

# General Education Course Approval Cover Sheet

Date of Submission 10/28/2010

**1. Check which area(s) this course applies to**

- |                                  |                                     |  |                          |
|----------------------------------|-------------------------------------|--|--------------------------|
| Inquiry – Arts & Creativity      | <input type="checkbox"/>            | Composition & Communications - II      | <input type="checkbox"/> |
| Inquiry – Humanities             | <input type="checkbox"/>            | Quantitative Foundations               | <input type="checkbox"/> |
| Inquiry – Nat/Math/Phys Sci      | <input checked="" type="checkbox"/> | Statistical Inferential Reasoning      | <input type="checkbox"/> |
| Inquiry – Social Sciences        | <input type="checkbox"/>            | U.S. Citizenship, Community, Diversity | <input type="checkbox"/> |
| Composition & Communications - I | <input type="checkbox"/>            | Global Dynamics                        | <input type="checkbox"/> |

**2. Provide Course and Department Information.**

Department: Biology

Course Prefix and Number: BIO 102 Credit hours: 3

Course Title: Human Ecology

Expected # of Students per Calendar Yr: 1200 Course Required for Majors in your Program (check one)? Yes  No

Prerequisite(s) for Course? none

This request is for (check one) A New Course  An Existing Course

Departmental Contact Information

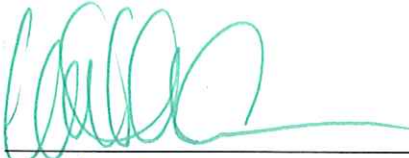
Name: Ruth E. Beattie Email: rebeat1@uky.edu


Office Address: 101 Morgan Building Phone: 257-7647

**3. In addition to this form, the following must be submitted for consideration:**

- A syllabus that conforms to the Senate Syllabi Guidelines, including a mapping of the stated learning outcomes to those presented on the corresponding Course Template.
- A completed Course Review Form. See the Gen Ed website <http://www.uky.edu/gened/forms.html> for these forms. Proposals prepared prior to September 15<sup>th</sup>, 2010 are allowed to use a narrative instead of the Course Review Form.
- If applicable, a major course change form for revision of an existing course, or a new course form for a new course.

**4. Signatures**

Department Chair:  Date: Oct 29 2010

Dean:  Date: 11/5/10

*Handwritten note:*  
 need  
 11/2/10  
 submitted  
 GE06  
 11/5/10

All proposals are to be submitted from the College Dean's Office  
 Submission is by way of the General Education website <http://www.uky.edu/gened>

**Course Review Form  
Inquiry in the Natural/Physical/Mathematical Sciences**

**Course Name:** Human Ecology  
**College:** Arts and Sciences

**For Review Committee Use Only**  
Accept  Revisions Needed

Using the course syllabus as a reference, identify when and how the following learning outcomes are addressed in the course. Since learning outcomes will likely be addressed multiple ways within the same syllabus, please identify a representative example (or examples) for each outcome.

- Course activities that enable students to demonstrate an understanding of methods of inquiry that lead to scientific knowledge and distinguish scientific fact from pseudoscience.

Example(s) from syllabus:

**Characteristics of science written report and logical fallacy/pseudoscience written report**

Brief Description:

Initial class sessions in BIO 102 are devoted to discussing the methods of scientific research. The nature of science is a theme that runs through the course. In Written report 1 students identify characteristics of science in an environmental news article and explain how they are illustrated. In written report 2 students identify logical fallacies and pseudoscientific statements in an environmental case study on climate change.

- Course activities that enable students to demonstrate an understanding of the fundamental principles in a branch of science.

Example(s) from syllabus:

**Exam questions and student research projects**

Brief Description:

An understanding of fundamental environmental science principles is assessed in exam questions that ask students to define and recognize examples such as the precautionary principle, Hardin's tragedy of the commons and principles of sustainability. The student research projects require that students state and define what environmental principle(s) were used in the generation of the hypothesis they are testing.

- Course activities that enable students to demonstrate the application of fundamental principles to interpret and make predictions in that branch of science.

