

Animal Behavior (Biology 3015) :: Course Policies and Syllabus

Instructor: **Vikram K. Iyengar**
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Research lab: Mendel 113 (look for me here if I'm not in 190C)
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Lecture: Tuesday and Thursday, 10:00am – 11:15am Mendel Hall, Room 115
Lab: Tuesday or Thursday 1:00pm – 3:50pm Mendel Hall, Room 088

Teaching Assistant: Andrea Egan (aegan04@villanova.edu), 519-6358 (office)
Office Hours: by appointment in Mendel G74

Required Text*: Dugatkin, L.A. 2013. Principles of Animal Behavior, Third Edition;
W.W. Norton & Company. ISBN 0393920453

Suggested Text: Pechenik, J.A. 2010. A short guide to writing about biology. Seventh edition.
Pearson Longmans, New York, NY.

Other supplies (for lab):

- **Required: Bring laptop to lab** to complete exercises during class
 - Download JMP onto your computer by going through Biology's 'Resources' website (<http://www1.villanova.edu/villanova/artsci/biology/resources.html>)
- **Required: Three-ring binder** for lab handouts plus small notebook (+ pen/pencil!)
- **Required: USB stick** (“pen drive”) to save and transfer files

*Note: Additional readings will be assigned for specific lectures and posted on Blackboard.

COURSE OBJECTIVES AND INSTRUCTOR EXPECTATIONS

Welcome to Animal Behavior! This course presents an introduction to 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; behavior associated with finding food, and with avoiding predators; visual and auditory communication; courtship, mate choice, and mating systems; and social behavior and social systems. The lectures will focus primarily on ultimate explanations (*why* animals behave as they do) with less attention to proximate mechanisms (*how* they get the job done). Through the lectures, students should be able to demonstrate (1) comprehension of major concepts in animal behavior; (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) the ability to synthesize and analyze critically research studies.

This lab component of the course will be different in structure from many other Biology labs you may experience at Villanova, as its primary emphasis will be on **group projects**. Students in teams will conduct research studies, analyze results, report those results to the rest of the class in

both written and oral form, and receive feedback from peers and the instructors. Overall, this part of the course seeks to introduce students to (1) observation and description of animal behavior in lab and field; (2) construction of hypotheses in behavioral ecology and derivation of testable predictions; (3) collection of behavioral data; (4) quantitative and statistical analysis of those data; and (5) interpretation and presentation of findings in written and oral forms. An additional goal of the course is to give students a sense of the diversity of animal behavior through use of videos, field exercises, and off-campus trips.

Bio 3015 fulfills the research requirement for the biology major. The course will include instruction about principles and skills for effective writing about the biology of animal behavior, through a Critique assignment (an initial version followed by required revision), and the completion of a scientific paper that reports the results of a group research project. No student may pass the course without completing all steps of these written assignments.

GRADING

The general grade breakdown is shown below (with due dates in parentheses):

Lecture (66%):

Exam #1 (Tuesday, February 11):	16 %
Exam #2 (Tuesday, March 25):	16 %
Critique Essay (Tuesday, April 8):	14 %
- Topic Statement due Thursday, January 23	
- First Submission due Thursday, February 20	
- Revised Critique due Tuesday, April 8	
Final Exam (Tuesday, May 6):	20 %

Laboratory (26%):

Various Lab Worksheets:	6 %
Group Independent Project:	20 %
- Oral Proposal (February 25 or 27) =	5 %
- Written Report (April 22 or 24) =	15%

Attendance, Participation, Attitude, etc. (subjective): 8 %

Final grades will be assigned based on a standard plus/minus scale (see below):

A	(93-100%)	C+	(77-79%)
A-	(90-92%)	C	(73-76%)
B+	(87-89%)	C-	(70-72%)
B	(83-86%)	D	(60-69%)
B-	(80-82%)	F	(< 60%)

ATTENDANCE AND PARTICIPATION

Attendance in the lecture is *strongly* encouraged – although attendance is not absolutely mandatory, it *does* count towards your overall grade. I expect everyone to **contribute** to the course by asking questions, participating in discussions and “clicker” exercises, and filling out end-of-class feedback forms. Furthermore, I cannot imagine that you will find it possible to

master this material without regular class attendance, especially since lecture coverage will not match the text (Dugatkin 2013) exactly; I will use some different examples and incorporate material from other sources. As 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 lecture attendance. 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. I will also periodically show videos, and you will also be responsible for knowing the organisms depicted as well as the concepts they illustrate. 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.

