

NEW COURSE PROPOSAL

Courses must be submitted by October 15, 2011, and finalized by the end of the fall semester for the next catalog production.

DATE (*Change if modified and redate file with current date*) 10-4-2011; REV 10.20.11L REV 11.29.11

PROGRAM AREA(S) BIOLOGY

1. Course Information. *[Follow accepted catalog format.]*

Prefix(es) (Add additional prefixes if cross-listed) **and Course No. BIOL 453**

Title: Methods in Population and Community Ecology Units: 4

Prerequisites BIOL 200, BIOL 203, MATH 150

Corequisites

Consent of Instructor Required for Enrollment: No

Catalog Description (Do not use any symbols):

Discuss the mechanisms governing population dynamics and community structure. Mathematical models for population growth, predator-prey interactions, competition, island biogeographs, and food webs will be explored. Computer labs will emphasize the analysis of ecological datasets.

Grading Scheme:

X A-F Grades

Credit/No Credit

Optional (Student Choice)

Repeatability:

Repeatable for a maximum of ____ units

Total Completions Allowed

Multiple Enrollment in Same Semester

Course Level Information:

X Undergraduate

Post-Baccalaureate/Credential

Graduate

Mode of Instruction/Components (*Hours per Unit are defaulted.*)

	Units	Hours per Unit	Benchmark Enrollment	Graded Component	CS & HEGIS # (Filled in by the Dean)
Lecture	3	1	20	X	
Seminar		1			
Laboratory	1	3	20	X	
Activity		2			
Field Studies					
Indep Study					
Other Blank					

Leave the following hours per week areas blank. The hours per week will be filled out for you.

3 hours **lecture** per week

3 hours laboratory per week

Is this course delivered online? Yes____ No_X__

2. Course Attributes:

General Education Categories: All courses with GE category notations (including deletions) must be submitted to the GE website: <http://summit.csuci.edu/geapproval>. Upon completion, the GE Committee will forward your documents to the Curriculum Committee for further processing.

A (English Language, Communication, Critical Thinking)

A-1 Oral Communication

A-2 English Writing

A-3 Critical Thinking

B (Mathematics, Sciences & Technology)

B-1 Physical Sciences

B-2 Life Sciences – Biology

B-3 Mathematics – Mathematics and Applications

B-4 Computers and Information Technology

C (Fine Arts, Literature, Languages & Cultures)

C-1 Art
C-2 Literature Courses
C-3a Language
C-3b Multicultural

D (Social Perspectives)

E (Human Psychological and Physiological Perspectives)

UDIGE/INTD Interdisciplinary

Meets University Writing Requirement

Meets University Language Requirement

American Institutions, Title V Section 40404: ☐ Government ☐ US Constitution ☐ US History

Refer to website, Exec Order 405, for more information: <http://senate.csuci.edu/comm/curriculum/resources.htm>

Service Learning Course (Approval from the Center for Community Engagement must be received before you can request this course attribute).

3. Justification and Requirements for the Course. (Make a brief statement to justify the need for the course)

A. Justification: BIOL 453 is an elective course that would provide biology and ESRM students with a solid background in population and community ecology. Current biology courses offered do not present the calculus based models at the level that is required for students seeking to enter graduate programs or planning to gain employment with government agencies or in agriculture. In particular, this course would emphasize the analysis of ecological datasets using statistical/mathematical modeling software.

B. Degree Requirement: Requirement for the Major/Minor **Note: Submit Program Modification if this course changes your program.**
X Elective for the Major/Minor
Free Elective

4. Student Learning Outcomes. (List in numerical order. You may wish to use the following resource in utilizing measurable verbs: <http://senate.csuci.edu/comm/curriculum/resources.htm>)

Upon completion of the course, the student will be able to:

- Outline the mechanisms regulating populations and communities
- Describe population and community dynamics using mathematical models
- Know how to analyze ecological datasets using appropriate techniques and software
- Summarize and interpret the primary literature in ecology

5. Course Content in Outline Form. [Be as brief as possible, but use as much space as necessary]

Estimating Population Size
Exponential Population Growth
Logistic Population Growth
Age-Structured Population Growth
Meta-population Dynamics
Competition Models
Predator-prey Dynamics
Island Biogeography & Assembly Rules
Measuring Species Diversity
Community Structure
Trophic Cascades & Food webs
Neutrality Theory
Interaction Networks

Does this course content overlap with a course offered in your academic program? **Yes** X **No**

If YES, what course(s) and provide a justification of the overlap.

This course overlaps with some general topics presented in BIOL 433 (Ecology and the Environment). However given that BIOL 433 is a GE- B2 course, it does not require calculus, and thus does not present the mathematical models at the level that is required for biology majors. BIOL 453 would focus on the computational skills required to analyze ecological datasets.

Does this course content overlap a course offered in another academic area? **Yes** **No** X

If YES, what course(s) and provide a justification of the overlap.

Overlapping courses require Chairs' signatures.

6. Cross-listed Courses (Please note each prefix in item No. 1)

A. List Cross-listed Courses (Signature of Academic Chair(s) of the other academic area(s) is required).

List each cross-listed prefix for the course:

B. Program responsible for staffing: BIOLOGY

7. References. [Provide 3 - 5 references]

Gotelli, N. J. and G. R. Graves. 1996. Null Models in Ecology. Washington D. C.: Smithsonian Institution Press.

Gotelli, N. J. 2008. *A Primer of Ecology*, 4th Edition. Sunderland, MA: Sinauer Associates.

Krebs, C. J. 2008. *Ecology: The Experimental Analysis of Distribution and Abundance*, 6th Edition. San Francisco: Benjamin Cummings.

Real, L. A., and J.H. Brown. 1991. *Foundations of Ecology: Classic Papers with Commentaries*. University Of Chicago Press.

8. Tenure Track Faculty Qualified to Teach This Course.

Ruben Alarcon

9. Requested Effective Date:

First semester offered: Fall 2012

10. New Resources Requested. **Yes** **No** X

If YES, list the resources needed.

A. Computer Needs (data processing, audio visual, broadcasting, other equipment, etc.)

Classroom with computers for data analysis using statistical software

B. Library Needs (streaming media, video hosting, databases, exhibit space, etc.)

C. Facility/Space/Transportation Needs

D. Lab Fee Requested (please refer to Dean's Office for additional processing) **Yes** **No** X

E. Other

11. Will this new course alter any degree, credential, certificate, or minor in your program? **Yes** **No** X

If, YES attach a program update or program modification form for all programs affected.

Priority deadline for New Minors and Programs: **October 1, 2011** of preceding year.

Priority deadline for Course Proposals and Modifications: **October 15, 2011**, of preceding year.

Last day to submit forms to be considered during the current academic year: **April 15th**.

Ruben Alarcon

October 4, 2011

Proposer of Course (Type in name. Signatures will be collected after Curriculum approval)

Date

Approval Sheet

Program/Course: [REDACTED]

If your course has a General Education Component or involves Center affiliation, the Center will also sign off during the approval process.

Multiple Chair fields are available for cross-listed courses.

The CI program review process includes a report from the respective department/program on its progress toward accessibility requirement compliance. By signing below, I acknowledge the importance of incorporating accessibility in course design.

Program Chair		
Signature		Date
Program Chair		
Signature		Date
Program Chair		
Signature		Date
General Education Chair		
Signature		Date
Center for International Affairs Director		
Signature		Date
Center for Integrative Studies Director		
Signature		Date
Center for Multicultural Engagement Director		
Signature		Date
Center for Civic Engagement Director		
Signature		Date
Curriculum Chair		
Signature		Date
AVP		
Signature		Date