Example(s) from syllabus:

**Exam questions and student research projects**

Brief Description:

Applications of fundamental environmental principles are assessed in exam questions that describe ecological phenomena such as competition or the flow of energy in a food chain and ask students to interpret the ecological dynamics in operation and predict the outcome. The student research projects will require that students use environmental principles to both predict and interpret their research outcomes.

- Course activities that enable students to demonstrate their ability to discuss how at least one scientific discovery changed the way scientists understand the world.

Example(s) from syllabus:

Paradigm shift discussions concerning ozone depletion and climate change

Brief Description:

The concept of paradigm shifts in science that change how scientists understand the world is covered in class discussions and exam questions on environmental issues such as ozone depletion or climate change in which the collection of new data contributes to building better models of these phenomena.

- Course activities that enable students to demonstrate their ability to discuss the interaction of science with society.

Example(s) from syllabus:

Class sessions on climate change

Brief Description:

The interaction of science and society is an integral part of this course given the multidisciplinary nature of environmental science. Opportunities to make links between the natural sciences, humanities and social sciences occur often as scientific topics with societal ramifications raise ethical and political questions. The two sessions on global warming and climate change, for example, offer an excellent opportunity to discuss the interaction of science, politics and economics.

- A hands-on student project is required. This project enables students to demonstrate their ability to conduct a scientific project using scientific methods that include design, data collection, analysis, summary of the results, conclusions, alternative approaches, and future studies. Describe the required student product (paper/ laboratory report) based on the hands-on project.

Students will work with online environmental simulations on topics such limiting resources and pollution that allow the student to propose an original hypothesis and test it through the manipulation of the multiple variables that these sophisticated simulations allow. Students will present their research in the form of a scientific paper with literature review formatted as a peer-reviewed scientific publication.

- Course activities that demonstrate the integration of information literacy into the course.

Example(s) from syllabus:

Written reports on an environmental news article and web site critique plus student research projects

Brief Description:

Find information that supports or refutes their news article. Critique a biological web site according to variables such as authorship, purpose, bias and credibility. Provide a literature review for the research project.

Reviewer's Comments

## **BIOLOGY 102 (Section 001) - Human Ecology Fall 2010 Syllabus**

*"The environmental crisis is an outward manifestation of a crisis of mind and spirit. There could be no greater misconception of its meaning than to believe it is concerned only with endangered wildlife, human-made ugliness, and pollution. These are part of it, but more importantly, the crisis is concerned with the kind of creatures we are and what we must become in order to survive." -- Lynton K. Caldwell (Professor Emeritus of Public and Environmental Affairs, University of Indiana - Bloomington)*

*"Mitigating (an environmental) crisis will require a planetary perspective, long-term thinking, political courage and savvy, eloquence and leadership ..."* -- Carl Sagan (Astronomer)

### **Course Information:**

*Time:* Tuesday/Thursday 8:00 - 9:15 a.m.  
*Room:* 107 Biological Sciences  
*URL:* <http://www.uky.edu/~burke/bio102>

### **Instructor Information:**

*Instructor:* Bill Burke  
*Office:* 518D King Library  
*Office Hours:* Tu / W 2:00 - 4:00 pm  
*Phone:* 257-8039  
*E-mail:* [burke@uky.edu](mailto:burke@uky.edu)

Biology 102 is an introductory biological science course designed for non-science majors. It satisfies the general education requirement for intellectual inquiry in the natural, physical and mathematical sciences. Science is a major human activity and influence in the world. Whether you are a scientist or not, science affects you and society. Consequently, it is important that the non-scientist understand the nature of this activity called "science" and something of the subject matter with which science is involved.

Environmental science has become particularly important and newsworthy at the beginning of the 21st century as we begin to better understand how our planet functions and how humans impact global ecology. It is important for each of us to understand and value what environmental science has to say regarding the nature of the Earth's resources and web of life and how *Homo sapiens* fits into and affects this world wide environmental web. A scientifically literate citizen will need basic environmental knowledge to interpret news stories and make intelligent personal, economic, and political decisions.

