Objectives

The purpose of this course is to provide you with concepts and skills needed to measure, analyze, and communicate the behavior of animals either in the field or in the laboratory. To this end you will observe animals and measure their behavior both in captivity and in the wild. You will also design and execute an independent project of your choosing as well as participate in group projects. Exercises on scientific writing and analysis will provide you with experience in communicating observations on the behavior of animals. Films will augment your understanding of the kinds of questions scientists ask about the behavior of animals, the techniques used to answer these questions, and the behavior of animals not normally observed on the Smith campus. Your laboratory text explores conceptual issues surrounding the measurement of animal behavior and that material will be tested over 5 quizzes during the semester. The material will also be an invaluable guide for your independent project. Finally, a poster symposium, powerpoint oral talk, and/or scientific paper writing assignment will give you experience with the major methods scientists use to present the outcome of their research.

The course has no final exam.

Time and Place

Tuesdays: 1:20-4:00 pm; Sabin-Reed 205. This class will normally require an additional hour to be self-scheduled each week for observations of animals. Attendance is mandatory.

Personnel

Faculty: Virginia Hayssen, 236 Sabin-Reed, x3856
Email: vhayssen@science.smith.edu
Office Hours: My formal office hours are on Wednesday morning from 9 to 11, but I encourage you to drop by any other time Tuesday, Wednesday, or Thursday. I teach a first year seminar Tuesday and Thursday from 9:25-10:40. If you prefer, you may phone for an appointment. Don't go away if the door is shut, just knock. I do my research on Mondays and Fridays, so please don't disturb me then. Thanks.

Course Assessment

50% Quizzes (10% each)
30% Exercises: in class work, film assignments, check sheet, field book
10% Independent Project: Proposal, Data, Analysis, Poster, Paper
10% Participation: attendance, attention, focus
### Dates and Topics

- **10 Sept**: Overview of Lab
  - Exercise: What is behavior?
  - Observations: Ad lib field
- **17 Sept**: MB ch 1-2
  - Exercise: Quiz 1
  - Observations: Squirrel data
- **24 Sept**: MB ch 3
  - Exercise: Quiz 2
  - Observations: Squirrel data again
- **1 Oct**: MB ch 5-6
  - Exercise: prep captive prelim
  - Observations: Ad lib captive
- **8 Oct**: MB ch 7-8
  - Exercise: Quiz 3
  - Observations: Captive data
- **15 Oct**: Fall Break
- **22 Oct**: MB ch 9; titles
  - Exercise: Discuss captive
  - Observations: prelim IP obs/data
- **29 Oct**: intro
  - Exercise: Quiz 4
  - Observations: IP data
- **5 Nov**: statistics
  - Exercise: IP Proposal
  - Observations: IP data
- **12 Nov**: figures
  - Exercise: Hinde exercise
  - Observations: IP data, stats
- **19 Nov**: results
  - Exercise: Quiz 5
  - Observations: IP data, results
- **26 Nov**: TBD
  - Exercise: IP analysis
  - Observations: bird observation?
- **3 Dec**: communication
  - Exercise: IP data
  - Observations: invert observation?
- **10 Dec**: symposium
  - Exercise: IP paper and field book due

**Dates and topics may change as the semester progresses**

### Readings and Quizzes


### Hinde Assignment


*Your boss has read an article from the journal Animal Behaviour published within the last 12 months. She has decided to replicate the experiment on another species from a different taxonomic group (different family, order, or class). Design a check sheet appropriate for this replication. Do not forget the header information. Include a separate sheet of instructions for those people who are to use the check sheet. Be thorough. On a separate sheet(s) explain the logic behind your design. Explain each column and row and all other information on the sheet. Explain what modifications you had to make to do the work on another taxon. Include a copy of the Animal Behaviour article your boss read with your check sheet and rationale.*

### Animal Behaviour

Each of you will be assigned a recent issue of Animal Behaviour (http://www.sciencedirect.com/science/journal/00033472). From that issue, download 5 complete articles, and the title page, abstract and figures from 3 additional articles. Bring this material to each class on your laptop. These articles will provide the framework for our exploration of scientific writing about the behavior of animals.

### Observations and Field Journal

Throughout the semester you will be doing observations of animals. I want you to keep a record of all your observations in a field notebook. For this you will need a
bound notebook. Professional field books are often made of water-resistant paper and are quite expensive, but for your purposes this semester a composition book will do.

You will hand in your field notebook intermittently during the semester and on the last day of classes. Descriptions of all the observation assignments, including the independent project, will be on Moodle as ‘assigned observations, independent project’. A description of how the field journal should be formatted and how your observations and journal will be assessed will also be on Moodle as ‘Field journal: format, assessment’.

**Films**

Behavior is not well captured by text. Animals move, taste, vocalize, interact in myriad ways. The best way to observe animal behavior is directly, in person. Then you can feel the weather, sense the smells, be immersed in the environment and get an understanding of the depth of the actions. We don’t have enough time in the semester to view the diversity of animal behavior first hand. So we will resort to video. Film is better than text but it is still 2-dimensional. However, most people’s knowledge of how animals behave comes from films: from documentaries, animations, movies, YouTube, etc. You need to understand the scope and limitations of film and you need an understanding of the diversity of animals behavior, thus a significant component of the class will be films or videos.

Over the course of the semester, I want you to complete 7 film assignments. The film choices, the assignments, and the deadlines are on Moodle as ‘Film assignments’. If you took the topics course you have already completed these assignments and need not do them again!

