 4	Monday	2/5	Lecture	🧟Alien Invasions 🌿	<a href="#">Bottom-up regulation, la resistance – Johnson and Sniezko 2021</a>
	Wednesday	2/7	Lecture	🧟Alien Invasions 🌿	<a href="#">Top-down regulation of invader – Crandall et al. 2022</a>
	Thursday	2/8	Lab	Fact Sheets, Dichotomous Keys, Tree ID – Campus walk	Turn in tree id worksheet

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Page 2/4	<u>Day</u>	<u>Date</u>	<u>Class Type</u>	<u>Topic</u>	<u>Readings and Assignments Due</u>
Week 5	Monday	2/12	Lecture	Time and Place: Scales 🐜	<a href="#">Reconstructing historical outbreaks – Nergrón et al. 2020</a>
	Wednesday	2/14	Lecture	Time and Place: Scales 🐜	<a href="#">Recovery but different, Rodman et al. 2022</a>
	Thursday	2/15	Lab	Insects	Insect ID worksheet
Week 6	Monday	2/19	Lecture	Insects and Climate 🌿	<a href="#">Warming and tree mortality – Robbins et al. 2022</a>
	Wednesday	2/21	Lecture	Insects and Climate 🌿	<a href="#">Compounding effects of agents – Dudney et al. 2020</a>
	Thursday	2/22	Lab	Insects and Fire	Insects around town
Week 7	Monday	2/26	Lecture	Edaphic Factors 📐	<a href="#">Local Responses and Systemic Resistance – Dreischhoff et al. 2020</a>
	Wednesday	2/28	Lecture	Decay and rot 📐	<a href="#">Old growth forests and fungi – Majdanová et al. 2023</a>
	Thursday	2/29	Lab	Fungi	Fungi worksheet
Week 8	Monday	3/4	Lecture	Decay and rot 📐	<a href="#">Stand structure and root disease – Flores et al. 2023</a>
	Wednesday	3/6	Lecture	Mid-term Exam	No Reading
	Thursday	3/7	Lab	Fungi	
Week 9	3/11-3/15			SPRING	BREAK

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Page 3/4	<u>Day</u>	<u>Date</u>	<u>Class Type</u>	<u>Topic</u>	<u>Readings and Assignments Due</u>
Week 10	Monday	3/18	Lecture	Abiotic factors and global change	<a href="#">Southwestern North American megadrought – Williams et al. 2022</a>
	Wednesday	3/20	Lecture	Abiotic factors and global change	<a href="#">Fire and insect interactions – Fettig et al. 2022</a>
	Thursday	3/21	Lab	Fire and insects	World College Field Trip
Week 11	Monday	3/25	Lecture	Silviculture and management	<a href="#">Resistance to drought and bark beetle – Bernal et al. 2023</a>
	Wednesday	3/27	Lecture	Silviculture and management	<a href="#">Fungal endophyte inoculation? – Bullington et al. 2018</a>
	Thursday	3/28	Lab	Mistletoes and Plants	Mistletoe ID and infection rate worksheet
Week 12	Monday	4/1	Lecture	Biodiversity and conservation	<a href="#">Bark beetles and bee diversity – Davis et al. 2020</a>
	Wednesday	4/3	Lecture	Biodiversity and conservation	<a href="#">Landscape disturbance and Lynx – Squires et al. 2020</a>
	Thursday	4/4	Lab	HPCF Field Trip	
Week 13	Monday	4/8	Lecture	Mistletoe and seed dispersal – ecological scales	Assign pest management project <a href="#">Mistletoe and Juniper seed dispersal - van Ommeren and Whittman 2002</a>
	Wednesday	4/10	Lecture	Monitoring	<a href="#">Types of monitoring based on questions they ask – Hutto and Belote 2013</a>
	Thursday	4/11	Lab	Lab Practical	Lab Practical Exam

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Page 4/4	<u>Day</u>	<u>Date</u>	<u>Class Type</u>	<u>Topic</u>	<u>Readings and Assignments Due</u>
Week 14	Monday	4/15	Lecture	Looking to the future	<a href="#">Advanced reproduction as a key co-morbidity – Vickers et al. 2023</a>
	Wednesday	4/17	Lecture	Work on Projects	No Reading
	Thursday	4/18	Lab	Work on Projects	
Week 15	Monday	4/22	Lecture	Caste Study: SBW Southern CO	No Reading
	Wednesday	4/24	Lecture	Caste Study: SBW Southern CO	No Reading
	Thursday	4/25	Lab	Project Presentations	
Week 16	Monday	4/29	Lecture	Course Summary	No Reading
	Wednesday	5/1	Lecture	Wrap up activity	No Reading
	Thursday	5/2	Lab	Project Presentations	Project Presentations
<b>FINALS</b> Monday 7:30-10:30					



