

UNIVERSITY OF KENTUCKY
APPLICATION FOR CHANGE IN EXISTING COURSE: MAJOR & MINOR

11. If the course is 400G or 500 level, include syllabi or course statement showing differentiation for undergraduate and graduate students in assignments, grading criteria, and grading scales. Check here if 400G-500.
12. Is this a minor change? Yes No
 (NOTE: See the description on this form of what constitutes a minor change. Minor changes are sent directly from the Dean of the College to the Chair of the Senate Council. If the latter deems the change not to be minor, it will be sent to the appropriate Council for normal processing.)
13. Within the Department, who should be consulted for further information on the proposed course change?

Name: Scott Gleeson (skglees@uky.edu) Phone Extension: 323-3284

Signatures of Approval:

<p style="text-align: center;"><i>11/13/07</i></p> <p style="text-align: center;">Date of Approval by Department Faculty</p>	<p style="text-align: center;"><i>[Signature]</i></p> <p style="text-align: center;">Reported by Department Chair</p>
<p style="text-align: center;"><i>11/13/07</i></p> <p style="text-align: center;">Date of Approval by College Faculty</p>	<p style="text-align: center;"><i>[Signature]</i></p> <p style="text-align: center;">Reported by College Dean</p>
<p style="text-align: center;">*Date of Approval by Undergraduate Council</p>	<p style="text-align: center;">Reported by Undergraduate Council Chair</p>
<p style="text-align: center;">*Date of Approval by Graduate Council</p>	<p style="text-align: center;">Reported by Graduate Council Chair</p>
<p style="text-align: center;">*Date of Approval by Health Care Colleges Council (HCCC)</p>	<p style="text-align: center;">Reported by HCCC Chair</p>
<p style="text-align: center;">*Date of Approval by Senate Council</p>	<p style="text-align: center;">Reported by Senate Council Office</p>
<p style="text-align: center;">*Date of Approval by University Senate</p>	<p style="text-align: center;">Reported by Senate Council Office</p>

*If applicable, as provided by the Rules of the University Senate.

The Minor Change route for courses is provided as a mechanism to make changes in existing courses and is limited to one or more of the following:

- a. change in number within the same hundred series;
- b. editorial change in description which does not imply change in content or emphasis;
- c. editorial change in title which does not imply change in content or emphasis;
- d. change in prerequisite which does not imply change in content or emphasis;
- e. cross-listing of courses under conditions set forth in item 3.0;
- f. correction of typographical errors. [University Senate Rules, Section III - 3.1]

From: "Steve Bullard" <Steve.Bullard@uky.edu>
To: "Scott Gleeson" <skglees@uky.edu>
Subject: RE: course change for BIO/FOR/ENT 609
Date sent: Fri, 25 May 2007 07:40:49 -0400

Scott:

Dave Wagner asked me to sign for him while he's out of the country for a few weeks -- and he obtained approval from the Graduate School for me to do so temporarily.

I've reviewed the document you forwarded and would be glad to sign on Dave's behalf.

Steve.

Steven H. Bullard, Chair
Department of Forestry
University of Kentucky
106 T.P. Cooper Building
Lexington, KY 40546-0073
(859) 257-7596 (ph) - 9086 (fax)
steve.bullard@uky.edu

-----Original Message-----

From: Scott Gleeson [<mailto:skglees@uky.edu>]
Sent: Thursday, May 24, 2007 11:32 AM
To: steve.bullard@uky.edu
Subject: course change for BIO/FOR/ENT 609

Dr. Bullard,

I'm a faculty in Biology. I'm putting in a course change for BIO/FOR/ENT 609, Population and Community Ecology and I will need your signature on the application.

I wanted to run this through your DGS, but Dave Wagner is out of town for the next month and I haven't been able to find out if anyone is standing in for him while he's away. If there is someone, feel free to forward this to them.

The change I'm requesting is to increase credit hours from 2 to 3 (it was reduced from 3 to 2 some years ago for a training grant that no longer exists). I've found that 2 hours limits what we can do with this material. I'd be happy to answer any questions you might have about this. I have attached the current draft of the proposal.

Thanks for your help.

