SYLLABUS
Bi 101 Oregon Ecology, Fall, 2020

CRN: 9:00 a.m. class: 22915
CRN: 2:00 p.m. class: 20386
INSTRUCTOR: Bob Ross **OFFICE:** WOH-211
OFFICE HOURS: by appointment throughout week
CLASSROOM: Zoom
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DESCRIPTION: Ecology is the scientific investigation of the relationships found among living things and their environments. Oregon Ecology is features natural ecological systems such as ponds, meadows and forests as well as urban parks and lawns. Primary themes include the qualities of the air, water and soil environments, the creatures that are found in those environments, how they are uniquely adapted, how everything is organized around the flow of energy and minerals, and how communities of living things work together to form systems.

This course has been designed for non-science majors. There is less use of math, chemistry, physics, geology, meteorology and biology to explain things, and more emphasis on relating ecology to other subjects such as political science, ethics, sociology, and art that students take at a liberal arts college. There is also more emphasis on relating ecology to one's personal life.

If there was a subtitle to the course, it would be "Vacation Biology: where to go, what to see, and how to think about it ecologically." Learning about ecosystems can help you enjoy your recreational outings in nature more fully by knowing more about the places you visit when you hike, camp, swim, bike, hunt, fish, and do sight-seeing. Yards and gardens are mini-ecosystems, so understanding how ecosystems work can help you manage your yard and garden more effectively as well.

We use two metaphors in class to facilitate an understanding of ecosystems: life is like a game and life is like a business. Oregon Ecology is designed to be a lively, fun and provocative class that quickly propels you into a clear understanding of how the world works and how you can participate in the game of life successfully.

THINGS YOU NEED IN ORDER TO SUCCEED:

- The Oregon Ecology Manual by Ross,
  Purchase from the LBCC Campus Store

- Camera. Digital is best. Cell phone is adequate,
- A few household items for field work (in place of lab)

QUIZZES: Quizzes are given at the end of each class meeting and covers the assigned chapter for the day. Each quiz is worth 10 points, and the 10 best scores out of 16 or 17 contribute to your grade for the term.

EXAMS: You will have two midterm exams and a final. Each is worth 100 points. The first two exams mostly deal with the material covered since the last exam. The final is comprehensive. Tests typically contain multiple-choice, short- and long-answer questions that often include photos. Exams are designed to measure a person's knowledge and comprehension, as well as the ability to think critically. Science honors clarity and brevity, so students who answer certain exam questions clearly, completely, correctly and concisely, and who demonstrate "seeing the connections" receive bonus points.

"LAB" IS A FIELD PROJECT. It is impossible to bring a natural ecosystem into the lab to study, so we ask students to visit ecosystems in place of attending a two-hour lab each week. You will need to be able to travel to parks and other natural areas in your community on occasion. You will be given specific tasks to do each week that include gathering data, exploring, and making observations that lead to discoveries on how nature is organized and how living things adapt. The results are put into a "Field Report" that contains the photographs, data and discussions of the results of your investigations. Students must earn a minimum of 50% of the points for the "Field Reports" in order to receive a grade for the class; otherwise, an "F" is given for the course regardless of what is earned on the exams and quizzes. It is not hard to do the field work, but this is the important minimum requirement that needs to be met in order to receive a passing grade. The Field Report is worth 200 points; 40 of those points are a subjective grade based upon behavioral criteria that are outlined in the Field Project Overview. You are being asked to do the field project because this is really the only way you can experience ecological systems and gain firsthand experiences with scientific processes — something the State Board of Higher Education thinks is important for you. Additionally, ecologists would like you to enjoy nature enough that you will value it and take care of it. Employers in our college district want you to do projects like this in order to develop your skills of following directions, working independently on a project, and submitting work in a timely manner. Each Field Report is due at the end of the following week, and the last submission date if Friday of Week 9.