Attendance at all laboratories is **required** and will factor in grading. Anyone who has to miss a laboratory session should see me immediately to explain your absence in *advance* of the relevant lab session. Your **active** participation during lab sessions is expected. If you're not present, you can't participate – and there's no way to make up for the lost opportunity to contribute. A considerable portion of the course will involve projects done by small groups of students and individuals. In the second half of the semester, you will devote several lab periods to project data collection and analysis. Depending on the nature of each project, students will probably need to schedule blocks of additional **out-of-class time** to prepare experimental set-ups, make observations, and conduct data analysis, either individually or with the help of your teammates.

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 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 (please try to skim the assigned 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 pagers and cell phones (cell phones going off will result in a quiz!)

LECTURE COURSE COMPONENTS

Exams will emphasize comprehension of terminology, concepts, and factual material in animal behavior and 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 I have not specifically covered in the class or in the text). I usually hold two *identical* Jeopardy-style review sessions for the lecture exams during lab time (Tuesdays and Thursdays at 1:00pm in Mendel 088) the week before the exam. These are optional (but recommended) review sessions, and I will post the questions and answers on Blackboard afterwards. Please attend the appropriate session unless prior arrangements have been made. There is one major writing assignment – a “Critique Essay” – and the details regarding this important assignment are described in extensive detail later in this syllabus.

LAB COURSE COMPONENTS

Given all major advances in technology and the current level sophistication demanded, most scientific research is done in collaboration with others. With that in mind, almost all of the labs will be done in groups of 2-3 people unless otherwise stated. As with all collaborative (group) projects, each team member will receive the same grade, with possible minor adjustment by myself and the TA based on our perception of variation among group members in effort and contribution to the final product. Please see the handout and advice on Blackboard for details on our expectations.

Weekday laboratory exercises = 6% of grade

We will ask you to complete several ‘worksheet’ style exercises, via electronic submission, based on data collection and analysis we’ll conduct during weekday lab meetings. Requirements for these exercises will be explained in lab and handouts posted on Blackboard. These labs will be conducted in randomly-assigned groups of 2-3 students, and the team worksheets will be due by the start of the following lab period. Grades for these exercises and worksheets will generally be qualitative:

- “✓+” if your submission indicates that you understood the concepts and details of the exercise and you made a clear effort to think carefully and thoroughly about what it all meant. If you receive mostly ✓+ grades for lab work, you can count on receiving **full** marks for the worksheet portion of the overall grade.
- “✓” if your submission shows that you understood the basic idea of the exercise (but did not make an effort to go as far as you could with interpretation). If you receive all or mostly ✓ grades for the lab work, that’s an indication that you are on the right track—but might be missing out on some opportunities to show us that you’re getting as much out of the labs as possible.
- “✓-” if your submission is incomplete or includes important errors of fact (e.g., calculation errors) or interpretation (missed the point). If you receive any ✓- grades, you should not panic: rather, you should discuss the exercise with your TA or the instructors to make sure you *understand* where you went wrong (so as to avoid losing even more points on a subsequent exam); you can and should also “upgrade” your score to a “✓” for the exercise by submitting a revised/corrected version.

Independent Group Projects = 20% of grade

During the second half of the semester, we will focus on an independent project conducted by teams of 3 students. Each group will investigate a topic in animal behavior and design a simple study that will address a specific question. You will have time to discuss your team’s plans and construct a **typed, detailed outline** of your proposal during the lab period on February 25 – by the end of class that day, we will make suggestions and then give you a “green light” to start getting equipment, organisms, etc. Although you will have some time on February 18, we *strongly* suggest you start discussing project ideas with your group ASAP, especially if you anticipate needing to specially order organisms, equipment, etc. Don’t wait!!

1) Project Proposal – oral presentation Due date: February 25 or 27 5% of grade

The team will *jointly* prepare one research proposal, which they will then present orally (using PowerPoint) to the class; the general format of the proposal should follow advice in Pechenik (2010), chapter 10. During our lab session this week, each team's oral presentation will be approximately 12-15 minutes, and should give a complete picture (background, questions, methods, anticipated statistics) of the experiment. Other students will also have an opportunity to critique the proposed project and make suggestions for improvement.