Scott

Scott Gleeson
Department of Biology
University of Kentucky
Lexington KY 40506
859-323-3284
skglees@uky.edu

Subject: **proposed change in 609**
Date sent: **Wed, 23 May 2007 17:19:28 -0400**
From: **"Yeargan, Ken" <kyeargan@email.uky.edu>**
To: **<skglees@uky.edu>**
Copies to: **<john.obrycki@uky.edu>**

Scott,

I looked over your proposal to change Population and Community Ecology from 2 to 3 credits, and it looks fine to me. I will copy this response to my Department Chair for his information. Best regards.

Ken

Kenneth V. Yeargan
Department of Entomology
University of Kentucky
Lexington, KY 40546-0091 USA
telephone: 859-257-7454
fax: 859-323-1120

5/23/07 5:19 PM
1 May 2007 11:25 -0400

Ken Yeargan
kyeargan@email.uky.edu
john.obrycki@uky.edu

Change Proposal for 609
The following information is for
information only.

5/23/07 5:19 PM
1 May 2007 11:25 -0400

Ken Yeargan
kyeargan@email.uky.edu
john.obrycki@uky.edu

Change Proposal for 609
The following information is for
information only.

5/23/07 5:19 PM
1 May 2007 11:25 -0400

Ken Yeargan
kyeargan@email.uky.edu
john.obrycki@uky.edu

Change Proposal for 609
The following information is for
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5/23/07 5:19 PM
1 May 2007 11:25 -0400

Rationale for modification of BIO 609:

This course is part of a series of courses used in graduate training in ecology, evolution and behavior (particularly in Biology, Entomology and Forestry). Several years ago, as part of a process of administering a graduate training grant, this course was reduced from 3 to 2 credit hours. The main purpose was to reduce course load on the graduate fellows that were trying to satisfy the requirements of both the training grant and their respective departments. This change was not particularly helpful in that regard, and now the grant has expired. The time restriction resulting from the credit hour reduction has adversely affected the breadth and depth of course content and the level of student effort and participation. Restoring the credit hours to 3 will significantly improve the course quality.

Because of the pressure to cover the essentials of the significant topics in two hours per week (and the equivalent student homework time), the depth of presentation has been compromised. Increased course hours will mean that there will be more time in class to give complete derivations, include additional complexities, explore specific examples and case studies, and expand discussions. In addition, students can be expected to spend more time on this course out of class so more primary literature can be read, more problems worked, and more synthetic writing assigned. An important feature of the course that was dropped will be re-instituted – what we called “exemplary studies”. Most important experimental studies in ecology are multi-faceted and have taken years to develop. They are only well appreciated by reading a collection of related papers. Each student will choose one such study, collect the literature, and prepare a synthesis paper and presentation.

The course content will expand primarily through the addition of ecological applications, including material on global issues. Many of the topics covered have an applied dimension, particularly in relation to significant human impacts on the environment. For example, many population analysis and prediction techniques have application in the study of populations of special interest, such as rare and invasive species. Currently there is no time to describe “population viability analysis”, but it will be included in an expanded course. Likewise, principles of host-parasite interactions have implications for disease and pest control, and theories of biogeography have been used in interpretation of the effects of habitat fragmentation, and theories of resource competition make predictions about the effect on vegetation of global impacts like elevated carbon dioxide and nitrogen loading.

This change will not impact any current program requirements, but will affect students that choose to use this course in their programs. The Director of Graduate Studies of the Biology Department (Dr. Brian Rymond), Entomology (Dr. Ken Yeargan) and Forestry (Dr. David Wagner) have seen and approved this change.

ARTS AND SCIENCES
EDUCATIONAL POLICY COMMITTEE
INVESTIGATOR REPORT

<http://www.as.uky.edu/Admin/faculty/viewdocs/summary/>

INVESTIGATING AREA: Natural & Math. Sci. COURSE, MAJOR, DEGREE or PROGRAM: BIO. 609

DATE FOR EPC REVIEW: _____ CATEGORY: NEW, CHANGE, DROP

INSTRUCTIONS: This completed form will accompany the course application to the Graduate/Undergraduate Council(s) in order to avoid needless repetition of investigation. The following questions are included as an outline only. Be as specific and as brief as possible. If the investigation was routine, please indicate this. The term "course" is used to indicate one course, a series of courses or a program, whichever is in order. Return the form to **Leonidas Bachas Associate Dean, 275 Patterson Office Tower** for forwarding to the Council(s). ATTACH SUPPLEMENT IF NEEDED.

