

LSC Use Only Proposal No:
LSC Action-Date:

UWUCC Use Only Proposal No: 11-134
UWUCC Action-Date: App-4/10/12 Senate Action Date: App-5/01/12

Curriculum Proposal Cover Sheet - University-Wide Undergraduate Curriculum Committee

Contact Person(s) Tim Nuttle	Email Address nuttle@iup.edu
Proposing Department/Unit Biology	Phone 7-2750

Check all appropriate lines and complete all information. Use a separate cover sheet for each course proposal and/or program proposal.

1. Course Proposals (check all that apply)

- | | | |
|---|---|--|
| ☐ New Course | ☐ Course Prefix Change | ☐ Course Deletion |
| ☒ Course Revision | ☒ Course Number and/or Title Change | ☒ Catalog Description Change |

Current course prefix, number and full title: **BIOL 450/550 Pymatuning: Field Studies**

Proposed course prefix, number and full title, if changing: **BIOL 450/550 Field Biology at Pymatuning Laboratory of Eco**

2. Liberal Studies Course Designations, as appropriate

This course is also proposed as a Liberal Studies Course (please mark the appropriate categories below)

- | | | | |
|--|---|---|---|
| ☐ Learning Skills | ☐ Knowledge Area | ☐ Global and Multicultural Awareness | ☐ Writing Across the Curriculum (W Course) |
| ☐ Liberal Studies Elective (please mark the designation(s) that applies – must meet at least one) | | | |
| ☐ Global Citizenship | ☐ Information Literacy | ☐ Oral Communication | |
| ☐ Quantitative Reasoning | ☐ Scientific Literacy | ☐ Technological Literacy | |

3. Other Designations, as appropriate

- | | |
|--|---|
| ☐ Honors College Course | ☐ Other: (e.g. Women's Studies, Pan African) |
|--|---|

4. Program Proposals

- | | | | |
|---|--|--|------------------------------------|
| ☐ Catalog Description Change | ☐ Program Revision | ☐ Program Title Change | ☐ New Track |
| ☐ New Degree Program | ☐ New Minor Program | ☐ Liberal Studies Requirement Changes | ☐ Other |

Current program name: _____

Proposed program name, if changing: _____

5. Approvals	Signature	Date
Department Curriculum Committee Chair(s)		11/2/11
Department Chairperson(s)		11/4/11
College Curriculum Committee Chair		3/7/12
College Dean		03/23/12
Director of Liberal Studies (as needed)		
Director of Honors College (as needed)		
Provost (as needed)		
Additional signature (with title) as appropriate		
UWUCC Co-Chairs		4/10/12

Received

MAR 23 2012

Liberal Studies

Part II. Description of the curriculum change

1. New syllabus of record, including catalog description, etc.

New Catalog Description:

BIOL 450 Field Biology at Pymatuning Laboratory of Ecology

3c-3l-4cr

During the summer session, various field courses are offered through the Pymatuning Laboratory of Ecology. The offerings vary depending on the summer. Possible offerings include Field Methods in Ecology and Conservation, Fish Ecology, Behavioral Ecology, Aquatic Botany, Forest Ecology, and Wildlife Conservation. Information regarding specific offerings is available from the department in the spring.

New Syllabus of Record (unchanged from the Old Syllabus of Record):

Syllabi will vary from year to year depending on the specific subject matter being taught. See the Appendix for an example of a typical syllabus.

2. Summary of proposed changes:

The only proposed changes are:

- The course name has been changed
- The number of credits has been changed to 4 and the distribution of lecture and lab has been specified.
- The course description has been changed to reflect current possible offerings.
- The old syllabus of record was missing the graduate section; that has been added.

Old catalog description:

BIOL 450 Pymatuning: Field Studies

var-3cr

During the summer session, various field courses are offered through the Pymatuning Laboratory of Ecology. The offerings vary depending on the summer. Possible offerings include Experimental Design, Fish Ecology, Behavioral Ecology, Aquatic Botany, and Ecological Genetics. Information regarding specific offerings is available from the department in the spring.