Your project must be designed so that it can be completed between March 13 and April 8 – you should plan to leave yourself *several* days for analysis and write-up at the end. If two or more students wish to work on the same study system, they must coordinate their plans so that there is sufficient distinctiveness, as judged by the instructors, between the individual projects. *Again, it is very important to get started **immediately** on project plans*, especially if the biology of the organisms creates time constraints.

2) Project Written Report and Oral Presentation Due date: April 22 or 24 15% of grade

Each team will conduct the second phase of their research; this work can begin as soon as necessary, and even *before the final version of the proposal is submitted if necessary*. Each team will collectively gather data to test predictions and perform the appropriate statistical analyses. Having conducting this research project **collaboratively**, each team will *jointly* prepare and complete one written lab report (please download the report template from Blackboard), again following guidelines in Pechenik (2010), chapter 9. The text of the individually written report should be 7-10 pages (~ 2000 words), not counting tables, figures, or references; for organization and style, follow guidelines in Pechenik (2010), chapter 9, and for format details, follow the journal *Animal Behaviour*. Each group will also give a 12-15 minute oral presentation (in PowerPoint) during the lab period.

GENERAL INSTRUCTIONS FOR WRITING ASSIGNMENTS

All writing assignments are due at the times shown here or as announced in class (in case I need to make adjustments). Late assignments will be penalized at least 10% 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 me PRIOR to the exam to make arrangements for a make-up exam. Unless I specify otherwise, **all writing assignments must be submitted electronically as Microsoft Word files (always named like this: LastName.Assignment.docx) attached to an email message addressed to me (vikram.iyengar@villanova.edu)**. Always use 1" margins, 12 pt. *serif* font (such as Times New Roman), and double-spacing, with each page numbered in a header (see template file in Blackboard). *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).

I will follow the grading philosophy explained at the end of this handout. ***Poorly presented science is poor science.*** I advise those of you who have *not* had to write critical argumentative

essays for other upper-level biology courses to **seek guidance from me for the written assignments** (make an appointment to review expectations one-on-one). Other sources for help about organization, style, and grammar include Pechenik (2010, especially chapters 1 and 5) and the university's Writing Center: don't hesitate to take a complete but rough draft over there for input about overall structure and organization, as well as 'mechanics.' I am available to give advice about your paper's topic, sources, goals, organization, and format.

Academic integrity can be an issue in science courses that involve writing. I can only give you all the credit you deserve if I can tell how much of the work is genuinely your own. 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 expectations, 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. Aim to write so that the reader can reasonably infer where *every* piece of information and *every* idea came from. If you include information that you didn't know before you started researching your topic, you **must** make your source(s) clear through the use of in-text citations. If an idea is yours, *say* so using **active** voice, including and first person, such as: "I think that the analysis of Jones (2012) is flawed because..." Pechenik (2010) provides additional helpful advice about writing so that your sources are acknowledged fully, and so that your writing is clear, simple, and concise. I encourage you to use his book!

MAJOR WRITING ASSIGNMENT (LECTURE) – “Critique” Essay or “Mini-Review”

Objectives: to help you learn (1) to locate, read, and understand sources from the primary literature in animal behavior; (2) to construct an essay that **builds an argument** in which you *summarize* and *critically evaluate* the paper(s) you read; and (3) to use effective organization, clear style, and correct spelling, grammar, and citation format.

What kind of paper am I looking for? I want you to construct something *intermediate* between a Critique and a Term Paper as both are described by Pechenik (2010, Chs. 7 and 8). Your essay should be based mainly on a single journal article from the primary (1°) behavioral literature. Your task is to (1) choose an appropriate source, (2) read it (many times) until you understand the article's content thoroughly, and (3) write an essay that puts that single piece of new research *into the context of the broader field of behavioral ecology*.

Your target will be an essay of about 5-7 pages (\approx 1500-2100 words) of double-spaced text (*not* counting the References section or any figures you might include, although figures are *not* something that would typically be appropriate or necessary for this type of essay). Your essay should go beyond the simple 2-page Critique described by Pechenik mainly by including your assessment of the degree to which the research represents an **important contribution** to the field of animal behavior as presented by Dugatkin (2013) or other general sources (textbooks, 2° review articles). You should try to present and *justify* your answer the question, "Is the study likely to have a big influence on, and to be cited by, other people studying animal behavior?" (Your paper will not be a full-blown Review as described by Pechenik because I am not asking you to synthesize a whole set of 1° research articles.)