The central themes that run through this course are: a) the nature of science (data collection and building models), b) the science of nature (ecological principles that can inform human activities), c) the human/environment interface (interactions and consequences), and d) sustainability (creating an environmentally sustainable society).

Environmental science is an interdisciplinary field so we will be studying material that comes from the natural sciences (such as Biology, Chemistry, Physics, and Earth Sciences), the social sciences (such as Anthropology, Geography, Economics, and Political Science), and the Humanities (such as History and Philosophy).

You are a part of the global web of life and your lifestyle impacts the planet. Please get involved both in class and in your community. Here's to an intellectually stimulating and enjoyable semester for all of us!

### **Course Goals**

- 1) To provide knowledge about --
  - a) the nature of science including its assumptions, characteristics, goals, and limitations and how models are built and modified to explain and predict natural phenomena
  - b) basic environmental concepts and principles regarding the flow of energy and the cycling of matter
  - c) specific environmental issues such as biodiversity and climate change to include the nature of the issue, evidence of human impacts, consequences, and alternative solutions
  - d) principles of sustainability found in nature that could be applied to human societies
- 2) To enhance skills in --
  - a) examining information and drawing conclusions
  - b) critically evaluating sources of information and arguments
  - c) communicating ideas clearly and with supportive arguments
- 3) To promote valuing --
  - a) the planet's resources and services as natural capital to be used wisely
  - b) the act of reflecting on one's own ecological footprint
  - c) the consideration of alternative perspectives and the promotion of rationale and civil discourse

### **Learning Outcomes**

By the end of the course, you should be able to:

1. Describe methods of inquiry that lead to scientific knowledge and distinguish scientific fact from pseudoscience.
2. Explain fundamental principles of environmental science.
3. Apply fundamental principles to interpret and make predictions in a branch of science.
4. Demonstrate an understanding of at least one scientific discovery that changed the way scientists understand the world.
5. Give examples of how science interacts with society.
6. Conduct a hands-on project using scientific methods to include design, data collection, analysis, summary of the results, conclusions, alternative approaches, and future studies.
7. Recognize when information is needed and demonstrate the ability to find, evaluate and use effectively sources of scientific information.

### Textbook

Readings listed in the course schedule come from Miller, G. T. & Spoolman, S. E. (2009). *Living in the Environment* (16th Edition). Pacific Grove, CA: Brooks/Cole Cengage Learning. In addition to containing subject matter that we will discuss in class, the text includes some material that we will not discuss and omits other material that we will only cover in class. You are responsible for knowing any material covered in class (which the textbook may also cover) as well as any specifically assigned readings beyond the general chapter readings. The textbook is intended to be a supplement to and not a substitute for class attendance and discussion.

### Office Hours

It has been my experience that the system that works best for all concerned is a combination of scheduled open office hours and appointments. I will be available in my office on Tuesday and Wednesday, 2:00 - 4:00 p.m. You may also come to my office at any time and see if I am available for consultation or, better yet, request an appointment by e-mailing or phoning me or talking to me after class. In addition to face-to-face meetings or phone conversations, e-mail can be very productive. Please allow up to two workdays for an e-mail response. All e-mail must have a relevant subject line and must identify who you are by having your name somewhere in the message.

### Academic Accommodations

If you have a documented disability that requires academic accommodations, please see me as soon as possible. In order to receive accommodations in this course, you must provide me with a *Letter of Accommodation* from the Disability Resource Center (Room 2, Alumni Gym, 257-2754, [jkarnes@uky.edu](mailto:jkarnes@uky.edu)) for coordination of campus disability services available to students with disabilities. We can then collaborate on the best solution.

### Attendance

Given the large class size, attendance is not taken. Attendance and participation, however, are key strategies for doing well in the course. Class sessions will involve lecture and an assortment of active learning activities that contribute to making the course content more meaningful. Exam questions come from material covered during the class periods and any assigned online readings. Some of the material discussed in class is unique to this course and not found in other sources. Missing class and depending on the notes of friends or a lecture note company is a risky venture and eliminates the opportunity to make personal meaning of the material through your own notes and participation in class activities.

