LABORATORY IN ECOLOGY AND POPULATION BIOLOGY
BIOLOGY 394 (BIOL394.1001 & 1002)
SPRING SEMESTER 2015

Note: this syllabus will evolve with the course (i.e. it is subject to change)

Instructor: Dr. Angela M. Smilanich
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Office hours: Tues. 1:00-3:00pm
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Website: WebCampus Learn BIOL 394.1001 and 1002 (https://wcl.unr.edu/)
Teaching Assistant: Andrea Glassmire
Email: glssmr33@gmail.com

Class Schedule:
Time: Section 394.1001 Monday 1:00pm-5:00pm
Section 394.1002 Wednesday 1:00pm-5:00pm
Location: FA 254

COURSE DESCRIPTION
Research techniques and investigative approaches in field and laboratory studies. Prerequisites: STAT 152 or APST 270; BIOL 191; BIOL 192 or NRES 211; BIOL 314.

COURSE OBJECTIVES
The objectives of this course are: 1) to expose you to the process of science in ecology, 2) to develop your skills in scientific writing and statistical analysis, 3) to expose you to the scientific review process, and critical thinking in science, and 4) to develop oral presentation skills. The course will introduce you to several field techniques, research design, and data analysis and interpretation. You will utilize several computer software applications, including Excel, Minitab, SAS, R, and Word. You will also utilize statistical analysis, including t-tests, Analysis of Variance, Regression, and Chi-square. BIOL 394 is not a course in field methodology, computer applications, statistics, or graphic arts; however, these techniques are necessary in the preparation of raw data for scientific paper development and oral presentations. Over the course of the semester, you will participate in 3 group field/laboratory exercises and 1 independent project. In addition, you will complete 1 statistical analysis assignment, write 1 research proposal, write 2 scientific papers, write reviews of 1 proposal and 1 paper, and give 1 oral presentation and 1 poster presentation.

STUDENT LEARNING OUTCOMES AND SILVER CORE OBJECTIVE 14:
APPLICATION
Upon completion of this course you will have the tools to: (1) create an experimental design for the lab and/or field, (2) successfully execute experiments, and
analyze experimental data, synthesize and interpret the results in a scientifically meaningful context. This course satisfies Silver Core Objective 14: Application. Student learning outcome number three will be used to assess the core objective. This will be done by assessing the students’ ability to analyze experimental data and synthesize results at the beginning of the semester, and then again at the end of the semester.

LABORATORY

We will always meet first in FA 254, and then move to the field on those few days that we are going out. For field days please come prepared to go into the field with clothing appropriate for daily weather conditions. University vehicles will be provided and we will make a concerted effort to be back at the University by 5:00pm. You will be provided with a copy of the laboratory handout before the exercise is conducted. You will be expected to participate in all laboratory exercises. All equipment will be furnished by the Biology Department.

ASSIGNMENTS AND LECTURES

It will be very important to read assigned journal articles and other readings (see references below) before attending lab. The information is there to give you a good background for lectures and discussions.

1. All assignments must be sent to Angela at: smilanich@gmail.com

2. Over the course of the semester there will be 3 group projects led by your instructors. You will work in the same groups of 3 throughout the semester for each of these field/lab experiments. For each experiment, one student in the group will write a scientific paper, a second student will give an oral presentation, and the third is an editor for the project’s paper. The identity of the author, presenter, and editor will rotate for each experiment. This means that you will write a paper for one project, give a presentation on a second project, and be an editor for a third project. For example, Jack, Jill, and Dick are a group. Jack writes the competition paper, is an editor for the diversity project, and gives a talk on the foraging project. Jill is an editor for the competition project, gives a talk on the diversity project, and writes the foraging paper. Dick gives a talk on the competition paper, writes the diversity paper, and is an editor for the foraging paper. If you are a group of two, the same process applies but you choose two of the projects. For example Fred and Ethel are a group. Fred writes the competition paper, is an editor for the diversity paper, and gives a talk on the diversity paper. Ethel gives a talk on the competition project, is an editor for the competition paper, and writes the diversity paper.

3. For the independent project, you will work on your own. You are responsible for thinking of a question and hypothesis, and creating a sampling design. You will turn-in a research proposal for your independent project. You will turn-in a
scientific paper and give an oral presentation based on your independent project. All independent projects must be approved by your instructor.

4. All assignments receive individual grades (i.e. there are no group grades for the group projects) so the work must be your own work. However, you are responsible for getting one of your group members to help with editing on your paper (checking for errors, general readability, etc.) and helping you with a practice talk for your oral presentation. Include this editor as a coauthor on your paper, but the editor does not share your grade.

5. All assignments are due by midnight on the day of your laboratory session on the week that they are due (i.e. Wednesday at 11:59PM).

6. **Scientific papers should be 2-3 pages single-spaced, but no more than 3!** We are stressing quality over quantity.

7. You will review 1 scientific paper from a student in the class and 1 research proposal from a student in the class. **Reviews should be no more than 1 page.**

8. Please follow formats provided in the links for reviews and for scientific papers.

9. Literature cited must be included for all assignments (including oral presentations) and must be from PRIMARY literature. For a review of citing literature, go here:

10. Poster presentations will be completed as a group. You and your group members will decide which group project to focus on for the poster. The posters will be presented during class time in one of the presentation rooms in the MIKC. The group that earns the highest score will win a prize!