Sources: Your paper should include summary and analysis of one **1° research article** from the animal behavior literature published in **2013 or 2014** (the date refers to the year in which the journal issue containing the article appeared, not the year when the article was submitted; articles that are available as official “online early” publications are OK). The article should present results of original research; you should be able to look directly at the data on which new conclusions are drawn. I *strongly* recommend that you choose an article that presents **empirical** results (i.e., experimental or observational data) as opposed to theory or modeling (those types of papers are usually much harder to comprehend and to write about).

In keeping with the placement of Bio 3015 within the population biology area of the disciplinary spectrum, I want you to select an article that mostly addresses **ultimate explanations** (i.e., behavioral ecology) as opposed to articles that concentrate on proximate explanations (e.g., focusing only on details of underlying mechanisms). Do not choose an article that focuses principally on some genetic, molecular, or hormonal process associated with some behavior, no matter how interesting that work might seem. Focus instead on papers about the adaptive functions of behavior, or about the evolutionary history of behavioral traits.

Major articles (but *not* short communications or commentaries) from the following journals are most likely to be suitable: *Animal Behaviour*, *Behavioral Ecology and Sociobiology*, *Ethology*, *Behaviour*, and *Proceedings of the Royal Society of London B*. Articles in *Behavioral Ecology* are nearly always appropriate in terms of focus **but** that journal includes “lay summaries” of the major papers; I will allow you to choose an article from this journal **only** if the lay summary leaves sufficient room for you to write your own version (i.e., you must obtain explicit approval from me to use a particular article from *Behavioral Ecology*). Examples of other journals that **might** offer suitable articles include *Auk*, *Current Biology*, *Animal Cognition*, *Journal of Mammalogy*, *Canadian Journal of Zoology*, *Journal of Animal Ecology*, *Oikos*, etc. If you have concerns about the appropriateness of a particular article, you can email me a PDF of the article before the Topic Statement deadline so I can check it.

Suggestion: The easiest way to get going on this essay is to search websites for the journals listed above using links from Falvey Library web site (after logging on to MyNova) until you find an intriguing article on some behavioral topic. You should probably not start by choosing a topic based *only* on its inherent interest to you (such as “tool use by chimpanzees”) because you may not be able to find **any** appropriate recent sources on that topic. However, you can search in this manner by going through Falvey and searching the database known as the “Web of Science”.

Then what? Your top priority is to summarize the scientific content of your chosen article—and then explain the likely importance of that content—in *your own words* (i.e., you need to more than to just paraphrase the article’s Abstract). Your presentation must demonstrate that *you* have developed a solid understanding of the study’s context, objectives, methodological approach, results (yes, the **data**, as displayed by the authors in tables and figures, and the associated analyses, which you should describe verbally – do **not** copy and paste the tables and figures from the source article), conclusions, and implications. The last bit involves **your** thoughts about the article’s likely impact on animal behavior and on behavioral ecologists.

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*. For more about the requirements of papers in this journal, consult the Guidelines file on Blackboard.

I encourage (and expect) you to cite *additional* 1° or secondary (2°) literature in your essay. You will need these references to establish the context into which your main article fits; you'll need to cite appropriate background sources at the very **beginning** of your essay (your introductory paragraphs), to set the stage for your critique in a way that's not completely dependent on the core article itself. You'll need background references again towards the *end* of your paper: a critical goal there is for you to discuss the article's **importance** within animal behavior. Does the research break new ground? Is it comprehensive and convincing, on a major topic? Or does it merely add a small piece to what was already known? Developing and explaining your answers to these questions is perhaps to most challenging aspect of this assignment. You will *certainly* need to **refer to Dugatkin (2013)** as your **primary frame of reference** against which you will evaluate the "impact" of the 1° article that is your essay's main focus. You may also want to cite to one or more **review papers** about the general topic, in your introductory paragraphs, when establishing your review's context and scope, and again when discussing the article's originality and importance. In general, 2° literature takes the form of review articles that summarize research results that were reported for the first time somewhere *else*; if you don't see tables or figures showing new data in a particular article, that paper probably is **not** a 1° source. See me if you have concerns about whether a particular article constitutes 1° or 2° literature.