IMPROVING YOUR THINKING and COMPREHENDING. We are *homo sapiens*, the sentient ones: the thinking ones. We especially use our thinking to compete with each other. The winners are thinkers. One of the greatest gifts of higher education is the opportunity to improve your thinking and problem-solving abilities. Science courses in particular are valuable in this way. Oregon Ecology is especially focused on improving your thinking. We will exercise your thinking skills as you read, hold discussions, and conduct your field studies. Critical thinking questions are posed everywhere in the course. Be careful to not "read through them" or let others answer them for you; on the contrary, take up the challenge of answering the questions for yourself as you come to them. That is the quickest way to gain comprehension.

Be sure to focus on understanding the concepts as much as learning the terms. Just memorizing the terms is no more comprehending a subject than possessing a bunch of tools and materials and thinking you have a doghouse or a lemon meringue pie. Comprehension comes about as you work to identify the components of relevant information and as you organize them into meaningful stories or mental constructs.

We have carefully weighed the value of using every ecology-related word in this course. We have selected about 200 words for you to master out of a thousand that an ecology major would need to learn in order to more fully master the subject. Each of these terms sheds valuable light on the topic of ecology and makes conversations efficient. It is important to develop a functional use of each word as it is introduced because many of them will be used to develop other concepts. If you fail to learn the word "species," for instance, you will have a fuzzy understanding of a later topic that includes the word such as interspecies interactions or speciation. When the second topic is used to develop a third topic — perhaps the development of ecological communities, you will have an even hazier idea of what is being discussed. Some educators call this process of becoming less and less capable of understanding a future topic "cumulative ignorance." It is easily avoided.

PERCEPTUAL SKILL-BUILDING

Oregon Ecology provides students with the opportunity for developing perceptive skills: the identification and organization of sensory data, followed by interpretation. Actively engaging in sensing and perceiving has the power of turning our forays in nature into interesting and enriching experiences that are long-remembered. Accurate perceptions help us to understand how our world is organized and how it works; thereby enabling us to be more successful at living.

The field project provides you with the opportunity of developing the following perceptual skills:

- Form separation: distinguishing between the subject and background by screening out irrelevant material.
- Form constancy: recognizing the form despite changes in color, shading, direction, orientation, size or age.
- Visual discrimination: identifying similarities and differences of shapes, textures, objects, etc.
- Visual memory: remembering and recognizing what you have seen.
- Analysis and synthesis: determining how the various parts make up the whole — rather than just observing a collection of objects.

These perceptual skills will not only help you to enjoy nature better, but will also help you to get more out of movies and other visual experiences! Most of us use our eyes all day long, and it seems as if we see just fine, but what is at issue is not the clarity of the lenses, but how the mind makes sense out of what the eyes are seeing.

COURSE STRUCTURE

We will have Zoom-session classes at the regularly scheduled times. It is possible that we might meet in person several times during the term. We will be using Moodle to manage the various activities of the course. We will do everything that we reasonably can to help you meet the challenges that you will face during the term so that you can succeed in this course.

DOING YOUR WORK ETHICALLY

Science and society only work effectively when people are honest. We expect you to do your own work (not use other people's work or plagiarize), to be honest, and to collect data accurately. You will not receive credit for the portions of work that are discovered to have been produced unethically. Furthermore, you might be disciplined as set forth in "STUDENTS' RIGHTS, RESPONSIBILITIES AND CONDUCT,"located on the LBCC website under Current Students > Admission Information > Policies.

OUTCOMES

<u>Outcomes established by the LBCC Biology Department:</u>

Upon completion of the course with a "C" or better, the student should be able to:

1. discuss biological community interactions,
2. explain how changes in human populations and/or actions impact natural ecosystems,
3. describe the movement of energy and nutrients through trophic levels, and

4. recognize the appropriate taxonomic level of an organism based on key characteristics or traits.

Outcomes specific to this course.

