A Syllabus for Biology 255: General Ecology

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Teaching Assistants:

Course Number: BIO 353
Lecture: 9:10 – 10:10 AM Mon, Tues, Thurs
Lecture Room: Olin 301
Lab Room: Olin 102
Laboratory: 1:40-4:40 PM Wed

Biology Department
Phone: 370-6013
Office: Olin 202
Hours: 9:00 AM – 4:00 PM

Required Textbooks:

Stiling, PD. 1998. *Introductory Ecology* (3rd Edition), Prentice-Hall.

Shultz, SM et al. 1999. *Conservation biology with RAMAS Ecolab*. Sinauer Associates.

Rose, S. L. 1999. *A Natural History of Minto Brown Island Park*, Dept. of Biology, Willamette U.

Additional reading will be assigned throughout the semester. These articles will be made available at the library reserve desk.

General: BIO 255 will teach you how to place organisms in the natural environment; understand plant and animal populations; the community concept; and methods of description and analysis of for ecological communities. Laboratory or field trip will let you experience the work of ecologists first hand.

Grading Criteria:

3 Lecture Exams(150 pts each)	450 pts.
2 Lab Exams (125 pts each)	250 pts.
Field Journal	200 pts.
Bird House & Ecology Mentoring	100 pts
Total Points	1000 pts.

Exams

Lecture exams will focus on lecture and reading material. There will be an emphasis on concepts, problem solving, and vocabulary. Lab exams will be focused towards applying your conceptual knowledge to the real world. This real world fluency will require you to learn the common names of many organisms and how they relate to each other.

***No make-up exams will be given without a written medical excuse. Any conflicts with the exam schedule must be resolved within the first week of the semester.

Field Journal

An important part of being an ecologist is writing down your observations. Your field journal will have two sections. I suggest getting a 3 ring binder so that you can easily add your work as it accumulates. Everything must be typed and have an electronic copy available on request. *Your field journal needs to be kept up to date on a weekly basis and brought to class every* ***Monday****. I will be asking for your journals on a* ***"pop quiz"*** *basis at my discretion.* Late journals will receive a 20% deduction from the maximum point total assigned to the exercise for the first 24 hr period and an additional 10% for each additional day.

Section 1:Weekly natural history observations (40 pts).

Write down at least two original and significant ecological observations per week. These observations can be recorded any time other than our field trips. You are encouraged to use Chapter 4 of Dr. Rose's *Natural History of Minto Brown Island Park* as an example. You may focus your observations on a particular area or make observations more widely.

Section 2:Field Trip/Lab Reporting (160 pts).

You will get further instructions and a model example at the first lab. Each report needs to have the following subheadings. The relative points for each section will vary depending on the lab and what we actually see and do.

I. *Site and Community Description* (e.g., second growth Douglas fir/W. Hemlock/Big Leaf Maple forest).
II. *Type of soil* (e.g., bedrock exposed, loose rocks, sandy soil, humus abundant, etc.)
III. *Topography* (e.g., level, east facing slope with a stream at the base)
IV. *Floristic Data* of major organisms including subheading for Trees, Shrubs, Forbes, Grasses & grass-like, Others (ferns, moss, fungi, algae etc). Lists should include Common and scientific, as well as a relative measure of abundance. Following your list you should describe the associations among the organisms included in your observations (e.g. willow, cottonwood, and red-osier dogwood were usually found together with "wet feet").
V. *Zoological Data*: same principle as IV.
VI. *Interesting Relationships* – Try to relate concepts from lecture and reading to what you have observed (e.g. the effect of soil type on plant distribution). Also include anything you found especially interesting (e.g. fish spawning in stream pools).
VII. *Special Techniques Report*: In each lab we will try to use a new ecological technique and collect some monitoring or experimental data. You should present that data and your personal analysis here.
VIII. *Critique*: How was or was not this experience of value to you and why.

Bird House & Ecology Mentoring

Each Willamette ecology student will be paired with a Salem area middle school student. Your primary tasks will be to cooperatively build and place a birdhouse in an area that supports Marion County's restoration ecology objectives. The house should be built and placed with a specific bird species in mind. You will teach the middle school student about the niche concept, hypothesis testing, and the reasoning behind why bird houses help heal the landscape. Ultimately I am hoping you will also help students imagine themselves as future college students and scientists.

Extra Credit (max. 20 pts)

Special additional field trips and reports	10 – 25 pts.
Build a class related web page	10 – 25 pts.

Other projects with Dr. Craig's pre-approval. All extra credit must be completed by the Lab's Final Exam.

Grading Scale:

A 92-100%	B- 80-81%	D+ 68-69%
A- 90-91%	C+ 78-79%	D 60-67%
B+ 88-89%	C 72-77%	F < 60%
B 82-87%	C- 70-71%	

Proposed Schedule:

This is a tentative guide for your class preparation. The schedule is subject to change--it is your responsibility to attend class and to keep abreast of any alterations.

			Reading Assignments		
Week	**Date**	**Topic**	**Stiling**	**Other**	**Lab**
1	1/15	Science of Ecology & Review Evol.	1 & 2	W.R. articles	no lab
2	1/22	Natural Selection & Speciation	3	Rose C1-3	Bush Park,Campus, Capitol Urban park land
3	1/29	Group Selection & Life Histories	4 & 5	Rose Ch 4	Minto Brown Island Park Willamette River bottoms
4	2/5	Population Growth	6	tba	Fairview Restoration Site Pringle Creek riparian zones
	2/6	**Journal Exam 1**		tba	
5	2/12	Physiological Ecology & Mutualism	7 & 8	tba	In stream ecology Pringle Creek & Mill Stream
	2/15	**Lecture Exam 1**		tba	
6	2/19	Coexisting or Competing	9	tba	Population Growth & Comp Computer simulations
7	2/26	Predation	10	tba	Conservation of small pops. Computer simulations
	2/28	**6:00 am – 10:00 pm**		tba	Columbia River Gorge
8	3/5	Herbivory & Parasitism	11 & 12	tba	Willamette Valley Grassland
9	3/12	Population Regulation by Death	13	tba	**Lab Exam**
10	3/19	Community Types	14	tba	Oak Fir Woodland Bone Steele?
	3/20	**Lecture Exam 2**			
	3/22	**12:30 pm to 10:00 pm**		tba	Inter-tidal & coastal ecosystems Newport, Oregon
11	3/26	Spring Break 3/23	break		Spring Break
12	4/2	Community Metrics	15 & 16	tba	
13	4/9	Diversity & Stability	17	tba	Island biogeography analysis
		Weekend Trip 13-15 April			Malhuer Field Station
14	4/16	Succession & Biogeography	18 & 19	tba	Coniferous forest
15	4/23	Trophic Structure	20	tba	Willamette River Ride?
16	4/30	Energy & Nutrient Flow	21 & 22	tba	**Final Lab Exam Field Trip**
	5/4	**Lecture Exam 3: Friday 8:00**			