3. Rationale for proposed changes:

- Name change: This course is taught off campus, at the Pymatuning Laboratory of Ecology operated by the University of Pittsburgh, in Linesville, PA. The new name is more transparent for students to understand the format of the course, clearly indicating that the course is taught at an off-campus field station.
- The number of credits more accurately reflects the number of hours spent in the class. A 3c-3l-4cr class during the normal academic year would have a total of 14 weeks of instruction and 6 contact hours per week for a total of 84 hours of instruction. Courses at Pymatuning Laboratory of Ecology are 3 weeks (14 days + 1 day for the final exam) and meet for 6-8 hours each day. While the exact distribution of lecture to lab hours will vary from class to class and day to day, depending on the nature of the content to be delivered, three hours of lecture or in-

class activity and 3 hours of laboratory activity would be normal on average. Hence, each day during the 3-week summer session is equivalent to one week during the academic year and there would be 84-112 hours of instruction. The revision makes it more representative of the actual time spent in class. Also, there is a discrepancy between the old syllabus of record, which lists the course as 3 cr, and the catalog, which lists the course as a range of var-3cr. This change to 4 cr will correct that discrepancy.

- The new course description more closely matches courses that have been offered in recent years.
- The old syllabus of record was missing the graduate section.

4. Old syllabus of record: see attached pdf file.

Part III. Letters of support or acknowledgment

No other departments are affected by this revision

APPENDIX I

Sample Course Syllabus

I. Catalog Description:

BIOL 450/550 Field Biology at Pymatuning Laboratory of Ecology:

3c-3l-4cr

During the summer session, various field courses are offered through the Pymatuning Laboratory of Ecology. The offerings vary depending on the summer. Possible offerings include Field Methods in Ecology and Conservation, Fish Ecology, Behavioral Ecology, Aquatic Botany, Forest Ecology, and Wildlife Conservation. Information regarding specific offerings is available from the department in the spring.

Topic: Field Techniques in Ecology and Conservation

Introduce students to a variety of field and research techniques used in the ecology and conservation profession, including sampling and experimental design, basic orienteering skills, and sampling methods in forests, fields, and aquatic habitats.

II. Course Outcomes

Students will be able to:

- a. design an appropriate scheme for sampling populations, communities, and habitats in the field to answer specific questions.
- b. navigate to defined locations in unfamiliar areas with the help of maps, compasses, and pacing.
- c. select and implement the most appropriate sampling methods to meet the objectives of the sampling and study design.

III. Detailed course outline

- a. The course is a three-week summer field class at Pymatuning Laboratory of Ecology. Class meets for 6-8 hours each of 15 days in the three-week summer term.
- b. Topics:
 - i. Orienteering, Geographical Information Systems, and Global Positioning Systems (2 days)
 - ii. Sampling design & experimental design, set up projects (2 days)
 - iii. Sampling plants and animals in herbaceous vegetation (2.5 days)
 - iv. Practical Exam (0.5 day)
 - v. Sampling plants and animals in forests (3 days)
 - vi. Sampling aquatic invertebrates & habitats (3 days)
 - vii. Radio telemetry (1 day)
 - viii. Practical and Final Exam (0.5 day)
 - ix. Presentation of projects (0.5 days)

IV. Evaluation methods

- a. Reports (60%): Students will complete 6 laboratory reports covering topics presented in the previous unit. Each is worth 10% of the grade. Each report will be at least 5 pages and include citations from at least 3 sources.

- b. Exams (30%): There will be three exams, each worth 10%. Two will be a practical exams focusing on ability to perform certain tasks. The third will be a final exam focusing on content.
- c. Final project (10%): A final project will be presented based on an experiment designed, conducted, and analyzed by the students.

V. Example grading scale

A 90-100%; B 80-89.9%; C 70-79.9%; D 60-69.9%; F 0-59.9%.

VI. Undergraduate course attendance policy

Because this is a field course and each day represents at least 6 hours of instruction, attendance is required. Late work will not be accepted and there can be no make ups (the instructor is in the class every day for 6-8 hours, too). In case of a bona-fide illness or personal emergency, up to one assignment will be dropped. If more than one day of class is missed, the student will need to take an incomplete and complete the missing assignments at a future date outside the scheduled term.

