

## Behavioral Ecology (7980-003) :: Course Policies and Syllabus

Instructor: **Vikram K. Iyengar**  
Office: Mendel 190C (East end of hallway, inside office suite)  
Research lab: Mendel 113 (look for me here if I'm not in 190C)  
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Lecture: Tuesdays and Thursdays 11:30am – 12:45pm Mendel Hall, Room 260

Required texts: (1) Danchin, E., Giraldeau, L-A. Frank, C. 2008. Behavioural Ecology: An Evolutionary Perspective on Behaviour. Oxford University Press. ISBN#0-1992-0629-5

\*Note: Additional readings may be assigned for specific lectures. Hard copies will be handed out in lecture and then placed in a folder outside my office.

### Course Description

Welcome to Behavioral Ecology! We all have a desire to understand the world around us that goes beyond what we need to know in order to survive; this curiosity is usually the main reason for our interest in animal behavior. This graduate-level course will focus on the biological study of animal behavior, with an evolutionary and ecological emphasis. Topics will include: how genes and the environment affect behavior, learning and animal consciousness, hormones and their role in aggression and reproduction, predator-prey interactions, visual and auditory communication, courtship and mate choice, and human social behavior. This course will focus primarily on ultimate explanations (*why* animals behave as they do), with less attention to proximate mechanisms (*how* they get the job done), as this distribution generally reflects the interests of students.

Students completing the course should be able to demonstrate (1) comprehension of major concepts in the subject; (2) knowledge of factual generalizations about behavior (which animals do what); (3) familiarity with the original scientific literature in behavior and behavioral ecology; and (4) ability to synthesize and critically analyze research studies in the discipline. Although both this course and the undergraduate Animal Behavior course (Bio 3012) provide an introduction to basic theories and classic empirical studies in animal behavior, this graduate course places a greater emphasis on student participation – in particular, students will be required to critically evaluate primary literature and lead discussions on current ‘hot ‘ topics in behavioral ecology.

### Course Policies

Attendance in the lecture is *strongly* encouraged; indeed, it is expected. I cannot imagine that you will find it possible to master this material without regular class attendance, and active participation is an essential part of the course, particularly with respect to student-led discussions (aka ‘Journal Clubs). Furthermore, you might miss something important, enlightening or entertaining. As I am sure you will notice, the lecture PowerPoints – which will be posted on Blackboard – will not tell the whole story, and they should not be considered a substitute for attending lectures. Since you will have access to the lectures, you should not merely copy the words on the slide; I expect you to focus more on writing down things I say that help to synthesize information into coherent ideas that will aid in other aspects of the course. Regardless of whether you are in class or not, however, you are responsible for everything

that is discussed in lecture, announced changes in the syllabus, and any handouts distributed in class. If you miss class, you must make your own arrangements to obtain class notes.

All assignments will be due at the times announced in class or in the syllabus. Late assignments will be penalized 10% of the points available for each 24-hour interval that they are late. Assignments > 1 week late will not be accepted unless you have medical or other valid documented reasons for the delay. The only valid reasons for missing an assignment deadline or an examination are those accepted by the University and published in the Student Handbook (Blue Book). If you know in advance that you will be missing an exam, it is your responsibility to contact the instructor PRIOR to the exam to make arrangements for a make-up exam.

I am here to help you not only learn the material covered in class, but also develop skills that will assist you in learning throughout your academic and professional careers. To that end, please feel free to ask us questions inside or outside of class if there is something you don't understand – one my primary objectives is to provide a supportive community for learning.

To facilitate learning, please be respectful of your classmates by adhering to the list below:

- Be prepared for class (at the very least, skim reading before class)
- Do not be late to class (classes will start and end on time)
- Avoid conversations with others during class
- Limit food and beverages to those that can be consumed quietly
- Turn off cell phones (cell phones going off will result in a quiz *for the entire class!*)

## Course Components and Grading

Your lecture grade will be based on 1 major writing assignment, 1 midterm exam, a final (comprised of a second exam and a cumulative portion), and class participation (including leading 1-3 of the student-led discussions). Exams will emphasize comprehension of terminology, concepts, and factual material in behavioral ecology, as covered in lecture and assigned readings. A variety of question formats may be used – including multiple choice, matching, short answer and essay – to test your ability to synthesize and apply this information to novel situations (in other words, situations we have not specifically covered in the class or in the text).