11. Oral presentations are 10 minutes for the individual projects. Your presentation must include Introduction, Methods, Results, Discussion, and a Literature Cited at the end. There will be time for questions from your classmates, the T.A., and your instructor.

12. To summarize, each student will write 2 papers (1 group and 1 independent), give 1 oral presentation and 1 poster presentation (1 group and 1 independent), and write 2 reviews (1 scientific paper and 1 research proposal).
GRADING
Grading is approximately as follows:

<table>
<thead>
<tr>
<th>Assignment</th>
<th>Points</th>
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<tbody>
<tr>
<td>1 Statistics Assignment</td>
<td>100</td>
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<tr>
<td>2 Papers (100 pts each)</td>
<td>200</td>
</tr>
<tr>
<td>1 Research Proposal</td>
<td>100</td>
</tr>
<tr>
<td>2 Reviews (50 pts each)</td>
<td>100</td>
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<tr>
<td>1 Poster Presentation</td>
<td>100</td>
</tr>
<tr>
<td>1 Oral Presentation</td>
<td>100</td>
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<tr>
<td><strong>Total</strong></td>
<td><strong>700</strong></td>
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For final grades, I will use a standard percentage system: A = 90 - 100%; B = 80 - 89%; C = 70 - 79%; D = 60 - 69%; F = less than 60%.

ACADEMIC DISHONESTY
Academic dishonesty is completely unacceptable and is defined as cheating, plagiarism or otherwise obtaining grades under false pretenses. Plagiarism is defined as submitting the language, ideas, thoughts or work of another as one's own work. To help prevent plagiarism, all papers will be scanned for comparison and future reference.

POLICY ON LATE ASSIGNMENTS
Late assignments will not be accepted. All assignments are due by 11:59pm on the due date; otherwise, they will not be graded and the student will receive a zero.

STATEMENT OF DISABILITY SERVICES
Any student with a disability needing academic adjustments or accommodations is requested to speak with the Disability Resource Center (Thompson Building, Suite 101) as soon as possible to arrange for appropriate accommodations.

STATEMENT OF ACADEMIC SUCCESS SERVICES
Your student fees cover usage of the Math Center (784-4433 or www.unr.edu/mathcenter/), Tutoring Center (784-6801 or www.unr.edu/tutoring-center), and University Writing Center (784-6030 or http://www.unr.edu/writing-center). These centers support your classroom learning; it is your responsibility to take advantage of their services. Keep in mind that seeking help outside of class is the sign of a responsible and successful student.

STATEMENT ON AUDIO AND VIDEO RECORDING
Surreptitious or covert video-taping of class or unauthorized audio recording of class is prohibited by law and by Board of Regents policy. This class may be videotaped or audio recorded only with the written permission of the instructor. In order to accommodate students with disabilities, some students may have been given permission to record class lectures and discussions. Therefore, students should understand that their comments during class may be recorded.
<table>
<thead>
<tr>
<th>Week</th>
<th>Date</th>
<th>Class Topic</th>
<th>Reading</th>
<th>Due Dates</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Jan 19</td>
<td>NO CLASS</td>
<td></td>
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<tr>
<td>2</td>
<td>Jan 26</td>
<td>Introduction and Process of Science</td>
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<tr>
<td>3</td>
<td>Feb 2</td>
<td>Natural History, Observation, and Formulating Questions in Ecology</td>
<td>Blackburn (2004); Handout</td>
<td></td>
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<tr>
<td>4</td>
<td>Feb 9</td>
<td>Experimental Design Group Project 1: Competition</td>
<td>Hurlbert (1984); Ryan (2011);</td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td>Wagg et al.(2011)</td>
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<tr>
<td>5</td>
<td>Feb 16</td>
<td>NO CLASS</td>
<td></td>
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<td></td>
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<td>verifying a model</td>
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<td>7</td>
<td>Mar 2</td>
<td>Individual Meetings for Independent Projects</td>
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<tr>
<td>8</td>
<td>Mar 9</td>
<td>Individual Meetings for Independent Projects</td>
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<td>Stats assignment due</td>
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<td>9</td>
<td>Mar 16</td>
<td>Spring Break-NO CLASS</td>
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<td>10</td>
<td>Mar 23</td>
<td>Group Project 3: Diversity</td>
<td>Theimer et al.(2011)</td>
<td>Proposals Due</td>
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<tr>
<td>11</td>
<td>Mar 30</td>
<td>Independent Projects-No Lab Meetings</td>
<td></td>
<td>Reviews Due for Proposals</td>
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<tr>
<td>12</td>
<td>Apr 6</td>
<td>Independent Projects-No Lab Meetings</td>
<td></td>
<td>Competition, Diversity and Foraging Papers Due</td>
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<tr>
<td>13</td>
<td>Apr 13</td>
<td>Field Ecology Symposium: Group Projects</td>
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<tr>
<td>14</td>
<td>Apr 20</td>
<td>Field Ecology Symposium: Independent Projects</td>
<td></td>
<td>Reviews Due for Papers</td>
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<tr>
<td>15</td>
<td>April 27</td>
<td>Field Ecology Symposium: Independent Projects</td>
<td></td>
<td>Independent Project Paper Due</td>
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References


Ecology – instructions for authors: http://esapubs.org/esapubs/AuthorInstructions.htm