Regardless of which journal provides the paper you summarize, you must write *your* paper using the style and *exact* citation format of the printed version of the journal *Animal Behaviour*. Download a pdf to obtain the proper citation format, and follow it to the letter. Formatting is extremely important when it comes to publishing in journals. **Please be forewarned that those that have incorrectly formatted references on the FIRST submission will be docked a half grade on the FINAL critique grade.**

The assignment involves 3 required steps. Expectations and deadlines for each are as follows:

- I. **Topic Statement** (due **Thursday, January 23** by the start of lecture). To complete this step, send me an email message with the **PDF** of your article and an attached **Word file** (named like Richards.Topic.docx) that includes:
 - 1) A **capsule summary** (just 2-3 sentences) of the paper *in your own words* (don't draw *directly* from the paper's abstract), to show that you have done a "first pass" reading of the paper and that you have a sense of what it is all about
 - 2) A statement (1 sentence) of *your* essay's likely **goal**. Does it look like you will be able to argue that the paper is a "big deal" because of it breaks totally new ground in animal behavior? Or that the article is a minor contribution at best, because it lacks originality, thoroughness, broad applicability, etc.? Your goal **MUST** be more than just "to summarize the paper that I read"; such a summary is *necessary* but not *sufficient* for the assignment. (See also advice about 'thesis statements' in Pechenik 2010:142-144.)

Good goal: "In this paper, I will ask whether recent research by Jagger et al. (2014) regarding the polygyny threshold model will necessitate a change in understanding of the topic as presented by Dugaktin (2013)." [Clear focus with an end-point: you'll have

accomplished your goal when you conclude whether the weight of evidence in the 1^o literature “leans” towards a “**yes**” or towards a “**no**” answer to the question.]

Not-so-good goal: “In this paper, I will describe recent research on song learning.” [Too vague: how will you (or your reader) know when you’ve accomplished your goal?]

- 3) The complete and properly formatted **bibliographic information** for the 1^o research article that you expect to cover, following exactly the bibliographic format of the journal *Animal Behaviour*; see example on Blackboard for more details about that format).

II. Critique essay, first complete submission (due **Thursday, February 20** by the start of lecture). Submit via email with attached Word file (named like Richards.Critique1.docx).

Audience: Yourself, your instructor, *and* your fellow classmates. Your presentation must make sense to someone who does not already know about the article you’re critiquing, or about its specific subject area. It is especially important to avoid using scientific jargon unless absolutely necessary; be sure to define *all* technical terms you include, if there’s a chance that a biologically literate but *general* audience wouldn’t understand.

Format: The first submission **must** include your *own* informative title (which should *not* simply be the title of the focal article) followed by your full text with in-text citations in all appropriate spots. You may consider using EndNote to manage citation of sources so that your paper follows the format of the journal *Animal Behaviour* **exactly** with regard to in-text citations and terminal References list. **For this assignment, you do not need to write an abstract.**

Please don’t consider your 1st version a “rough draft”: even though I will not assign a grade until you submit your final version, I can’t help you make your paper as good as it can be if your first submission is incomplete, error-filled, and poorly organized. My comments will focus on aspects needing the most attention—but your chances of getting a top grade will be greatest if your draft is *already* in great shape, because then I can help you “put the icing on the cake.” If your 1st submission is weak, I will only be able to make general comments about major revision that will be needed, but I won’t catch everything. It’s an *excellent* idea also to review advice in Pechenik (2010, pp. 4-15 and ch. 6) before submitting your 1st version. I urge you to do the hard work on the front end, so that your 1st submission is as good as possible; that will make the revision step much easier for **both** of us!

III. Critique essay, final revised version (due **Thursday, April 8** by the start of lecture). Submit via email with attached Word file (named like Richards.CritiqueFinal.docx).

You will receive comments back from me about content, presentation, and format. You will then revise the paper (I suggest resaving and using a different Word file since it will be less cluttered) and resubmit a polished final version.

Grading: Your grade for the Critique will be based mainly on the quality of your final product, i.e., on your ability to construct a cogent and polished essay that summarizes and analyzes material effectively. See the statement of Grading Philosophy for explanation of standards for the various letter grades. You will not receive separate grades for your Topic Statement or 1st version, although I will provide an “indicator grade” when I give you comments on the 1st version, to help you appreciate the work that will be required to meet the

expectations of the overall assignment. The final grade will be based in part on revision also; even if your 1st version is very strong, there is always room for improvement, and I will be looking for evidence that you took the revision step seriously.

