**NR 4 – Forest Ecosystems**

Section # 57724

Units: 3

Course Syllabus – Fall 2019

Lecture Tuesday 10:00am – 11:50am in FEM 8

Lab Tuesday 1:00pm – 3:50pm in FEM 8

**Instructor:** Louie Long

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Office Hours: Mon. 2:00pm – 3:00pm & Wed. 2:00pm – 3:00pm

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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. Analyze forest communities by collecting data and applying the scientific method.
3. Define populations and communities and understand the dynamics and factors that influence each, including succession and its impact on community structure and function.
4. Understand the response of ecosystems to natural and human-induced disturbances.
5. Recognize ecosystem components and be able to describe their structure and functions.

**Student Learning Objectives:** Upon completing this course students will:

1. Demonstrate an understanding of factors that affect forest growth and development

such as the water cycle and the nutrient cycle.

2. Understand the basics of how energy flows through a forest ecosystem.

3. Understand the components of a forest ecosystem and how they work together.

**Required Materials:** The following is a list of required materials needed to successfully complete this course including textbooks and lab manuals.

**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)***

**Modules:** You will find modules that you must complete on the Canvas page for this course. Embedded in the modules are quizzes. Modules are sequential and mandatory. Failure to complete the modules will result in a sub-par grade.

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

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. $7.00). You must purchase the lab manual to successfully complete the course. I **do not** supply a copy of the lab sheets for each class.

***Assignments:***

Assignments for the lecture portion of the class will consist of completing the readings from the modules and completing the associated quizzes. In addition, you will be expected to review the lab for the week. This means you will review/read the lab sheets and come prepared to ask any questions you may have. You will also be expected to have your lab manual with you during the lab portion of the class. I will not accept lab assignments turned in on line paper. 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 it 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. There is no guarantee that you will be able to make up the lab however. **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.**

***Quizzes:***

You will complete multiple quizzes throughout the semester. Most of them will be embedded in the Modules that you are expected to complete thus they will be completed online as homework. You may also be asked to complete additional quizzes during the class period should I feel that they are necessary.

***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 an extra credit question on each exam. 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.

***Grading:***

We will be using a mix of grading techniques in this class. Quizzes and exams, we will be graded on a straight percentage. 90% to 100% is an A, 80% to 89% is a B, and so on. For lab assignments, we will be using a competence scale that ranges from N – No evidence of progress towards the learning target to E – Exceptional Competence (see below).

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| --- | --- | --- | --- | --- |
| Lab Assignments | |  | Exams & Quizzes | |
| E | Exceptional Competence |  | A | 90 – 100% |
| C | Clear Competence |  | B | 80 – 89% |
| A | Adequate Competence |  | C | 70 – 79% |
| B | Basic Competence |  | D | 60 – 69% |
| N | No Evidence of Progress Towards the Learning Target |  | F | <60% |
| \* The points you see on Canvas are arbitrary and do not denote the value of each lab assignment | | | | |

Assignments are weighted which means that your grade will not be determined by a straight percentage of points earned. In other words, some sections of your grade are worth more than others. See the table below for more information on how your grade is weighted.

|  |  |
| --- | --- |
| Weighting of Grade | |
| Lab Assignments | 55% |
| Quizzes | 10% |
| Midterms (x 2) | 20% |
| Final Exam | 15% |
| Total | 100% |

Your overall grade will be based on the sum of two mid-term exams (20%), a comprehensive final exam (15%), lab assignments (55%), and quizzes (10%). Both lecture and laboratory material will be covered on midterm exams and quizzes. 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.

***Essential Information:***

You are expected to treat others as you would want to be treated yourself, even if you disagree with an expressed opinion. Please refrain from using foul language. As a student in the Forestry Program, you are preparing yourself for a professional career in the natural resource field and you are expected to conduct yourself as such at all times.

Be on time! Walking into class late is distracting. Make sure you give yourself plenty of time to make it to school, find a parking spot, and walk to class. 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!!! I recommend checking CANVAS every day and not just for this class.

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.

***Important Dates:***

***Aug 23 – Last day to drop full-term course for full refund.***

***Aug 30 – Last day to register for a full-term class in person***

***Aug 30 – Last day to drop a full-term class to avoid a “W” in person***

***Sept 2 – Last day to drop a full-term class to avoid a “W” on WebAdvisor***

***Oct 11 – Last day to drop a full-term class (letter grades 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.

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.

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.

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

“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.”

*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)

