**NR 4 –Forest Ecosystems**

**Section # 59338**

**Course Syllabus – Spring 2017**

**Lecture Monday 2:00pm – 3:50pm FEM 8**

 **Lab Wednesday 2:00pm – 4:50pm FEM 8**

***Instructor:*** Louie Long

 Office: FEM 4F, Phone: (559) 638-0300, Ext. 3268

Office Hours: Tuesday 8:00am – 12:00pm, other times by appointment

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***Course Description:*** The forest community is used as a model to discuss the role of ecology in forest management. Students will become familiar with basic biological concepts which are the building blocks for understanding forest ecosystems. Students will gain a better understanding of biological processes and organization, the physical environment, and ecological processes such as: nutrient cycling, succession, natural selection, and application of the scientific method.

***Course Objectives:*** *In the process of completing this course you will:*

1. Gain an understanding of cellular processes, biological and environmental factors, and how they relate to forest growth and development.
2. Understand the reasoning behind taxonomic and biological organization.
3. Analyze forest communities by collecting data and applying the scientific method.
4. Define populations and communities and understand the dynamics and factors that influence each, including succession and its impact on community structure and function.
5. Understand the response of ecosystems to natural and human-induced disturbances.
6. Recognize ecosystem components and be able to describe their structure and functions.

***Textbook(s):***

All lecture material (Power Points, handouts) will be made available to you via CANVAS in advance of the lecture and will remain available for the duration of the class. Studying the lecture material is important for your success in this class. The text book listed below is optional. Not all of the material we cover in this class is found in the text listed.

*Krogh, D. 2014. Biology: A guide to the natural world, custom core edition. Pearson Prentice Hall. Upper Saddle River, New Jersey. Loose leaf* ***(Optional)***

We will complete a lab assignment each week unless otherwise instructed. The instructions for each lab as well as the data sheets and materials that you will submit for a grade are found in the lab manual. The NR 4 Lab Manual can be purchased in the Reedley College bookstore for a nominal fee (approx. $6.00). You must purchase the lab manual to successfully complete the course.

*Lab manual* ***(Required)***

***Field Trips:***

On occasion, we will be conducting labs outside. These labs will be conducted on campus and will be completed by the end of the class period. Always come to lab prepared for outside activities. Prepared is defined as having **sturdy hiking shoes or boot, long pants, water, food, and warm (appropriate) clothing.**

***Quizzes, Assignments, Exams, Grading Policy:***

***Quizzes:***

While quizzes may seem like a hassle, they are a great way to assess whether or not you are truly learning the material being taught. I have found that students often feel like they are understanding the material until they take a quiz. Doing bad on a quiz is not the end of the world. It is however a wakeup call for you and me.

We will take many quizzes in this class. They are generally 10 questions or less, fill in the blank, short answer type quizzes. We usually take quizzes at the start of the class and grade them immediately so you will know how well you did. I try to post quiz grades to CANVAS by the end of the day, though this doesn’t always happen. I will not give make-up quizzes so it is important that you attend class.

***Assignments:***

All lab assignments are due at the end of the lab period unless otherwise instructed. Simply write your name on the front page, staple all of the pages together and leave in on the podium in the front of the class. Because many of the labs that we complete require the use of special equipment or additional setup time, it is difficult if not impossible to make up a lab assignment. If you need to make up a lab, it is your responsibility to arrange a make-up time. All late assignments will receive a 15% grade reduction and must be turned in within two weeks of due date to receive any credit. Work completed more than 2 weeks after the due date will not be accepted.

***Exams:***

We will take 2 midterm exams and a final exam in this class. The 1st midterm will cover all material discussed from day 1 until the exam date. The 2nd midterm will cover all material discussed after the 1st midterm until the exam date. The final exam will be a cumulative exam that covers all material discussed starting from day 1.

All exams will be multiple choice. You will be required to bring a Scantron 882E answer sheet to the exam. The midterms are approximately 50 questions each (give or take) and the final exam is approximately 100 questions (give or take). I usually will include extra credit questions on the exams. These questions will be short answer type questions.

If you miss an exam, it is your responsibility to schedule a make-up exam with me within 1 week of the exam date. After that, you will receive a 0 on the exam.

***Grades:***

In this class, all graded assignments are graded on a straight percentage. 90% to 100% is an A, 80% to 89% is a B, and so on. Your overall grade will be based on the sum of two mid-term exams, a comprehensive final exam, lab assignments, and quizzes. Both lecture and laboratory material will be covered on midterm exams and quizzes. Each graded area is weighted. For example, all of the lab assignments are worth 40% of your total grade in the class while quizzes account for 15% of your grade. The grade break down is illustrated in the table below. You can keep track of your grades by logging onto CANVAS from the Reedley College Homepage. I encourage you to check CANVAS daily for announcements as well as to keep track of your grade.

|  |  |  |  |
| --- | --- | --- | --- |
| **Course Grade** | **Cumulative Percent** | **Breakdown of Grades** | **Percentage** |
| A | 90-100 | Lab Assignments | 40% |
| B | 80-89 | Quizzes | 15% |
| C | 70-79 | Midterm Exams X 2 | 30% |
| D | 60-69 | Cumulative Final Exam | 15% |
| F |  <59 |  |  |
|  |  | TOTAL | 100% |
|  |  |  |  |

***Accommodation Statement:***

“If you have a verified need for an academic accommodation or materials in alternate media (i.e., 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.”

***Essential Information:***

It is your responsibility to stay informed on any changes to assignment due dates, readings, test material, etc. Missing a class doesn’t excuse you from this responsibility (i.e. if a due date for an assignment changes, new assignments are given, etc.). This means you should ask a trustworthy classmate for notes if you are absent. Being absent is not an excuse for late work, late assignments, or just not knowing what is happening. Check CANVAS often!!!

