Ethology and Behavioral Ecology (Bio 287)
Spring 2010 Course Information

Instructor:	Ken Prestwich
Office:	108 O' Neil
	Monday 4-6 PM
Office Hours:	Tuesday 7:15 – 9:15 AM
	Wednesday and Friday 3-5 PM
Review Sessions:	We will have review sessions in the late afternoon as needed. You are encouraged to attend these.
Required Text:	*Animal Behavior* 9th Edition. 2009. J. Alcock. Sinauer Associates Inc. ISBN 978-0-87893-225-2 (paperback) **NOTE: earlier additions are absolutely not acceptable – be sure you have the 9th edition.** Note there are also a hardback and a netbook version that would be acceptable if you are into using that sort of text.
Course Website URL:	http://www.holycross.edu/departments/biology/kprestwi/behavior/

General Course Goals: Ethology is the study of animal behavior viewed through the lens of evolution. Behavioral ecology examines the relationship between an animal's behaviors and its environment. Thus, unlike the approach classically taken in psychology (which concentrates on learned behavior and is less concerned with the adaptive nature of behavior), ethology and behavioral ecology look at behavior in terms of organic evolution.
We will examine behavior from two general vantages:

- the mechanisms that produce behavior (nervous system structures, the roles of genes and experience in behavior). These are also often called the proximate causes of behavior.
- the evolutionary forces that shape behavior. We will consider how behaviors evolve within populations over time, how ethologists reconstruct this evolution and what the forces and accidental events were that result in the evolution of a particular behavior. These are often called the ultimate causes of behavior.

In the process of gaining a broad overview, we will also learn some of the most important theoretical and experimental methods used by ethologists and behavioral ecologists.

Alas, this course is not primarily descriptive and we will not spend time watching "Nature Channel" films of furry animals and birds cavorting about in exotic places. A number of folks often express surprise that we do not dwell on such scenes. Please realize that our main purpose is to understand behaviors as adaptations. Thus, the course is mostly about evolutionary theory and the mechanism and development of behavior.

Class Format: Class will be a mix of discussion and lecture. There will be text, handout, and literature readings assigned before most classes. You will usually be given questions to guide your reading. I fully expect that you will have read the material, answered the questions, and studied **before** coming to class. In

class, I will discuss some of the most important and difficult points in the reading and add additional material. I will ask questions during class based on the reading assignments and on what was discussed in previous classes. I have a strong expectation that you will:

- arrive ready to work and participate
- be prepared for each class
- not miss class;
- not arrive late (although late is always better than not at all)
- not leave the classroom unless it is absolutely necessary

Learning in this class is a collaborative effort. Following the steps above will be beneficial both to you and to all members of our class community and will maximize everyone's enjoyment and benefit of the course.

The course syllabus and all assignments can be found at the course website. The site is updated after each class to reflect our actual progress.

Grading: Grades will be determined as follows:

Project		Points
Mid-term exams -- three, worth 100 pts. each		300 (43 %)
Comprehensive Final Exam		150 (21 %)
Short Research Paper		100 (14 %)
Ethogram and Acoustic Analyses (40 & 25pts.)		65 (9 %)
Class Participation – in class and via Moodle		85 (12 %)
	Total	**700**

Grading Scale: Grades are based on a scale, not a curve. I use the following scale (averaged to whole percentages): above 93% = A, 93 to 90% = A-, 89 to 87% = B+, 86 to 83% = B, 82 to 80% = B-, 79 to 77% = B^+, 76 to 73% = B, 72 to 70% = C^-, 69 to 67% = D^+ and 66 to 60% = D. Any average below 60% fails. Thus to earn an A in this course you will need at least 605 points (650 * 0.93). Similar calculations can be made for other grades.