Midterm Exam:	20 %	Thursday, February 28
Review Essay:	20 %	Thursday, April 11
Final Exam:	25 %	Saturday, May 4 @ 1:30pm
Journal Club presentations:	20 %	To be assigned
Participation & Attendance:	15 %	<i>Ask questions and contribute during class</i>

Final grades will be assigned based on a standard plus/minus scale:

A	(93 - 100 %)	C+	(77 - 79.99 %)
A-	(90 - 92.99 %)	C	(73 - 76.99 %)
B+	(87 - 89.99 %)	C-	(70 - 72.99 %)
B	(83 - 86.99 %)	D	(60 - 69.99 %)
B-	(80 - 82.99 %)	F	(< 60 %)

## Academic Integrity

I expect all students to adhere *strictly* to the College's principles of academic honesty throughout this course. I regret to say that I have had to enforce these policies and fail students in courses for violation of these principles of academic (and scientific) integrity. Be sure that you know all of the relevant definitions and policies. This includes taking exams and all aspects of submitting written assignments: **take careful notes** as you review literature sources (including *complete* bibliographic information), **save records** of your work (don't submit a final draft of a paper without keeping some evidence of your early drafts or outlines), acknowledge *all* sources, and use the computers appropriately. Also, the work you do for this course should be only for this course; submitting the same work for multiple classes (without the *explicit* agreement of instructors from **all** courses involved) is a violation of College policies. The College's policies pertaining to all Academic Integrity issues will be strictly adhered to and the appropriate penalty will be assessed at the discretion of the instructor. There will be no exceptions to this policy.

I can only give you all the credit you deserve if I can tell how much of the work is uniquely yours. Obviously, do not attempt to copy—or even to paraphrase nearly verbatim—material directly from any other source. Even if you were to give a reference for a source you cited this way, you still would be falling short of my expectations for the assignment, because the words would not be your own. *Read* your sources, work towards an *understanding* of their content, and then *restate* the essentials **in your own words** ... with appropriate acknowledgment of the source. Try to write so that the reader can reasonably infer where *every* piece of information and *every* idea came from. If an idea is yours, say so using *active* voice and *first* person: “I think that the analysis of Jones (2012) is flawed because...” Where the material instead comes from somewhere else (i.e., something you didn't know before you started researching your topic), you **must** make it clear where you got the information through the use of text citations.

## Academic Accommodations

It is the policy and practice of Villanova University to make reasonable accommodations for students with properly documented disabilities (written notification from the Learning Support Services). If you are eligible to receive an accommodation and would like to request it for this course please discuss it with me and allow a one-week notice before the accommodation would be needed. Otherwise, it is not guaranteed that the accommodation can be arranged on a timely basis.

There is also support on campus for writing through the Writing Center. I will be happy to discuss your papers anytime, but I do not edit and 'pregrade' rough drafts. Pechenik's book *A Short Guide To Writing About Biology* is a fantastic resource that belongs on any biologist's bookshelf since it provides helpful advice that will make your writing more clear, simple, and concise.

## Writing Assignments

All writing assignments will be due at the times announced in class or in the syllabus. Late assignments will be penalized 10% of the points available for each 24-hour interval that they are late. Assignments > 1 week late will not be accepted unless you have medical or other valid documented reasons for the delay. The only valid reasons for missing an assignment deadline or an examination are those accepted by the University and published in the Student Handbook (Blue Book). If you know in advance that you will be missing an exam, it is your responsibility to contact the instructor PRIOR to the exam to make arrangements for a make-up exam. **All written assignments should be typed/word-processed, 12 pt. font, 1" margins, and double-spaced, with each page numbered.** All papers in the course must be submitted electronically as an email attachment in Microsoft Word (LastNameAssignment.docx). *Note:* I expect you to have run spell/grammar-check and carefully proof-read all submitted written material, as you will be evaluated on your ability to communicate clearly (which includes proper grammar, spelling and punctuation).

**REVIEW ESSAY** – Students will research and write a relatively brief review essay, comparable in scope and presentation to a “News & Comment” paper in *Trends in Ecology & Evolution* that summarizes and synthesizes recent primary literature dealing with some topic in **behavioral ecology**. (In keeping with the “population” emphasis of the course, topics focusing mostly on behavioral mechanisms, such as physiological or genetic controls, are not appropriate for this assignment.) Your Review Essay will include citation and analysis of **two** closely related *primary* references (articles containing **new data and analysis**) published after 2010 (i.e., from 2011-present). The following journals are likely to find excellent empirical articles in behavioral ecology:

*Animal Behaviour* (available in Falvey including **online** contents)

*Behavioral Ecology* (available in Falvey including **online** contents)

*Behavioral Ecology and Sociobiology* (a.k.a. *BES*) (available in Falvey including **online** contents)

*Behaviour* (available in Falvey including **online** contents)

*Proceedings of the Royal Society of London B* (available in Falvey including **online** contents)

Regardless of which journal provides the paper you summarize, you must write *your* paper using the general style and *exact* citation format of the journal *Animal Behaviour*.