### Exams and Assignments

Grades will be based on the following exams and assignments:

Assessment	Number of points	Percentage of Course Grade
Exam 1	30	10%
Exam 2	30	10%
Exam 3	30	10%
Final Exam	60	20%
Written Report 1	15	5%
Written Report 2	15	5%
Written Report 3	15	5%
Written Report 4	15	5%
Written Report 5	15	5%
Research Paper	75	25%
Total	300	100%

**Exams:** There will be three exams during the semester worth 30 points each. Each exam will have 30 multiple-choice questions worth 1 point each. Each exam will cover only the material from that section of the course. The final exam will consist of 60 multiple choice questions at one point apiece. Half of the multiple-choice on the final will cover old material (modified questions from the previous exams) and half will cover new material. Only one make-up exam (an essay test) will be allowed and only for documented, excused absences as defined in Student Rights and Responsibilities (<http://www.uky.edu/StudentAffairs/Code/part2.html>). The exam must be scheduled before or immediately after the class exam.

Questions on exams will come from material covered in class with some of the material not available through other sources. The exam policy is – if we covered it in class or if it was specifically assigned as an online reading, it is testable.

Given the large class enrollment, the test questions are multiple choice questions based on the material presented in class. However, the questions are not simply the rote memorization kind, but rather test your comprehension of the information and your ability to apply the material in a problem-solving fashion. Sample questions will be discussed in class and are available on the Web site for this course.

Exam questions that received low scores will be discussed in class at the class period following the exam. Given that the final exam is cumulative, attendance at this session is valuable. You may also e-mail me regarding answers to exam questions either to get clarification or to argue for credit. I don't respond to queries, however, until we have had a chance to discuss the questions in class. You may discuss exam answers with me at any time during the semester up until the day of the final exam.

**Written Reports:** There will be five short written reports (1-2 pages each) worth 15 points each. The assignments are due on non-exam days as noted in the syllabus. Unexcused late papers are not acceptable. The topics for these papers are: a) Current Environmental News Article - summarize, locate three characteristics of science, find a web site with information related to the news article; b) Environmental Case Study - locate examples of logical fallacies and pseudoscience traits; c) Environmental Web Site - summarize and critique (according to assigned criteria) a biological web site; d) Environmental Audit - take an online assessment of your environmental footprint and how it might be reduced; and e) End-of-Course Reflection - write a personal, reflective statement concerning connections between course materials and your life. Specific instructions will be discussed in class and are available on the course Web site.

**Research Paper:** You will be assigned an ecological topic to investigate such as predator/prey interactions, pollution or limiting resources. Background information will be provided to familiarize you with the specifics of the study. Based on those details and additional information you will acquire from the literature and online resources, you will propose a hypothesis to test. Following approval of your hypothesis, you will download an online simulation and test the hypothesis by manipulating the appropriate variables. You will collect the data, analyze and summarize it, draw appropriate conclusions, and suggest further studies that might be conducted. The results will be submitted as a scientific research paper. The assignment is worth 75 points. Specific instructions will be discussed in class and are available on the course Web site.

**Extra Credit:** There will be ten unannounced quizzes in class worth one point each for up to 10 extra credit points. These quizzes will not be graded according to right or wrong answers. They are formative (not summative) assessments that will familiarize you with my exam questions and give you feedback as to your understanding of the material.

### **Grades**

Course grades are assigned according to the following criteria. The grades are not norm-referenced or curved. They are criterion-based using your performance on exams and papers.

<b>Course Grade</b>	<b>Percentage</b>	<b>Points</b>
A	90% or better	270 – 300
B	80 – 89%	240 – 269
C	70 – 79%	210 – 239
D	60 – 69%	180 – 209
E	Below 60%	Less than 180 points

Students with borderline grades at the end of the semester (i.e., within 2% of the next higher grade) may be considered for the higher grade if certain criteria are met. All exams must have been taken and all written reports must be submitted on time. I will review such cases on an individual basis and look for borderline causes such as one low exam pulling a grade down when the rest of the exam grades are fairly consistent, gradual improvement in exam grades during the semester bringing the course grade up to borderline or consistent grades with a strong performance on the final exam resulting in a borderline course grade.