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Course Policies:

<u>Policy</u>	<u>Description</u>	<u>Resources</u>
<p><b>Academic Integrity Policy:</b></p>	<p>New Mexico Highlands University students and faculty are expected to maintain integrity through honesty and responsibility in all their academic work.</p> <p>Academic dishonesty includes plagiarism, <b>Cheating, Collusion, Facilitation, Fabrication, Multiple Submissions, and Falsification of Records.</b></p> <p>ChatGPT and other Artificial Intelligence (AI) tools help look up questions or ideas; however, copying and pasting AI-generated answers is still academically dishonest.</p>	<p>This course follows the Highlands Academic Integrity Policy as described in the catalog:  <a href="#">Academic Integrity Policy</a></p>
<p><b>Cell Phone and Electronics Policy</b></p>	<p>Cell phones can both distract and enhance the learning environment.</p> <p>We will develop rules regarding cell phone use together as a class, please reference the <b>Rules of Engagement</b> for more details.</p>	<p><a href="#">Smart Phones in Classrooms</a></p> <p><a href="#">10 Ways A Smartphone can help you Learn</a></p>
<p><b>Preparedness and Etiquette Policy</b></p>	<p>Having the proper etiquette for the day means having a good attitude and being part of the team that is our class.</p> <p>Specific <b>Rules of Engagement</b> will be made on the first day of class and added to this syllabus.</p>	<p><a href="#">Packing checklist</a></p> <p><a href="#">Field Biology Checklist</a></p>

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Health and Mental Health Services:

<b>Service</b>	<b>Description</b>	<b>Benefits</b>	<b>Contact Information</b>
<b><u>Health Center Main Campus</u></b>	<p>The health Center offers basic student medical and wellness services included <b>primary care, illness diagnosis and wound treatment.</b></p> <p>The health center also provides students with counseling services for mental health and wellness.</p>	<p>The campus health center offers an affordable and local option for students to seek health and wellness options including STD testing and family planning</p> <p>Proactive maintenance of our physical and mental health can keep us happy and focused on our lives</p>	<p>505-454-3218</p> <p>901 Baca Street Las Vegas, NM,87701</p>
<b><u>NM Crisis &amp; Access Line</u></b>	<p>The NM Crisis and Access line is a 24/7 phone service for counseling and mental health emergency support line. They also offer <b>warm peer calls and text messaging for non-crisis</b> but need-to-talk-to-someone moments.</p>	<p>Any mental health challenge or emergency can be met with professional counseling and confidentiality by calling this number.</p>	<p><b>Crisis and Access Line</b> <i>Call only:</i> 1-855-662-7474 <b>Peer-to-Peer Warm Line</b> <i>Call or text:</i> 1-855-466-7100</p>
<b><u>Food Resources</u></b>	<p>A general store and food pantry</p>	<p>Eating a healthy diet helps us focus and thrive</p>	<p><b>505-454-3529</b> SUB Room 110</p>
<b><u>Emergency Funding</u></b>	<p>The student extreme hardship fund can support students with challenging financial circumstances</p>	<p>This can help students pay for rent or groceries when facing hardship. There also the Dean Farmer Fund</p>	<p><b>505-454-3020</b> <a href="mailto:deanofstudents@nmhu.edu">deanofstudents@nmhu.edu</a> 505-454-3198 <a href="mailto:tlaw@nmhu.edu">tlaw@nmhu.edu</a></p>
<b><u>Outdoor Recreation Center</u></b>	<p>The outdoor recreation center offers gear, including jackets, for outdoor recreation.</p>	<p>Students can rent camping gear, jackets, rafting gear, bikes, and many other items to enjoy outside. <i>Hint: could be useful for class ;)</i></p>	<p><b>Adrian Gallegos</b> 505-454-3495 or 505-454-3050</p>

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Academic and Professional Development Services:

