Course Syllabus

Department: Environmental Conservation and Horticulture

Date: 22 November 2013

I. Course Prefix and Number: BIO 221L

Course Name: Principles of Terrestrial and Aquatic Ecology Lab

Credit Hours and Contact Hours: 1 credit hour and 2 contact hours

Catalog Description including pre- and co-requisites: In this hands-on laboratory-based course, students will have the opportunity to conduct studies and perform experiments that enrich their knowledge and understanding of the scientific concepts learned in the lecture portion of CON 202/BIO 221 Principles of Terrestrial/Aquatic Ecology. Laboratory exercises will include a combination of field trips and observational and experimental studies as well as in-classes exercises aimed at preparing students for upper level coursework in the field of ecology (e.g. reading scientific papers, presenting data, interpreting graphs). Prerequisites: ENG 101, BIO 121 and BIO 122, or BIO 125. (Also listed as CON 202L)

Relationship to Academic Programs and Curriculum including SUNY Gen Ed designation if applicable:

Required for AS Environmental Studies. May be taken by students in the AAS Natural Resources Conservation, AAS Natural Resource Conservation: Law Enforcement, Fish and Wildlife Technology and AAS Horticulture programs. The course may also be taken together with BIO 221/CON 202 as a science elective.

II. Course Student Learning Outcomes:

The student will

1. Exercise the steps of scientific method from the initial stages of collecting observations, to building hypotheses and analyzing results. (Critical Thinking, Professional Competency)

2. Review, interpret, evaluate, and analyze peer-reviewed scientific studies that are related to laboratory exercises. (Reading, Mathematics, Critical Thinking, Professional Competency)

3. Execute standard ecological sampling procedures, calculate and analyze data, and compare these results to those published in peer-reviewed, scientific papers. (Reading, Mathematics, Computer Literacy, Critical Thinking, Professional Competency)
College Learning Outcomes Addressed by the Course: (check each College Learning Outcome addressed by the Student Learning Outcomes)

☐ writing  ☑ computer literacy
☐ oral communications  ☐ ethics/values
☑ reading  ☐ citizenship
☑ mathematics  ☐ global concerns
☑ critical thinking  ☐ information resources

III. Assessment Measures (Summarize how the college and student learning outcomes will be assessed): For each identified outcome checked, please provide the specific assessment measure.

<table>
<thead>
<tr>
<th>List identified College Learning Outcomes(s)</th>
<th>Specific assessment measure(s)</th>
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<tbody>
<tr>
<td>Reading</td>
<td>Comprehension will be evaluated using an established laboratory report rubric.</td>
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<tr>
<td>Mathematics</td>
<td>Comprehension and application of mathematical concepts will be evaluated using an established laboratory report rubric.</td>
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<tr>
<td>Computer Literacy</td>
<td>Application of relevant computer programs in the field of ecology will be evaluated using an established laboratory report rubric.</td>
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<tr>
<td>Critical Thinking</td>
<td>Comprehension and analysis of how published, scientific results relate to class laboratory results will be evaluated using an established laboratory report rubric.</td>
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IV. Instructional Materials and Methods

Types of Course Materials:

Lab manual, primary literature, field guides, standard sampling equipment, software, and protocols

Methods of Instruction (e.g. Lecture, Lab, Seminar …): 

Lectures, field trips, in-class activities, and both observational and experimental studies
V. General Outline of Topics Covered:

**Population Ecology**

- Population Dynamic Studies (e.g. life history / cohort tables, mark-recapture experiments, dendrochronology studies, intra-specific competition experiments)

**Community Ecology**

- Field Sampling of Different Communities
- Species Interaction Experiments (e.g. interspecific competition experiments, predator-prey studies)
- Species Richness / Biodiversity Sampling

**Ecosystem Ecology**

- Biogeochemical Studies (e.g. carbon flow experiments, nutrient cycling studies)