### **Classroom Courtesy**

Given the large enrollment in this class and the nature of the large lecture hall I'm requesting your cooperation in making the learning environment as effective and courteous as possible. Please be respectful to others in the class and engage in civil discourse when we discuss topics that have a diversity of perspectives. Please minimize distractions by not reading newspapers or carrying on conversations and be discreet if you must arrive late or leave early. Turn mobile phones off during class. Please help me maintain the best environment by using a little peer pressure if necessary. This is a challenging teaching and learning environment so let's be as courteous as possible. Thank you.

### **Plagiarism and Cheating**

Cheating on exams or submitting written assignments that are not your own original work constitute grounds for failing this course and possibly further academic actions. If you use another's ideas in a paper, perhaps by paraphrasing their thoughts, cite the reference. Obviously, if you directly use another's text, place it in quotations and cite the reference. If you are suspected of cheating during an exam, you will be assigned a failing grade for the course. Talking to another student during the exam, looking at another student's paper, using supplementary material, or using a surrogate test-taker all constitute cheating. Consult the *Student Rights and Responsibilities* manual (Part II, Section 6) for further details. (Available on the Web at <http://www.uky.edu/StudentAffairs/Code/part2.html>)

## Strategies for Success

### 1) Attendance & participation

Class activities (exercises and discussion in class) contribute to your overall understanding of course material. They provide an opportunity to make personal meaning out of the content. "Getting" the material is not simply a matter of getting the notes from another student or, worse yet, from a commercial notes company which has no stake in your success in the course. Personal notes and active participation (even if it's thinking to yourself if not answering out loud) contribute to success. Take advantage of the participation opportunities offered during class time.

### 2) Note-taking & meaning-making

Do more than take *verbatim* notes directly from the PowerPoint slides. Take notes on what is being said in class as well. Practice becoming more efficient at note taking by paraphrasing and abbreviating (ex: use abbrev for biol wds & reg wds). It's a good skill to have. Review your notes on a regular basis as soon after the class as possible (not just before exams) and make personal meaning of them by adding comments, questions, and summaries in the margins.

### 3) Critical reading

Painting a textbook with a highlighter (even if it's a great color) is reading only in a very surface manner. It's not deep reading for meaning. Be selective and interactive. Mark up the text with comments, questions, and symbols to make personal meaning of it. Even if you sell the book back at the end of the semester (which is unlikely since it could be such a valuable addition to your personal library), the bookstore won't give you any less money for it because it has notes in it. And, if the next student is smart, they won't buy your used copy, but rather a clean copy so they can make their own meaning out of it.

### 4) Study time

A survey of UK first year students revealed that 70% studied 10 hours or less per week. What is commonly recommended is at least 2 hours/1 hour of class or at least 30 hours/week for a 15 credit hour load. Whatever you actually study, a consistent regimen is best. Whatever other jobs you may hold, being a student should be considered a full-time job involving 40 hours per week including class and study time.

### 5) Consultation with instructor

I'm here. Use office visits or e-mail. Contact me as soon as possible if you are having problems with the course. Please don't wait until the end of the semester.

### 6) Study groups

This could be a very good supplement to your individual study. I'll help set them up if you like.

### 7) Exam-taking

Make several passes on multiple-choice questions eliminating choices and making selections. Read the questions carefully. Pause, make sure you understand the question, and even try to answer it before looking at the choices. Even with all the test anxiety that might be present, pause and reflect before jumping to an answer. Ask me for clarification if needed.

### 8) Motivation

Attitude can make a big difference. What's your personal motivation? What's your perception of your potential? What could you get out of this course in addition to satisfying a core requirement?

### 9) Productive Effort

Attending class, reading the text, and studying your notes count to the extent that they are productive. In and of themselves, however, they don't necessarily lead to success. Simply attending all classes or reading all the chapters will not be productive unless done so meaningfully. Attend and participate. Read and question. There is no separate grade for effort. Effort is graded through your performance on exams and written reports.