<b>Service</b>	<b>Description</b>	<b>Benefits</b>	<b>Contact Information</b>
<b><u>Achievement in Research, Math and Science (ARMAS)</u></b>	The ARMAS center is a place for studying and peer support in the sciences.	Having a study community and place to work on campus can enhance productivity and sense of belonging in the academic community	505-426-2010 armassocialmedia@nmhu.edu
<b><u>NMHU Dean of students</u></b>	The dean of students is a resource for all student affair related questions and concerns.	The Dean is an administrative role at the University and the Dean of Student Administrations.	<b>Kimberly Blea</b> 505-454-3020 <a href="mailto:kjvaldez@nmhu.edu">kjvaldez@nmhu.edu</a>
<b><u>Human Resources</u></b>	Human Resources is the office that ensures fair hiring and payroll.	The human resources office can help with any and all issues related to payroll and hiring.	505-454-3308 <a href="mailto:hr@nmhu.edu">hr@nmhu.edu</a> Mass Communications Building, East, Room 138
<b><u>Center for Professional Development and Career Readiness</u></b>	Professional development can connect you with on and off campus jobs	This center offers interview practice, resume building and more services	505-454-3048 <a href="mailto:careerservices@nmhu.edu">careerservices@nmhu.edu</a> Felix Martinez Building, Room230
<b><u>NMHU Library</u></b>	Academic databases, books, digital media and more	The library can help you with research support and finding academic resources. The library also loans computers to students!	<a href="#">Computer loan program</a> 505-454-3401 libinfo_nmhu.edu
<b><u>Professional Job Boards</u></b>	Job boards are where professionals list employment opportunities	Connects you to opportunities nationwide and internationally where you can build experience and your professional network.	<a href="#">Forestry Jobs</a> <a href="#">Natural Resource Jobs</a> <a href="#">Research Experience</a>

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Harassment and Crisis Services:

<u>Service</u>	<u>Description</u>	<u>Benefits</u>	<u>Contact Information</u>
<p><u><a href="#">HU-CARES Information</a></u></p>	<p>Title IX makes it clear that violence and harassment based on sex and gender are Civil Rights offenses subject to the same kinds of accountability and the same kinds of support applied to offenses against other protected categories such as race, national origin, etc.</p> <p>If you or someone you know has been harassed or assaulted, you are encouraged to contact the Center for Advocacy, Resources, Education, &amp; Support (HU-CARES)</p>	<p>HU-CARES is a confidential and professional service with individuals who are trained in helping students with these unfortunate circumstances.</p> <p>HU-CARES will facilitate making a student’s campus and off-campus experience safe and can help connect students with housing opportunities if they are displaced because of violence or harassment.</p> <p>See the website for scheduling an appointment. HU-CARES also offers counseling and confidential crisis support services.</p>	<p>Leon Bustos 505-454-3445</p> <p><a href="mailto:leonbustos@nmhu.edu">leonbustos@nmhu.edu</a></p> <p>24/7 Crisis Call/Text: 505-795-3665</p>
<p><u><a href="#">Title IX Officer</a></u></p>	<p>Title IX is a law that prevents discrimination based on sex.</p>	<p>Title IX has online reporting forms (see website) and offers professional and confidential ways to report incidents.</p>	<p>Ruth Mariampolski 505-454-3363</p> <p><a href="mailto:ruthm@nmhu.edu">ruthm@nmhu.edu</a> or <a href="mailto:TIX@nmhu.edu">TIX@nmhu.edu</a></p>
<p><u><a href="#">Campus Police</a></u></p>	<p>Campus police can be called for any non-emergency situation. Locked out of a room? Locked out of your dorm? Call campus police.</p>	<p>Campus police are friendly and helpful members of our community. They help us all when we need help and help make our campus a safe and vibrant place.</p>	<p><b>Immediate emergency: 911</b> On-campus emergency: (campus phones) 5555, cell phones 505-454-3278 Non-emergency: 505-454-3278</p>

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Support and Services:

<u>Service</u>	<u>Description</u>	<u>Benefits</u>	<u>Contact Information</u>
<p><b>Personal Needs</b></p>	<p>Field-based coursework and college in general can be challenging and bring us out of our comfort zones.</p> <p>Finding peers in the classroom our outside of class to talk through our challenges can help us grow as foresters.</p>	<p>Communicating with friends and peers in the class builds community and connections.</p> <p>Other people probably feel similar challenges and validate our experience and can help offer solutions we had not considered.</p>	<p>Call your friends, talk with someone in class, or contact Dr. Remke</p> <p>mremke@nmhu.edu</p>
<p><b><u>Accessibility Services Inormation</u></b></p>	<p>In accordance with federal law, it is university policy to comply with the Americans with Disabilities Act (ADA). If you believe you have a physical, learning, or psychological circumstance that creates extra challenges in your learning, we have services to help overcome those challenges.</p> <p>These can include physical injuries, dyslexia, mental health circumstances and many others.</p>	<p>Seeking services from the school can help by increasing the time allotted for you to take examinations, giving you quiet study rooms to take exams, offering alternative assignment and exam formats and/or finding additional mentors to help you learn how to live with exactly who you are.</p> <p>These services are confidential and respect student privacy.</p>	<p><b>Natalie</b>  <b>505-454-3250</b>  <a href="mailto:natalie@nmhu.edu">natalie@nmhu.edu</a>                      Lora Shields Building,                      2<sup>nd</sup>floor, room 250.</p>