If fully engaged in this course, you should be able to

1. name some famous places to visit in Oregon and describe some of the ecology of each of those areas,
2. use your knowledge about soils to develop a more productive garden,
3. have improved critical thinking skills,
4. use your perceptual skills to recognize and interpret more details of nature,
5. use scientific processes to investigate parts of nature and come to reasonable conclusions,
6. interpret the structural and functional aspects of an ecosystem using basic ecological terms,
7. use the ecological perspective to help you improve your fitness for living in our world,
8. be a better steward of Earth's resources and explain how you can live more sustainably and economically,
9. be more at ease in nature by reducing fears, increasing recognition and knowledge of the various parts of nature, feeling connected to nature, and having positive experiences,
10. continue to grow in knowledge and skills toward more fully understanding the world from an ecological perspective,
11. have improved study and test-taking skills, and
12. see all of life as a highly functioning system.

SCHEDULING ENOUGH TIME:

A full work load at college is considered to be 15 credits, which is equivalent to a 45-hour work week, based upon three hours of course work per credit. One credit normally represents one hour in class, so a 15-credit load represents 15 hours in class and 30 hours of various homework activities. Lab classes are slightly different. Two lab hours of instruction is equivalent to one credit of lecture hour. Four credits of Bi101 translates into three class hours/week, two lab (field) hours, and eight hours of homework that are apportioned as follows; six to seven hours/week of reading and homework, and one to two hours/week writing the Field Report. The most effective thing that you can do to be successful in this class is to develop a weekly schedule on a calendar showing when you will commit time for this work.

FLEXIBLE COURSE STRUCTURE:

We have set up the course to be highly organized and to promote as efficient and effective a learning environment as possible. It takes the average student a week to catch onto the pattern for doing things, and then everyone becomes very efficient at getting the work done. Then life happens: work schedules change, people have to move, relationships with friends and families change, interests change, and your life has to change in order to cope with the new situations. Ecology is all about adapting, and we have taken that concept to heart in Oregon Ecology. We at LBCC are here to help you in any ways we can, so give us a chance to help your life gets turned upside down.

While most students just want to follow the coursework as outlined, other students want to follow some of their own interests that relate to nature and ecology. We are set up to allow you to pursue alternative interests. Students who look for commonalities between other courses and ecology, and then write papers on these findings, are doubly blessed: they see more clearly how our intellectual world of understanding is all connected, and they earn points while doing so. Some students discover how much they enjoy learning from nature, and enjoy doing additional field work — and receiving credit for that. Feel free to approach us about modifying some of the course structure to meet your needs.

HOW THE GRADING SYSTEM WORKS

The basic system for the term looks like this:

100	quizzes
100	1st exam
100	2nd exam
100	final exam
160	field project
40	subjective evaluation
600	TOTAL POINTS

Letter grades are assigned as follows;
A = 85%: 510-600 points
B = 72%: 432-509 points
C = 60%: 360-509 points
D = 50%: 300-359 points

While failure is often attributed to the lack of time and commitment, **F** and **D** students often tend to believe that they can pass a class just by memorizing facts and terms. What they can't do is to put those facts and terms together in order to describe things They fail to move on toward comprehension and

insightfulness; therefore, they cannot manipulate the information, use it to test questionable statements or integrate the subject with other parts of their knowledge base. Neither can they solve problems.

C-A grades reflect the degrees of the following things;
From classroom work and testing:
- mastery of terminology
- comprehension of concepts and principles
- insightfulness; seeing the connections
- using clear, precise, well-reasoned thinking
- explaining what ecology is all about
- recognition of cause-effect relationships
- application of ecological concepts to real-life situations
- use of thinking and reasoning skills such as hypothesizing, synthesizing, analyzing
- attendance and participation

From working on the field project
- development of sensory awareness
- formation of useful and accurate perceptions
- use of scientific processes in investigations
- completion of field work and project report

INC An incomplete grade is issued when a student has failed to submit a report or to take the final exam. The student must complete the work prior to the end of the following term in order to receive a grade.