**Format for Formal Written Work**

Part of your grade on any assignment will reflect how well you write and follow instructions. I expect all your work to be presented professionally and organized logically. Say what you mean to say and say it clearly. You will be graded on the fluidity of your composition as well as the subtlety of your comprehension. Strunk and White's "The Elements of Style" (http://www.bartleby.com/141/) is a brief, excellent guide to clear writing.

**Content**: In all written work you should state your thesis, define your terms, explain your perspective, provide examples in support of your ideas, and summarize your conclusions. Provide titles for all written work and include your name and the date.

**Format**: Word-process all work. Each page should be single-spaced with a jagged right border (that is do not use proportional spacing or right justification). Use the following margins: one-inch top and bottom margins and 1/2 to 3/4 inch side-margins. Use pica type or a 12-point font in Times Roman (or equivalent).

**Scientific names** should be properly presented. Underline or italicize genera and species. All names of genera begin with a capital letter, but species names do not. Taxonomic names for higher levels are never italicized and are not capitalized when used as adjectives (e.g. canid). However, they are capitalized when used as proper names (e.g. Canidae). The names of geologic time frames (e.g. Mesozoic, Eocene) must also be capitalized.

Do not plagiarize. Cite all sources within the text and give the last name of the
author and the year of the publication (e.g. Pough et al., 1999). A complete bibliography must appended to each piece of work you hand in. Personal communications may be referred to as follows (Hayssen, pers comm). In general, the internet is not a reliable venue for information. Nearly all information you obtain from the net must be verified from a published source before you use it professionally.

**Mechanics:** Use correct spelling, appropriate punctuation, clear grammatical constructions, and succinct diction. Do not use place-keepers as subjects (e.g. there are, it is, it can be shown that, etc.). Instead make the true subject of the sentence the subject you use for the sentence.

**Proofread your paper:** Allow time to proof your paper before you print the final version. Check all of the following when proofing your paper: correct spelling and punctuation; genus and above taxa capitalized, genus and species italicized (or underlined), common names not capitalized; grammatically-correct sentence-structure; no ambiguous subjects (e.g., it, there); well-constructed paragraphs (topic sentence, detailed middle, transition or end); well-organized paragraph-sequence that develops the theme of the essay. I reserve the right to take a full point off for each incorrectly spelt word, for each non-italicized genus or species, for each capitalization error on scientific names, and for each sentence with an ambiguous subject.

**Criteria for Assessment of Letter Grades**

Letter grades will be assigned as follows

- **A ---** Assignment completed with thought and care. Strong evidence that the student either learned something by doing the assignment or brought material learned in other lessons or courses to bear on the assignment. Assignment goes beyond simply 'doing what you are told' and instead indicates that the student thought about the reason for the assignment. Completion of the spirit as well as the letter of the law. Imagination and originality may be apparent.

- **B ---** All required elements of the assignment completed exactly and competently. Attention to the letter but perhaps not the spirit of the assignment. No major errors present and few minor errors. Clear attention to details and format. Work has professional appearance.

- **C ---** Up to 20% of assignment has errors or is missing components. Attention was not given to appearance and/or format. Spelling, typographic, or grammatical errors; organizational problems; or minor logical or scientific mistakes present.

- **D ---** 20-50% of assignment missing or with numerous or significant errors.

- **E ---** >50% of assignment missing or with abundant and significant errors.

**In other words …**

If you do the minimum and do it well you get a B of some sort. If your work shows that you are actively engaged with the material for its own sake and not just for 'the grade' then you are in line for a grade in the A range. C grades indicate that the work has a number of minor problems; a D indicates that the problems are significant; and an E is reserved for work which is substantially incomplete, missing entirely, or extensively flawed.
Those students who accumulate 95% or more points will get an A, 90-94.9% an A-, 87-89.9% a B+, 83-86.9% a B, 80-82.9% a B-, 77-79.9% a C+, 73-76.9% a C, 70-72.9% a C-, 65-69.9 a D+, 60-64.9 a D, 50-59.9 a D-, and below 50% an E.

**Penalties for Late Work**

Unexcused late work will be penalized 10% per day late. Work which is granted an extension will be docked 5% per day past the original due date. If an essay or assignment is due on Thursday and you hand it in on Friday, you will be charged for 1 day late; if you hand it in on Monday you will be charged for 4 days late.

**Departmental Learning Objectives**

Content objectives
- Broad knowledge of biology and foundational concepts
- Deeper knowledge, fluency, and creative engagement in a part of biology
- Incorporate other disciplinary approaches to understand biology

Skills objectives
- Critical thinking and rigorous evaluation of research
- Evaluation/comprehension of one’s own learning process
- Ability to use scientific method, empiricism, generation of data
- Employ standard quantitative and statistical organization, analysis, and interpretation
- Communicate science effectively to other audiences

Ethical conduct/Civic engagement
- Consider ethics connected to scientific research and analysis
- Build confidence in life sciences
- Engage with a broader community to integrate science into policy and change
IF YOU NEED MORE INFORMATION

Animal Behavior: Theory and Concepts

Animal Behavior Methods is a methods course. For those who wish to review the major theories and concepts in animal behavior the following 4 volume series is available in the Science Library (QL751 .A5 2010). The 4 volumes follow Tinbergen’s 4 questions (causation, development, function, evolution).


Statistics

As statistics is a prerequisite for this course, I expect that you understand and can use the following:
- mean, SD, SE, median, IQR, min, max
- stem plots (single and back to back); box plots, outliers
- histograms/frequency distribution & how they differ from scatter plots
- t-test (paired and unpaired); linear regression, outliers from linear regression

That being said we will review these concepts in class.