1. List any modifications made in the course proposal as submitted originally and why.
see attached (to syllabus)
2. If no modifications were made, review considerations that arose during the investigation and the resolutions.
3. List contacts with program units on the proposal and the considerations discussed therein.
see attached (to syllabus)
4. Additional information as needed.

5. A&S Area Coordinator Recommendation:

APPROVE, APPROVE WITH RESERVATION, OR DISAPPROVE

6. A&S Education Policy Committee Recommendation:

APPROVE, APPROVE WITH RESERVATION, OR DISAPPROVE

7. Ruth Beattie Date: 11/18/07

A&S Educational Policy Committee,
Ruth Beattie rebeat1@uky.edu 257-7641

File: InvestigatorRpt

Instructor: Scott Gleeson, skglees@uky.edu, MDR3 109, 323-3284; FAX 257-1717

Office hours: Just call, email and/or drop by any time

Text: there is no required text

Course Website: <http://www.as.uky.edu/biology/faculty/gleeson/bio%20609.htm>

GOALS

The primary goal of this course is to **explore many of the major concepts** in modern, theory and experiment-based, **population and community ecology**. It is intended primarily for beginning graduate students working in some area of ecology. For this reason the **emphasis is on building a conceptual framework, or worldview**, that we need 1) to integrate the diverse flood of information that we experience daily in class, seminars, discussions, professional meetings, journals, web, etc. and 2) to stimulate new insights and syntheses and questions for further research. Naturally, the framework I will be working from is my own bias – but it is not my invention (I'm not that clever). So, my goal is to present as clear a description of the fundamentals of this area as I have been able to cull from my predecessors and colleagues.

My *assumption* is that you are actively constructing your own conceptual framework for your own purposes, and that you intend to use this course as a chance to work on that. My *hope* is that you will be motivated to challenge and question the limited view that I will be offering, by bringing your own views and experiences on these issues. Maybe we can make some progress here!

One notable aspect of this material is that **we use mathematical models** in exploring these ideas. This bothers some students for a variety of reasons. I believe, as have those who have co-taught this course in the recent past (Andy Sih, Phil Crowley), that people wanting to practice ecology must come to grips with this and that we would serve you poorly if we did not make you take a crack at it. These are quantitative disciplines, and much of the jargon refers to mathematical notions (e.g., “higher order interaction”). People differ a lot in their comfort level with math and models. I know it doesn't help much to say, even though true, that the level of math used here is quite rudimentary. But really, if you can do algebra and understand the *idea* of a derivative (calculus), you should be able to follow the ideas into the equations (but it takes some practice!)

FORMAT

This is a **lecture/discussion course**. There will be regular lectures, with discussion encouraged (sometimes by my calling on people). In addition there will be regular **readings and problem sets** to work on outside of class, due dates will be given when assigned. Usually there will be a short **quiz on the reading** on the due date. I also expect to have an in class **midterm and final exam**. The midterm will be given during class time at a date TBA, and the final on the scheduled day in finals week (5/5/06 10:30am) or at another time approved by all class members.

GRADES

Grades will derive from an averaging of performance on the exams (35%), problem sets (40%), quizzes (15%) and class participation (10%). These proportions are approximate. Attendance is not required, but included in class participation.

BIO/ENT/FOR 609 Population and Community Ecology
Scott Gleeson (Biology)

Addendum to course change application requested by the College (A&S) Educational Policy Committee

Requested modifications:

- 1. grade scale**
- 2. learning objectives**
- 3. expanded justification for increased credit hours**
- 4. summary of syllabus and grading changes**

1. Grading scale.

A = 100-90.0%

B = 89.9-80.0%

C = 79.9-70.0%

D = 69.9-60.0%

E = below 60.0%

2. Learning objectives.

By the end of the course, the students will be able to understand, describe and discuss articulately