Some further **strategic and stylistic advice** about the critique:

- DO put your summary of the primary research article into a broader context. You **should** cite coverage in Dugatkin (2013) as a source for that context. While optional, it would also be great—especially if you would like to show that you pushed the assignment as far as you could towards our expectations for an A paper—to explain how the new research you've read and analyzed relates to coverage of the same topic in **additional** 2^o sources such as *Trends in Ecology & Evolution* (sophisticated but highly recommended), *Scientific American*, *BioScience*, or *American Scientist*. Be sure to cite anything you use.
- DO write in active voice ... and use first person construction where appropriate. Active voice nearly represents always clearer, more direct, and more concise presentation than passive wording ... and it's often *essential* for making it crystal clear when you're presenting your *own* ideas (e.g., "I question whether the research by Darwin (1859) will influence anybody, because he was silly."). For this reason, many scientific journals ask authors explicitly to use active voice in the papers they submit for publication. If you were taught previously that scientists should always write in passive voice, *fuggeddaboutit!*
- Do NOT include direct quotations in your essay (see Pechenik 2010: 5-6 and 148). Rely instead on restating the substance of your sources using your *own* words, but with adequate acknowledgment along the way. Be sure to write so that **none** of your statements causes your reader to ask, "Where did this come from?" However, it's important also to avoid "citation overkill" (avoidable repetition of citations of the same source). Thus, do not merely stick in a citation at the end of *every* sentence; instead, use thoughtful paragraph organization and phrasing of sentences to signal to your readers when you are presenting a sequence of statements that all draw on the same source.
- DO structure your paragraphs so that each one begins with a statement that presents a main idea that 'covers' everything that follows in the rest of the paragraph. Do NOT include in the paragraph anything that doesn't relate to that first sentence; if you need to move on to such material start a new paragraph (beginning with its own good topic sentence). By the time you finish your text, it should be possible (literally!) to eliminate *everything* except the first sentence of each paragraph and still be left with a series of statements that together presents ALL of the main ideas that make up your paper's logical flow and argument, minus the elaboration and supporting information from the rest of each paragraph.
- Do NOT submit a paper that includes chunks of material from web sites (e.g., sites that provide student papers from similar courses at other universities) that review behavioral ecology studies like I am asking *you* to do. I have ways to check for this, and if I discovered that you had "lifted" material in this way and submitted as your own (even if you modified it), that would represent a serious violation of policies about Academic Integrity.

ACADEMIC INTEGRITY

I expect all students to adhere *strictly* to the Villanova'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. This includes taking exams and *all* aspects of submitting written assignments: **take careful notes** as you collect data (I may ask for your data notebook at *any* time), **save records** of your work (don't submit a final draft of a paper without keeping some evidence of your early drafts, as well as your raw data sheets and notes), carefully **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 and penalties pertaining to all Academic Integrity issues will be strictly adhered to, and there will be no exceptions to these policies.

Violation of any element of the Code on any assignment or activity will result in an F for the entire course and initiation of formal disciplinary procedures. These include violations such as falsifying data (making stuff up), plagiarism, and misrepresentation (in essence, lying about any aspect of the course, such as details of data collection, absences, etc.). If you have any questions regarding these issues, please ask me for clarification.

STATEMENT ON ANIMAL USE IN BIOLOGY TEACHING

(General policy statement of the Department of Biology, Villanova University)

Many people, including students and professional biologists, share a concern for the use to which animals are put in the context of teaching. In this course it will be necessary to carry out one or more exercises that make use of preserved or live animals. Such use of animals in teaching is an integral part of the biology experience and as such has been designed to fit in with the overall aims and goals of the course. For this reason, students generally will not be excused from participating in those laboratories involving the student in the study of living or preserved animals. If you object to these types of exercises, please see the Chair of the Department of Biology immediately to discuss your concerns and be prepared to consider other course options.

You may be required to perform dissections or observations on preserved specimens. These animals have been obtained from reputable supply houses that follow regulated guidelines for the humane sacrifice and preparation of the animals. In some other cases the lab exercise may involve the use of freshly euthanized animals. You need not participate in euthanizing the animals yourself; all such animals have been euthanized in accordance with regulations designed to minimize their suffering. Although some may regard certain animals (such as mammals) as being more "important" or more worthy of protection than others, all animals have intrinsic value and they should be treated accordingly. In this lab we recognize and respect the value of all living things.