If for whatever reason you cannot complete the class this semester, make sure that you officially drop the class via WebAdvisor. If you just stop showing up for class, you may not be officially dropped and end up receiving an “F” in the class when you thought you had withdrawn.

***LAST DAY TO DROP THE COURSE on WebAdvisor: Sunday, January 29th.*** A LETTER GRADE IS ASSIGNED AFTER THIS DATE.

It is important for you to show up for class. While the lecture material is available on CANVAS, we will be discussing the material in depth during class. This is something that the power point slides alone cannot duplicate. As per college policy, I have to drop you if you miss 3 or more classes.

Cheating and/or plagiarism will not be tolerated. You will not receive credit for an assignment if, in my opinion, you have cheated. Cheating on an exam will result in an “F” on the exam and could result in dismissal from the Forestry Program. While cheating is not tolerated, I encourage you to work together on lab assignments. This makes the lab more interesting and helps you to learn the material. Even though you are working in groups, you will each be required to submit your own lab sheet unless otherwise instructed.

Please turn cell phones off during class time. Using these devices during lectures is distracting to you and to students around you as well as to me. Trying to hide your phone under the table doesn’t work either. I still see you using it. Don’t make me call you out in class.

Sunflower seeds and all tobacco products are **NOT** permitted in the classroom or laboratory setting. Reedley College is now a smoke free campus

*Topics of Discussion*

1. **The Basics of Life** – We will discuss the chemistry of life starting with the atom and its subatomic particles. You will learn about chemical bonds and the roles that they play not only in life but in the forest. You will also learn the basics of the cell. We will discuss structural differences between plant and animal cells. In nature, nothing happens in a vacuum. Everything relates to something else. In this section we will lay the groundwork for a better understanding of how the forest functions.
2. **Energy in the Forest** – All living things consume energy. It is one of the characteristics of life. In this section we will learn about energy in the forest. What is it? How is it produced? How is it used? You will learn the basics of photosynthesis, where it occurs, and how it produces energy. We will also be introduced to Cellular Respiration.
3. **Structure & Growth** – A forest is a dynamic ecosystem. Life and death are a constant factor in the forest ecosystem. In this section we will discuss how plant life begins in the forest. We will cover the basics of germination, growth, and form.
4. **Site Factors: Climate** – Many factors play in role in the health of a forest. In this section we will begin the discussion about the four site factors that affect forest productivity by focusing on climate. We will discuss solar radiation and its impact on photosynthesis and well as tree morphology.
5. **Site Factors: Forest Soils** – Dirt is what you find under your finger nails, soil is what plants grow in. In this section we will learn the basics of how soil is formed. We will also learn about soil texture and structure and its impact of tree growth.
6. **Site Factors: Biological Factors a.k.a. The Nutrient Cycle** – Soil is what plants grow in but without nutrients, there wouldn’t be much growth. In this section we’ll discuss the nutrients found in forest soils. Are forest soils nutrient rich or nutrient poor? Where do the nutrients come from? How do the nutrients enter the plant? Once nutrients are taken up by a plant, are they lost forever? We’ll answer all of these questions and a few more in this section.
7. **Site Factors: Fire** – For more than a century we’ve been told that fire was bad for our forests. Is this really true? Is it possible that fire is good for a forest? If so, how? In this section we’ll discuss the role that fire platys in the forest ecosystem.
8. **The Soil-Plant Water Cycle** – You probably know or have at least heard of the hydrologic cycle. In this section we will take a more in depth look at the hydrologic cycle. You’ll gain a basic understanding of how energy relates to water and how water moves through the forest. We’ll discuss transpiration, evaporation, and evapotranspiration. We’ll also learn about something called gravitational water, capillary water, and hygroscopic water.

***Tentative Schedule*** (Subject to change)

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| --- | --- | --- | --- | --- |
| **Week** | **Date** | **Lecture Topic** | **Lab Date** | **Lab Topic** |
| 1 | 1/9/17 | Introduction | 1/11/17 | Lab Orientation / Calculations |
| 2 | 1/16/17 | No Class – Martin Luther King’s B-day | 1/18/17 | Field Observations (outside) |
| 3 | 1/23/17 | Quiz 1 | 1/25/17 | Scientific Writing |
| 4 | 1/30/17 |  | 2/1/17 | Microscopy |
| 5 | 2/6/17 | Quiz 2 | 2/8/17 | Taxonomic Keys |
| 6 | 2/13/17 | **Midterm #1** | 2/15/17 | Chromatography |
| 7 | 2/20/17 | No Class – Washington Day | 2/22/17 | Pattern Analysis |
| 8 | 2/27/17 | Quiz 3 | 3/1/17 | Community Structure (outside) |
| 9 | 3/6/17 |  | 3/8/17 | Leaf Area Index (outside) |
| 10 | 3/13/17 | Quiz 4 | 3/15/17 | Estimating Population Size |
| 11 | 3/20/17 |  | 3/22/17 | Transpiration (outside) |
| 12 | 3/27/17 | **Midterm #2** | 3/29/17 | YSI multimeters |
| 13 | 4/3/17 |  | 4/5/17 |  |
|  | 4/10/17 | **Spring Break** |
| 14 | 4/17/17 | Quiz 5 | 4/18/18 | TBD |
| 15 | 4/24/17 |  | 4/26/17 | TBD |
| 16 | 5/1/17 | Quiz 6 | 5/3/17 | Intro to Surveying (outside) |
| 17 | 5/8/17 |  | 5/10/17 | Estimating Water Velocity (outside) |
| 18 | 5/15/17 | **Final Exam 10-1150** |