The papers should present new empirical data, analysis, and conclusions. (Empirical means “real” observational or experimental data; unless you obtain explicit permission from me in advance, you should **avoid** articles that present only new **theory** or results from **simulations**.)

Your paper must present a clearly organized, logically sound, and carefully written *argument* that addresses a specific question or problem *using* the information from the literature references; the review may (probably should) contain additional *secondary* references, including Danchin et al. (2008) and perhaps also review papers from journals like *Trends in Ecology & Evolution*, *BioScience*, or *American Scientist* to help establish the **context** and **scope** of your argument. After an introductory paragraph that provides some context by establishing the overarching principles that link the articles, the bulk of your review essay will summarize the ‘guts’ of the two main articles. In this section, your job is to explain the context of the study; the goals authors set out to achieve; the methodological approach they used (in *general*; include only those details that are essential for *our* understanding of the research); the results the investigators obtained (describe patterns and trends thoroughly enough to give a good sense of **what their data “looked like”**); and the conclusions the authors reached.

You should then include a section that explains *your* critical assessment of the ‘core’ articles you covered. You should briefly address most if not all of the following questions: Was the problem in common to the two papers interesting and worthwhile? Were the methodological approaches appropriate? Were the results in each case conclusive? Are you convinced that the authors’ conclusions are supported by their data? Are these conclusions **important**, in the sense of helping to resolve some **general** problem or issue in behavioral ecology? In sum, *were these articles that others working on animal behavior are likely to cite frequently...or to ignore? Why?* I strongly encourage you to **find the corresponding section in the textbook and cite that as your frame of reference, along with any pertinent review articles you may find, for trying to answer the questions I just listed.**

Your essay should also include your own informative **title** (not just repetition of the source article’s title) and a terminal section with the heading **Literature Cited** where you list the bibliographic information for each source that you cited in your text (and only those).

Overall, your Review Essay should contain the following components: (1) an opening paragraph on general concepts (from the textbook or another general source) and the overarching themes that unite your two papers; (2) the “meat” of your essay, which includes a thorough summary of each of your two papers; (3) 3-4 paragraphs that compare and contrast the research contained in the two papers; and (4) a concluding paragraph that places the research in the “big picture”, based on the concept you mentioned in your opening paragraph. .

Topic description (due Tuesday, Feb 12): Please email me a Word document with 1-2 sentences that thoroughly and succinctly describe the purpose of your paper, and the 2 pdfs of the articles you intend to use as the basis of your Review Paper.

First Paragraph & Literature Cited (due Thursday, March 14): Each student should email me a Word document with the opening paragraph of your paper and a properly formatted references section. I will make some comments on the paragraph and double-check the format of the references.

Complete version (due Thursday, April 11): The text of your completed paper should be 9-12 pages, not counting your “Literature Cited” section. Please use the stylistic conventions and citation format of the journal *Animal Behaviour*.

## **Participation, including Journal Clubs (i.e., Student-led Discussions)**

In addition to providing you with basic information through lecture, I expect this course to be interactive. In this respect, participation is one of the most important components of the course. I will be expecting (and relying on) your input as we discuss seminal studies and current controversies. During the course of the semester, there will be 5-6 student-led discussion sections. For each of these periods, there will be 2-4 students assigned to choose recent articles for the class and lead a discussion that incorporates information from the lecture and textbook. The overall goal is to address current ‘hot’ topics in behavioral ecology in light of both past theory and present empirical evidence. Topics will be assigned during the first two weeks of the semester, and students will be assessed based on the choice of papers, preparation (quality of thought questions prior to class), presentation of results, and ability to stimulate good student discussion.

## The Evaluation of Assignments

Below is an outline of the factors I will take into consideration in assigning your final grade on papers and lab exercises, with a comparable grading scale applied to other assignments.

### Grade: C

Paper satisfactorily (but minimally) meets expectations of the assignment. It directly addresses a question or issue relevant to the scope of the course, with adequate reliance on appropriate biological literature sources. It presents a logical argument with a clear statement of your central objectives; develops an argument that incorporates accurately reported information from primary literature sources; and reaches a clearly explained conclusion that follows logically from that argument. The argument is developed by an organized sequence of main points and supported by specific details and examples. The text is readable and relatively free of errors in syntax, grammar, spelling, usage, punctuation, and requested format.