VII. Required textbooks, supplemental books and readings

- a. Required text:
Cox, G.W. 2001. General Ecology Laboratory Manual. McGraw Hill.
- b. Supplemental readings will come from technical reports and peer-reviewed literature, as germane to specific topics and student projects.

VIII. Special Requirements

- a. Students must buy a Silva Ranger compass or equivalent (ca. \$40)
- b. There is a \$58 site fee for Pymatuning Laboratory of Ecology. In addition, students are expected to live in the Linesville, PA area, with the option of paying for room and board at the Pymatuning Laboratory of Ecology.

IX. Bibliography

Barbour, M.T., J. Gerritsen, B.D. Snyder, and J.B. Stribling. 1999. Rapid Bioassessment Protocols for Use in Streams and Wadeable Rivers: Periphyton, Benthic Macroinvertebrates and Fish, Second Edition. EPA 841-B-99-002. U.S. Environmental Protection Agency; Office of Water; Washington, D.C.

Burns, R. M. and B. H. Hankala. 1990. Silvics of North America: 2. Hardwoods. USDA Forest Service Agricultural Handbook 654, Washington, DC.

Cox, G.W. 2001. General Ecology Laboratory Manual. McGraw Hill.

Leather, S. 2005. Insect sampling in forest ecosystems. Blackwell.

Long, Z. T., T. H. Pendergast IV, and W. P. Carson. 2007. The impact of deer on relationships between tree growth and mortality in an old-growth beech-maple forest. *Forest Ecology and Management* 252:230-238.

**The Wildlife Society. 2005. Techniques for Wildlife Investigations and Management (6th Edition).
The Wildlife Society.**

Graduate Level – BIOL 550

Additional Goals and Objectives:

In addition to the goals outlined in the undergraduate description, graduate students will, upon completion of this course, be able to:

1. Analyze data and present data using appropriate statistical tests.
2. Write lab and project reports in format suitable for publication to a peer-reviewed journal.

Different expectations on assignments and additional assignments:

In addition to the requirements listed above for undergraduates, graduate students will:

1. Be expected to achieve a higher level of integration of concepts in lab reports and projects.
 - a. Reports will be a minimum of 8 manuscript pages (instead of 5 for undergraduates)
 - b. Reports will cite a minimum of 6 sources (instead of 3 for undergraduates)
2. Complete their lab reports and project individually or in groups with other graduate students.

Criteria for evaluation:

1. Reports (60%): Students will complete 6 laboratory reports covering topics presented in the previous unit. Each is worth 10% of the grade.
2. Exams (30%): There will be three exams, each worth 10%. Two will be a practical exams focusing on ability to perform certain tasks. The third will be a final exam focusing on content.
3. Final project (10%): A final project will be presented based on an experiment designed, conducted, and analyzed by the students.

Grading scale:

A 90-100%; B 80-89.9%; C 70-79.9%; F 0-69.9%.

V. DESCRIPTION OF CURRICULUM CHANGE

I. CATALOG DESCRIPTION

BI 450/550 Pymatuning: Field Studies

3 credits

During the summer session, various field courses are offered through the Pymatuning Laboratory of Ecology. The offerings will vary depending on the summer. Some of the possible offerings include Experimental Design, Fish Ecology, Behavioral Ecology, Aquatic Botany and Ecological Genetics. Information regarding specific offerings available from Biology Department in Spring.

Course Syllabus

Syllabi will vary from year to year depending on the specific subject matter being taught. See the Appendix for an example of a typical syllabus.

Appendix

Example of a Course Syllabus

I. COURSE DESCRIPTION

BI 450/550 Vertebrate Community Ecology

3 credits

Consideration of the structure and function of terrestrial vertebrate communities, with emphasis on factors that determine community composition. Topics include the influences of species interactions, abiotic environment, and human impacts on community dynamics. Techniques of data gathering and analysis will be acquired during field studies of small mammal communities in two different habitats.