1. The major concepts of population and community theory (topics to be added included in all caps), including, but not restricted to: levels of organization, species abundance patterns, niche, gradient, tradeoffs, optimization, levels of selection, phylogeny, sensitivity, elasticity, density dependence/independence, exponential growth, per capita growth rate, intrinsic rate of increase, carrying capacity, logistic equation, Allee effect, maximum sustainable yield, attractors, repellers, chaos, demographic stochasticity, life table, stage structure, fecundity, projection matrix, reproductive value, POPULATION VIABILITY ANALYSIS, metapopulation, colonization, source-sink, PRESERVE DESIGN, trophic interactions, indirect effects, predator functional response, optimal foraging, isocline analysis, R^* , tragedy of the commons, coevolution, group selection, competition, predation, parasitism, EVOLUTIONARY MEDICINE, mutualism, competitive exclusion principle, apparent competition, niche overlap, character displacement, species packing, island biogeography, extinction debt, food web, connectance, abstraction, top down/bottom up, trophic cascade, METABOLIC ECOLOGY, ECOSYSTEMS (primary production, disturbance, succession, CSR strategies, balance hypothesis, competitive asymmetry), RESTORATION, GLOBAL CHANGE (global warming, carbon storage, nitrogen loading, gaia hypothesis).

2. The basic "toolbox" of mathematical techniques used to investigate dynamical ecological systems.

3. The range of current literature in population and community ecology.

4. Approaches to critically evaluate the primary literature.

5. The role of experimental design in testing hypotheses in ecology.

6. The value of current ecological research in solving important problems resulting from human impacts on the environment.

3. The rationale for restoring the course to its original 3 credit hours is to increase time available in the classroom and the student out of class commitment. BIO 609 is a fundamentals course in the education of our ecology graduate students. Most of them are

expected to take this course or its equivalent from another campus. It is vital that we are able to provide as thorough and effective coverage of this material as possible. Many campuses offer this material in two courses. We believe one course can be effective because there is considerable overlap in topics and concepts between population and community ecology, and material on life histories (typically covered in population courses) has been shifted to another course (BIO 608: Behavioral Ecology and Life Histories). The reduction to 2 credit hours has created continuous frustration over adequate coverage of material. For example, I assign an average of 1 recent journal paper to read per week. The course time involved in discussing those papers led me to try just giving quizzes on the papers with no discussion. We all agreed that was unsatisfactory. The analysis of the contemporary research is critical to the course for a number of reasons, not the least of which is to keep me calibrated to current thinking across these topics and reassure the students that these topics are objects of continuing research. A current paper contains a quick and up to date summary of the history of a particular research problem, a detailed look at research methods in a particular system, and a critical evaluation of the results with speculation about further possibilities and unresolved issues. These components are invaluable to the developing researcher and conspicuously missing from textbooks.

The additional hour will not be used to significantly expand the mathematical portion of the course, which has not been reduced due to its centrality and the general inexperience of the students. Rather, the purpose is to put more “meat on the bones” of the theoretical framework in the form of adequate discussion of outside readings, more coverage of applications of ecology (see above topic list), some expansion of area coverage (typically the final topics listed on the syllabus – ecosystems and global issues – are dropped for lack of time), and the addition of an independent literature review & critique and in class presentation (an analysis of an “exemplar study” as described in the application).

4. The syllabus for the course will not change notably in the description of course content. The most notable change will be the addition of a student independent research synthesis paper and presentation that will contribute to the overall grade.

	Previous	Modified
Exams	35%	25%
Problem sets	40%	30%
Quizzes	15%	10%
Paper & Presentation	0%	25%
Class Participation	10%	10%

Added course coverage: Population viability analysis, Preserve design, Evolutionary Medicine, Metabolic Ecology, Ecosystems, Restoration, and Global change.

BIO/ENT/FOR 609

Week Topic

1	Ecological Theory
2-3	Single Population Dynamics
4	Metapopulations
5	Age/Size structure
6	Two-species interactions
7	Consumer-Resource interactions – Predator/Prey
8	Plant-Herbivore, Parasite-Host, Mutualism
9	Competition and the niche
10	Coevolution: character displacement and arms races
11	Diversity, causes and consequences
12	Multiple species: indirect effects and trophic structure
13	Food webs
14	Ecosystem structure and development (terrestrial vegetation)
15	Scaling up: landscape and global ecology

This is a preliminary plan based on previous iterations of the course.

Reading assignment for Tuesday January 17

Brown, J.S. 2001. Ngongas and ecology: on having a worldview. *Oikos* 94:6-16.

A pdf is available on the course website.