The preceding section about dissection and euthanasia of living animals should **not** be relevant for this course. Overall, the emphasis in the preceding section on structure and function is peripheral to our primary focus in Bio 3015. The Animal Behavior Laboratory focuses more on **why** animals behave the way that they do, and less so on **how** that behavior happens. Consequently, we will **not** have much need for dissection or other invasive approaches necessary for evaluating form and function. Instead, we will focus mainly on the behavior of intact, living animals. Our "use" of the animals will involve mainly observation and experimental manipulation of behavior to investigate hypotheses about function.

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.

[Adapted from materials distributed in Writing Across the Curriculum seminar, Villanova University, April 1994, directed by D. Anselmi, B. Wall, and D. Zannoni, Trinity College.]

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 will trigger disciplinary procedures that can result in failure (F) for the entire course ... and even expulsion from the University.***

Tentative Course Schedule (important due dates are highlighted)

Date	Lecture Topic	Reading	Lab Exercise
January 14	Introduction and Logistics	Chapter 1 Adams 1990; Levitis et al. 2009 Wilson & Wilson 2008	<u>Lab: Sweet Tunes</u> Logistics & Statistics Downloading Programs Song Analyses (Raven)
January 16	Behavioral Adaptation and Hypothesis Testing	Ch. 1 Andrade 1996; Hrdy 1977; Holekamp & Sherman 1989	
January 21	Behavioral Adaptation and Hypothesis Testing (con't)	Ch. 1	Raven Assignment
January 23	Evolution of Behavior: Genetic Approaches Topic Statement due	Ch. 2 Trut 1999	<u>Lab: Something's Fishy</u> Fish Feeding (IFD) and t-tests
January 28	Sensory Systems, Hormones and Development	Ch. 3	Fish Feeding Assignment
January 30	Sensory Systems, Hormones and Development	Ch. 4 Bass 1996 Vanderburgh 2003	<u>Lab: Gone to the Birds</u> Seed preferences and chi-square tests [OUTSIDE...dress warmly]
February 4	Environmental Influences: Learning and Cognition	Ch. 5 Hauser 2000 Raby 2007 Shettleworth 2007	Bird Feeder Assignment *Review Session*
February 6	Environmental Influences: Cultural Transmission	Ch. 6	
February 11	Exam 1		<u>Lab: Anger Management</u> Crayfish Aggression, regression and ANOVA
February 13	Foraging	Ch. 11 Ricklefs 2007	
February 18	Anti-Predator Behavior	Ch. 12	Crayfish Assignment
February 20	Communication I: The Languages of Life Critique 1 st submission due	Ch. 13 Payne 1998	<u>Lab: The Best Made Plans</u> Group meetings to discuss ideas, order animals, outline project
February 25	Communication II: Classifying Communication	Ch. 13 Candolin 1999; Møller 1989	<u>Lab: Talk The Talk</u> Project Proposal Presentations (PPT)
February 27	Habitat Selection, Territoriality and Migration	Ch. 14	
March 4	*** No Classes – SPRING BREAK ***		
March 6	*** No Classes – SPRING BREAK ***		

March 11	Reproduction I: Battles of the Sexes	Ch. 7	<u>Lab:</u> <i>Let's Get It Started</i> Begin working on your Independent projects
March 13	Reproduction II: Sexual Selection & Mating Tactics	Ch. 7 Sinervo & Lively 1996	
March 18	Mating Systems	Ch. 8 Trumbo 2006 Warner 1984	<u>Lab:</u> Work on projects
March 20	Dr. Vik's Research, <i>plus</i> Video: <i>Courting</i>	Iyengar & Eisner 1999 Iyengar & Starks 2008	
March 25	Exam 2		<u>Lab:</u> Work on projects
March 27	Parental Care, Family and Kin Recognition	Ch. 9 Davies & Brooke 1991 Emlen 1995 Mock et al. 1990 Trivers 1974	
April 1	Social Behavior I: Kin Selection & Eusociality	Ch. 9 Packer & Pusey 1997 Honeycutt 1992	<u>Lab:</u> Work on projects
April 3	Social Behavior II: Cooperation & Conflict	Ch. 10 Emlen et al. 1995 Reeve & Nonacs 1992	
April 8	Social Behavior III: Aggression & Game Theory Revised Critique due	Ch. 15	<u>Lab:</u> More data collection Advice on data entry Advice on statistics Work on projects
April 10	More Social Behavior, <i>plus</i> Video: <i>Friends & Rivals</i>		
April 15	*** No Classes – Dr. Vik is out of town ***		***No Official Lab*** - Finish data analyses - Work on paper/PPT!!
April 17	*** No Classes – EASTER RECESS ***		
April 22	Human Connections: Play & Animal Personalities	Chs. 16 & 17	<u>Lab:</u> <i>Fruits of your labor</i> Project Proposal Paper (Word) and Presentation (PPT) due
April 24	Human Social Behavior and Darwinian Medicine	Buston & Emlen 2003 Neese & Williams 1998 Sherman & Flaxman 2001	
April 29	*** No Class – follows a Friday schedule ***		
May 1	Course Evaluations; Review Session		
May 6	Final (Exam 3 + cumulative), 11:30am – 2:00pm		