II. COURSE OBJECTIVES

- A. Students will learn of organization hierarchies above and below the community level, i.e. population and ecosystem ecology.**
- B. Students will gain an in depth understanding of community structure and of the factors generally considered to govern community composition and assembly.**
- C. Students will be able to apply theoretical concepts previously discussed to real communities.**
- D. Students will gain direct experience in the techniques used to study communities, as well as learning to analyze data.**

III. COURSE OUTLINE

- A. Introduction**
- B. Evolutionary Background**
- C. Population Biology**
 - 1. Evolution of Populations - based on gene pool**
 - a. genetic definition of population**
 - b. conservation of gene frequency - Hardy-Weinberg**
 - c. genetic variation and change in natural populations**
 - d. population divergence (- > speciation)**
 - 2. Population Descriptors (demography, basic processes)**
 - a. reproductive rate**
 - b. mortality/survivorship patterns**
 - c. synthesis**
 - 3. Population Regulation**
 - a. density independent factors**
 - b. density dependent factors**
 - c. life history strategies**
 - d. population cycles**
 - 4. Determinants of Distribution**

- a. abiotic factors (interaction with physiological tolerances)
- b. biotic factors - historical, habitat, physiological and behavioral characteristics of species, interactions with other species)

D. The Niche Concept

E. Community Ecology

- 1. definition - conflicting views
- 2. attributes and organization - descriptive
 - a. species diversity
 - b. trophic organization - guilds
 - c. niche concept
 - d. equilibrium vs. non-equilibrium communities
- 3. forces structuring communities
 - a. regional and historical influences
 - b. communities as groups of species whose requirements overlap (continuum of botanists)
 - c. communities as co-evolved units
 - 1. competition
 - 2. predation
 - 3. character displacement - causes or results of co-existence
 - 4. symbiotic relationships
- 4. island biogeography (as a means of studying how communities are assembled)
 - a. area effects
 - b. distance effects
 - c. diversity of source
 - d. species turnover
 - e. adaptive radiation
 - f. application to habitat islands
- 5. kinds of communities
 - a. food limited
 - b. space limited
 - c. temperature vs. tropical

IV. EVALUATION METHODS

A. The final grade in the course will be determined as follows:

- 1. 50% Exams

Two exams (mid-term and final) consisting of essay, multiple choice and completion.
- 2. 30% Laboratory Research Project

Each student will design and carry out an approved (by instructor) field research project, dealing with vertebrate community ecology.
- 3. 20% Primary Literature

Each student will choose an approved (by instructor) current research article from a journal in ecology, review the article and associated literature, and orally present the material to the

class. Areas to be included are: the scientific question; the hypothesis; methods to test the hypothesis; the results; and a discussion of the paper's relevance to the associated literature.

V. REQUIRED TEXTS

Strong, D. R. Jr., D. Simberloff, L. G. Abele, and A. B. Thistle, eds. 1984. Ecological Communities: Conceptual Issues and Evidence. Princeton University Press, Princeton.

Diamond, J. and T. J. Case, eds. 1986. Community Ecology. Harper and Row, New York.

VI. SPECIAL RESOURCE REQUIREMENTS

A. Each student will be required to pay a \$40.00 lab bench fee. This is a standard charge at field stations across the country.

VII. BIBLIOGRAPHY

A. The bibliographies will vary significantly depending on the course offerings. See attached 1994 Summer course list.

Sample 3 Week Summer Syllabus

Week 1

Lecture -10 hours

Introduction, evolutionary background, and population demography. Discussion of recent literature.

Laboratory-25 hours

Trapping, tagging, and determining small mammal population dynamics. Census of amphibians and reptiles, and population estimates.

Week 2

Lecture-10 hours

Regulation and distribution of populations and the niche concept. Discussion of recent literature. Exam I.

Laboratory-25 hours

Analyzing avian community structure and dynamics. Sampling of fish communities and estimates of populations.

Week 3

Lecture-10 hours

Community Structure and ecology. Discussion of recent literature. (Final Exam)

Laboratory-25 hours

Individual student research projects.