### 10) Responsibility

Responsibilities exist for both instructors and students. I will --organize and present content and activities; administer ways to assess understanding; be available for assistance; and do my best to be knowledgeable, fair, clear, organized, and enthusiastic. Please do your part -- attend class, take good notes and review them, and participate in class by asking and answering questions and engaging in the active learning exercises.

## Course Schedule

The following course schedule lists the topics to be covered, the associated readings from the textbook, and the dates that exams will be held and papers are due. Extended classroom discussions on particular topics and relevant events that appear in the news may alter the schedule a bit.

DATE	TOPIC	READING
Aug. 26	Student survey and review of course goals, activities, and assessments State of the Planet Address	Syllabus
Aug. 31	An overview of environmental issues and sustainable lifestyles	Chapter 1
Sept. 2	Science as a way of knowing -- the who, what, when, and where of science Characteristics of scientific method and philosophy	Class notes & Chapter 2
Sept. 7	The why & how of science - problem-solving and paradigm shifts	Class notes & Chapter 2
Sept. 9	Science and pseudoscience Logical fallacies and the critical examination of arguments	Class notes
Sept. 14	Building models and the behavior of systems Feedback loops, time delays, thresholds, synergy, & unexpected consequences Written Report #1 Due - Environmental News Article & Science Characteristics	Chapter 2
Sept. 16	Humans -- a part of nature and apart from nature Historical trends in the human/nature interface	Class notes
Sept. 21	Exam 1	-----
Sept. 23	Laws of matter & energy - operation of the ecosphere within physical boundaries	Chapter 2
Sept. 28	<i>Oikos logos</i> (studying the house) -- the science of ecology	Chapter 3
Sept. 30	Ecosystem structure & function -- flow of energy & cycling of matter	Chapter 3
Oct. 5	Community ecology -- competition, predation, symbiosis, & succession Niches, indicator species, and keystone species Written Report #2 Due - Logical Fallacies in an Argument on Climate Change	Chapter 4 & 5
Oct. 7	Population ecology -- growth, carrying capacity, and reproduction strategies	Chapter 4 & 5
Oct. 12	Biodiversity -- degradation and arguments for preservation	Class notes (a summary of chapters 7,8,9,10,11)
Oct. 14	Risk perception and analysis	Chapter 17 (pp 460-465)
Oct. 19	Exam 2	-----
Oct. 21	Human populations -- exponential growth and carrying capacity	Chapter 6
Oct. 26	Food resources -- world hunger, lifestyles, politics, and economics Written Report #3 Due - Summary and Critique of an Environmental Web Site	Chapter 12
Oct. 28	Water resources - water, water, everywhere, but a little more than a drop to drink	Chapter 13
Nov. 2	Non-renewable and renewable energy sources	Chapters 15 & 16
Nov. 4	Ozone loss -- a case of unexpected consequences and international cooperation	Chapters 19
Nov. 9	Climate change -- the interplay of science, politics, and economics	Chapter 19
Nov. 11	Open forum on the issue of global warming	Class notes
Nov. 16	Exam 3	-----
Nov. 18	Hawai'i -- a living laboratory for genetics, evolution, and ecology	Class notes
Nov. 23	Hawai'i - a metaphor for Earth and a case study of ecological disruption	Class notes
Nov. 25	Independent home study of predator-prey interaction between <i>Homo sapiens</i> and <i>Meleagris gallapavo</i> (Holiday. Thanksgiving. No class session.)	-----
Nov. 30	<i>Oikos gnomos</i> (managing the house) -- economics and environmentalism Written Report #4 Due - Personal Environmental Audit	Chapter 23
Dec. 2	The role of politics in setting environmental policy	Chapter 24
Dec. 7	Environmental worldviews -- planetary management to Earth wisdom	Chapter 25
Dec. 9	Creating a culture of sustainability. Personal decisions & actions. Living green.	Class notes

FINAL EXAM: Thursday, December 16, 8:00 a.m. - 10:00 a.m., 107 Biological Sciences (Written Report #5 Due)