Exams: I am very concerned that you take something away from this course. The best way to become a good student of animal behavior is to constantly review old material in addition to learning new material. To encourage this, **exams (second and third midterms and final) are comprehensive** -- any significant material covered at any time previously may show up on a test. The final exam has a greater proportion of comprehensive material that the other exams (40 to 50%) with the remainder dealing with material since the second midterm exam. Do not panic over the comprehensive nature of the exams! Most of the material on each exam will be "new" since the previous exam. I do not have a reputation as an unfair tester -- so, please rest assured that comprehensive questions will not deal with insignificant details. Keep up and review often!

Exams will consist of a **mix of essay questions, definitions, fill-ins, multiple choice and, when appropriate, problems**. Please see the information about power point (at end) in regards to studying.

Class Discussions: Discussion has a crucial role in this class since it gives me a chance to be sure that everyone understands the reading material (much of which will not be covered directly in lecture) and because it gives us a chance to deepen our understanding of behavior. Being active in discussion, while difficult for some, will pay great rewards in the long run, not only in this course but also in many of your future endeavors. Respectful, civil honest discourse will be the basic ground rule of all discussion.

Discussion will be largely based on the readings for class. Frequently I will provide you with study questions for reading assignments and you textbook has an excellent set of questions at the end of each chapter.

I will assume that all students in the class should either be able to answer these questions (by having done the reading) or can formulate a reasonable question seeking more explanation of the reading (*i.e.*, something a little more sophisticated than "please go over that material" -- this smacks of not having done the reading!). Good participation implies more than simply restricting your answers to the "softball" questions I use to start discussion.

You will be graded on class discussion -- participation is about 12% of your grade and is determined each week. I use a one-week basis because some classes have less opportunity than others for participation. Showing up for class and saying nothing will earn you 0.25; unexcused absence (no acceptable excuse) gets a zero. You will get your current participation grade each time I return an exam; it will be a number between 0 and 1 indicating the fraction of participation points you are presently earning. Participation must be consistent throughout the semester to earn the best possible mark – miracle improvements at the end or great starts followed by lack of involvement to do not constitute a semester's work.

Therefore, expect to be called on to speak and be ready to volunteer your well-considered ideas or questions.

Moodle and Discussion: I will post and you may post discussion points on Moodle. You will be graded on your participation there. Moodle will give me an additional chance to see what is on your mind and also give students a second avenue to participate in discussion. Write carefully and considerately!

Note that this is the only use of Moodle in our course (or at least the only one I have planned so far).

Practical Projects: So that you can gain a bit of the feel of ethology, we do two out of class projects.

- We will construct an ethogram (a systematic inventory of behaviors) and use it to construct a kinematic diagram (this shows the likelihood that one behavior will be followed by another). We will use betta fish or crickets.
- Collection and analysis of **animal acoustic signals** (field -- pardon the jargon but not just any animal sound will do).

All of these are group projects (variable sized groups of two or three) and all involve a data collection phase which should take an hour or two (either independently or at agreed-upon meeting times) and then a short write up and perhaps presentation in class.

Research Paper: To give you a bit of ownership of the material, you will be required to write a focused 7-page research paper on a topic of your choosing (and my approval). This will be a chance for you to become familiar with the animal behavior literature. You will receive an information sheet about the paper sometime in the first two weeks of the course; due dates are on the website.
Note: This paper will involve a re-write. You will get a grade on the initial submission that will count half of the final grade (i.e., you get half of your grade on initial and half on final submission).

Problems: A number of aspects of this course are mathematical and so some problems will be assigned. There will be no credit attached to these assignments; they are purely for study purposes.

Distribution of materials is via the worldwide web, intranet and via e-mail. I DO NOT USE MOODLE to distribute course materials.

PowerPoint: Powerpoints from lectures will be available before the lectures on the website. However, access is generally only "on-campus." Sometimes there will be some changes and if so they will be reposted. You are encouraged to bring a print out of the PP to class to help in note taking.
One word of advice – the PP is not a sufficient study tool. You need to do the readings, questions, problems and you also need to take good notes.