### Grade: B

Paper fulfills all of the requirements of a “C” paper and, in addition, presents a central argument that is well thought out and shows careful analysis of hypotheses and evidence in the biological literature. The argument demonstrates original and critical thought in synthesis and analysis. Points of interpretation are soundly and thoroughly argued. Supporting evidence is strong and extensive. Text contains few errors.

### Grade: A

Paper fulfills all of the requirements of a “B” paper and, in addition, presents an argument that is outstanding in its clarity, logic, rhetorical skillfulness, and originality. It demonstrates that you have a thorough understanding of the paper’s topic and an ability to apply and communicate that understanding through excellent writing.

### Grade: D

Paper makes an attempt to address the issue or question posed, but has one or more serious problems: it lacks a central thesis; it fails to develop a consistent, logical, well-organized argument; details are inaccurate or few; the text is difficult to read because of multiple errors.

### Grade: F

Paper contains no central question or problem, or it makes no attempt (or a fake attempt) to address a stated question. The paper fails to develop an argument of any sort. The text is filled with errors. The paper shows little or no indication that the author attempted to meet the expectations of the assignment, or to follow directions.

*A paper that contains **any** plagiarized material, that fails to incorporate adequate acknowledgment of all sources, or that otherwise violates the standards of academic integrity established by the University, Department, and instructor **will receive a grade of “F”** — and trigger disciplinary procedures that can result in failure (F) for the **entire** course ... and even expulsion from the University.*

**Course Schedule (important due dates are highlighted)**

<b>Date</b>	<b>Lecture Topic</b>	<b>Reading</b>
January 15	Introduction to Behavioral Ecology	Ch. 1 & 2; Andrade 1996
January 17	Approaches to Behavioral Ecology	Ch. 3; Alonzo 2008; Moller 1989; Trut 2001
January 22	The Use of Information: Environmental influences on behavior	Ch. 4 Ch. 17 (632-640) Davies & Brooke 1991; Sinervo & Lively 1996
January 24	Life History Strategies and Trade-Offs	Ch. 5
January 29	Sensory Systems, Hormones and Behavior	Ch. 6; Bass 1996; Vanderbergh 2003
January 31	Hormones & Behavior	Ch. 6
February 5	* Journal Club #1: Hormones	
February 7	Foraging Strategies	Ch. 7 & 8; Ricklefs 2001
February 12	Habitat Choice Review Paper: Topic Description	Ch. 9
February 14	Evolution of Dispersal	Ch. 10
February 19	* Journal Club #2: Foraging Behavior	
February 21	Communication	Ch. 16; Endler 1992; Candolin 1999
February 26	Review Session	
February 28	<b>Midterm Exam</b>	
March 4-8	<i>No Classes – SPRING BREAK</i>	
March 12	Sexual Selection	Ch. 11 & 13; Zahavi 1975; Hamilton & Zuk 1982; Kirkpatrick & Ryan 1992; Ryan 1998
March 14	Mating Systems & Parental Care Review Paper: 1 <sup>st</sup> Paragraph & References	Ch. 12; Trivers 1974; Emlen & Oring 1977; Trumbo 2006; Mock et al. 1990
March 19	Dr. Vik's Research	Iyengar & Starks 2008 Kelly et al. 2012
March 21	* Journal Club #3: Sexual Selection	
March 26	Animal Aggregations & Anti-Predator Defenses	Ch. 14
March 28	<i>No Classes – EASTER BREAK</i>	

**Course Schedule (important due dates are highlighted)**

<b>Date</b>	<b>Lecture Topic</b>	<b>Reading</b>
April 2	Interspecific Mutualism & Parasitism	Ch. 17
April 4	* Journal Club #4: Interspecific Interactions	
April 9	Adaptive Evolution of Social Traits: Altruism	Ch. 15; Dawkins 1979; Alexander & Borgia 1978
April 11	Conflict & Cooperation Review Paper due	Ch. 15; Reeve & Nonacs 1992; Keller & Reeve 1995; Parker & Pusey 1997
April 16	* Journal Club #5: Social Behavior	
April 18	Behavioral Ecology and Humans	Ch. 19; Emlen 1995; Neese & Williams 1998
April 23	Cultural Evolution	Ch. 20; Sherman & Flaxman 2001; Buston & Emlen 2003
April 25	* Journal Club #6: Human Behavior	
April 30	Course Wrap-Up; Course evaluations	
May 2	Review Session	
May 4	<b>Final Exam 1:30 – 4:00pm</b>	