Acknowledgment of Animal Use Policy

Please read and sign this form after you have examined the syllabus for Bio 3015. Detach the signed form and return it to your instructors.

I have read the course outline and syllabus for Bio 3015 and understand the Department of Biology **Statement on Animal Use in Biology Teaching**.

Name (printed)

Signature

Date

Acknowledgment of Course Policy on Academic Integrity

I have read the course outline and syllabus for Bio 3015 and understand the instructors' policy regarding **academic integrity** in the context of this course.

Signature

Date

(Sign and submit this to the instructors during the first lab period)

VILLANOVA UNIVERSITY Department of Biology

Assumption of Risk and Release Field Trips and Off-Campus Activities

This Release is executed by _____ to Villanova University, Villanova, PA.

As a Villanova student voluntarily enrolled in **BIOLOGY 3015** I understand that I may participate in various field trips in connection with the course throughout the semester (the "Activity").

Knowing the dangers, hazards, and risks of the Activity, and in consideration of being permitted to participate in the Activity, on behalf of myself, my family, heirs, and personal representative(s), I, the undersigned, agree to assume all the risks and responsibilities surrounding my participation in the Activity, the transportation, and in any independent research or activities undertaken as an adjunct thereto, and in advance release, waive, forever discharge, and covenant not to sue Villanova University (including the Department of Biology), its governing board, officers, agents, employees, and any students acting as employees (hereafter called the "Releasees"), from and against any and all liability for any harm, injury, damage, claims, demands, actions, causes of action, costs, and expenses of any nature that I may have or that may hereafter accrue to me, arising out of or related to any loss, damage, or injury, including but not limited to suffering and death, that may be sustained by me or by any property belonging to me, whether caused by the negligence or carelessness of the Releasees, or otherwise, while in, on, upon, or in transit to or from the premises where the Activity, or any adjunct to the Activity, occurs or is being conducted.

I understand and agree that Releasees do not have medical personnel available at the location of the Activity or on the campus. I understand and agree that Releasees are granted permission to authorize emergency medical treatment, if necessary, and that such action by Releasees shall be subject to the terms of this Agreement. I understand and agree that Releasees assume no responsibility for any injury or damage which might arise out of or in connection with such authorized emergency medical treatment.

It is my express intent that this release and hold harmless agreement shall bind the members of my family and spouse, if I am alive, and my estate, family, heirs, administrators, personal representatives, or assigns, if I am deceased, and shall be deemed as a "Release, Waiver, Discharge and Covenant" not to sue the above-named Releasees. I further agree to save and hold harmless, indemnify, and defend Releasees from any claim by me or my family, arising out of my participation in the Activity.

In signing this Release, I acknowledge and represent that I have fully informed myself of the content of the foregoing waiver of liability and hold harmless agreement by reading it before I sign it, and I understand that I sign this document as my own free act and deed; no oral representations, statements, or inducements, apart from the foregoing written statement, have been made. I understand that Villanova University does not require me to participate in the Activity, but I want to do so, despite the possible dangers and risks and despite this Release. I further state that I am at least eighteen (18) years of age and fully competent to sign this Agreement; and that I execute this release for full, adequate, and complete consideration fully intending to be bound by the same. I further state that there are no health-related reasons or problems which preclude or restrict my participation in the Activity, and that I have adequate health insurance necessary to provide for and pay any medical costs that may be attendant as a result of injury to me.

THIS IS A RELEASE OF LEGAL RIGHTS. READ AND BE CERTAIN YOU UNDERSTAND IT BEFORE SIGNING.

IN WITNESS WHEREOF, I have executed this release this _____ day of _____.

Signature

Witness