HOW TO GET STARTED IN THE COURSE
- Read through the remainder of the Syllabus (pages 2-7) to pick up some learning and test-taking tips.
- Read the Field Project Overview on pages 220-223 and scan through the Field Project Instructions that follow to get a sense of what you will be doing on your own in the field.
- Look at the Calendar and do the assigned reading before coming to class. Go to the end of the chapter before reading each chapter to see the terms and concepts that are especially important to master while reading. This makes your reading quite effective and efficient.

CALENDAR, FALL 2020

WEEK 1
9/29 class:
Intro to the course: Syllabus: pgs 2-7

Intro to the field project: pgs 220-223
10/01 class:
Ch. 1: The Game of Life: pgs 9-17
Intro to FP-1 (Field Project #1): pgs 224-5
Quiz #1 (Q-1 on Moodle) at end of class
Your time: FP-1: pages 224-5

WEEK 2
10/06 class:
Ch. 2: Exploring the Game Scientifically: pgs 19-30
Q-2 at end of class
10/08 class:
Ch. 3: From Atoms to Biomes: pgs 33-42
Intro to FP-2: pgs 226-7
Q-3 at end of class
Your time: FP-2: pages 226-7

WEEK 3
10/13 class:
Ch. 4: Creation of Oregon's Environments: pgs 45-54
Q-4 at end of class
10/15 class:
Ch. 5: Oregon's 10 Provinces: pgs 57-75
Intro to FP-3: pgs 228-31
Brief description of total grading system
Q-5 at end of class
Your time: FP-3: pages 228-31

WEEK 4
10/20 class:
Exam: Chapters 1-5 (on Moodle)
10/22 class:
Brief reflection on test results
Ch. 6: Three Milieus: Air, Water and Soil: pgs 77-89
Intro to FP-4: pgs 232-3
Q-6 at end of class
Your time: FP-4: pages 232-3

WEEK 5
10/27 class:
Ch. 7: The Kingdoms of Players: pgs 93-103
Q-7 at end of class

10/29 class:
Ch. 8: Natural Selection: Adapting: pgs105-115
Intro to FP-5: pgs 234-5
Q-8 at end of class
Your time: FP-5: pages 234-5

WEEK 6
11/03 class:
Ch. 9: Natural Selection: Results: pgs 117-128
Q-9 at end of class
11/05 class:
Ch. 10: Individuals Playing the Game: pgs 131-138
Intro to FP-6: pgs 236-7
Q-10 at end of class
Your time: FP-6: pages 236-7

WEEK 7
11/10 class:
Ch. 11: Populations Playing the Game: pgs 141-144
Intro to FP-7: pgs 238-239
Q-11 at end of class
11/12 class:
Exam: Chapters 6-11 (on Moodle)
Your time: FP-7: pages 236-7

WEEK 8
11/17 class:
Brief reflection on test results
Ch. 12: Communities Playing the Game: pgs 147-155
Q-12 at end of class
11/19 class:
Ch. 13: Putting a Game Together: pgs 157-163
Intro to FP-8: pgs 240-2
Q-13 at end of class
Your time: FP-8: pages 240-2

WEEK 9

Ch. 14: Energy: pgs 165-174
Q-14 at end of class
11/26 class:
Ch. 15: Nitrogen: a Building Material: pgs 177-180

Q-15 at end of class
11/27 LAST DAY TO TURN IN FIELD REPORTS

WEEK 10
12/01 class:
Ch. 16: Extinction: pgs 183-192
Q-16 at end of class
12/03 class:
Ch. 17: Promoting Nature: pgs 195-204
Q-17 at end of class

WEEK 11
12/08 final exam
9:00 a.m. class has exam from 7:30 to 9:20 a.m.
2:00 p.m. class has exam from 4:30 to 6:20 p.m.