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Rubrics:

<b>Participation Assessment Rubric</b>		Needs Improvement (1)	Developing (2)	Sufficient (3)	Excelling (4)
<b>Behavioral Trait</b>	Engagement	Student does not participate and lacks interest or curiosity in material covered	Student sometimes participates and seems curious for only some material covered	Student participates most days and is interested in some, but not all of the material covered	Student participates daily and encourages participation of peers. Student is curious in material covered
	Focus	Student is distracted and often dedicating energy to items besides the tasks on hand	Student is often distracted with other items during activities, presentations, and instructions	Student is sometimes distracted with other items during activities, presentations and instructions	Student works on task and is attentive during presentations, instructions, and activities
	Attitude	Student is negative and complains about circumstances without being proactive in resolving circumstances	Student is seldom positive and if negative about circumstances at least attempts to resolve the issue	Student is mostly positive but is mostly focused on self and not others	Student is positive daily regardless of circumstances and helps classmates
	Preparedness	Student came dressed inappropriately for weather or activity	Student forgot something at home but had the foresight of preparedness	The student had most needed items but would benefit from more organization	Student had all needed items and was well organized.
	After Action Review	Student is constantly distracted during class	Student is sometimes distracted.	Student often participates during after action reviews	Student is attentive and engaged during



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<b>Written Assessment Rubric</b>		Needs Improvement (1)	Developing (2)	Sufficient (3)	Excelling (4)
<b>Writing Component</b>	Clarity	The purpose of the student work is not well-defined. Central ideas are not focused to support the thesis. Thoughts appear disconnected.	The central purpose of the student work is identified. Ideas are generally focused in a way that supports the thesis.	The central purpose of is clear and ideas are almost always focused in a way that supports the thesis. Relevant details illustrate the author’s ideas.	The central idea is clear and well supported, supporting ideas are focused and details are relevant.
	Organization	Information and ideas are poorly sequenced (the author jumps around). The audience has difficulty following the thread of thought.	Information and ideas are presented in an order that the audience can follow with minimum difficulty.	Information and ideas are presented in a logical sequence which is followed by the reader with little or no difficulty.	Information and ideas are presented in a logical sequence which flows naturally and is engaging to the audience.
	Mechanics	There are five or more misspellings and/or systematic grammatical errors per page or eight or more in the entire document. The readability of the work is seriously hampered by errors.	There are no more than four misspellings and/or systematic grammatical errors per page or six or more in the entire document. Errors distract from the work.	There are no more than three misspellings and/or grammatical errors per page and no more than five in the entire document. The readability of the work is minimally interrupted by errors.	There are no more than two misspelled words or grammatical errors in the document.
	Creativity	The student work is difficult to distinguish as its own.	Some elements of the work are unique	Most of the work is unique	The student work is unique and stands out as a novel perspective or writing

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<b>Self-Assessment Rubric</b>		Needs Improvement (1)	Developing (2)	Sufficient (3)	Excelling (4)
<b>Self-assessment Component</b>	Knowledge	I feel I did not learn new knowledge	I learned little new knowledge in this class.	I learned many new knowledge, but some knowledge was not new.	I feel like I learned lots of new knowledge.
	Skills	I feel like I did not gain new skills	I learned few new skills in this class.	I learned many new skills, but some skills were not	I feel like I learned lots of new skills
	Comfort	I feel like I am uncomfortable in topics discussed in class	I did not increase my comfort much from the beginning of class	I am generally more comfortable, but some things still challenge me	I feel my comfort with material in course has increased.
	Confidence	I feel like I am not confident in class	I did not increase in confidence in forestry in this class at all.	I feel fairly confident but still find material I am not so confident in	I feel more confident as a forester than I did at the beginning of class
	Participation	I feel like I rarely participate throughout this class in the class	I only sometimes participated throughout the class	I find myself participating most of the time.	I feel like by the end of the class I was participating more.
	Excitement	I feel unexcited about the topics in the class.	I feel only sometimes excited about things in this class.	I am generally excited about material, but some topics still are not interesting to me.	I feel very excited about learning more about forestry.