

Introduction to Animal Behavior

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GTFs

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CLASS TIME (180 PLC) 1600-1720 Mon & Wed

DISC/LAB TIMES (111, [Huestis Hall](#))

Section 1 (CRN 30909)..... 0900-0950 Fri

Section 2 (CRN 30910)..... 1000-1050 Fri

Section 3 (CRN 30911)..... 1100-1150 Fri

Section 4 (CRN 30912)..... 1200-1250 Fri

Section 5 (CRN 30913)..... 1300-1350 Fri

Section 6 (CRN 30914)..... 1400-1450 Fri

Section 7 (CRN 30915)..... 1500-1550 Fri

Section 8 (CRN 30916)..... 1600-1650 Fri

OFFICE HOURS (Hours below, and by appointment)

Avinash..... 1230-1330 We &Th (228B HUE)

Christina 1130-1230 Mo (305C HUE)

Lisa..... 1600-1700 Tu (229 LISB)

Luis 14:45-15:45 We (3rd floor lounge, LISB)

Class Description and Goals

The number and diversity of animal species is equaled only by the variety and diversity of their behavior. Animals can be elegant and savvy at one instant, yet ruthless and amazingly stupid the next. How did this diversity of behavior arise, and what drives each animal to behave as it does? Why does each animal seem so exquisitely suited to its environmental niche, and its behavior so matched with its food and attractive to its mate? The answer to all these questions – and the starting hypothesis for this class – is that each animal, at every point in time, behaves in a way that maximizes its chances of reproduction.

We will explore the questions listed above, the influence of genetics and learning, interactions within and between species, mating systems and parental behavior, and finally, how we can apply lessons we learn from animals to our own species. The materials for this class will be popular science articles listed in the syllabus (these and other similar articles are collected in the recommended text, *Exploring Animal Behavior*, 6th edition), the lecture slides and notes, and videos shown in class and other material that will be posted on occasion on the Canvas class site.

COURSE OBJECTIVES

- Explain animal behavior based on the principle of natural selection.
- Understand and apply the principles and methods of scientific inquiry
- Read and understand scientific writing
- Search for and cite peer-reviewed scientific articles
- Understand human behavior in an evolutionary context

Quizzes and the Reading assignments will help keep you up to date with the material. Lecture slides and any associated notes will be available online, but Lectures will include material – both spoken and multi-media – which will not be available online. Performance in this class is correlated with attendance, so you should attend all classes. Attendance and participation is worth 10% of your final grade.

Feedback Response System

In-class feedback, participation, and learning will be facilitated with a classroom response system called [TopHat](#) (required). Subscription cost is \$20 for the term, or \$38 for 5 years. (Regarding cost of the feedback system: Please note that there is no required textbook or course-packet for this class. All the materials are available online, and will be available as links in the Canvas Course site.). Your [uoregon.edu email address](#) has been listed with the BI132 site on TopHat.com, and you will get an email on the 25th of March with instructions on how to register. Graded class participation will start on April 6th.

NOTE: The electronic version of this document is available on blackboard as a PDF file, and many underlined phrases are functional hyperlinks.

Notice to Students with Disabilities

The University of Oregon is working to create inclusive learning environments. If there are aspects of the instruction or design of this course that result in barriers to your participation, please let me know as early as possible, in person or via email. You may also wish to contact [Accessible Education Services](#) in 164 Oregon Hall, by phone at (541) 346-1155 or uoaec@uoregon.edu. We welcome the chance to help you learn, and will work with you to help make it a good learning opportunity and experience.

Grade Breakdown

Final Exam	25%
Midterm Exam.....	20%
Group Project + Presentation	15% (5% report; 10% presentation)
Weekly Reading.....	6%
Labs (best 7 of 8).....	14%
Quizzes (best 5 of 6).....	10%
Class Participation (TopHat).....	10%
All Assignments (on time)	1% (extra credit)

Exams

Exams are worth 45% of your final grade. Exams will be non-cumulative; however, the final will include concepts from throughout the course. Each exam will include material from the Lectures, Discussion, Video clips, and Reading assignment (Weekly Article Report). Exams will largely be multiple-choice, with a few short-answer questions where appropriate. Details will be announced in class prior to each exam. Scantrons will be used, so please bring a #2 pencil to all exams.

Make-up Exam Policy: Because this is such a large course, make-ups are NOT administered except in the case of a severe medical condition or other extreme documentable emergency. It is your responsibility to contact the instructor as soon as possible and to provide documentation. Make-up exams may be a different format or duration from the regular exam,

Quizzes

There will be 6 online quizzes, of which the highest scoring 5 for each student will count towards 10% of the final grade. Each quiz will be administered online via Canvas. The schedule of quizzes is in the main calendar on Canvas, and also in the documents titled 'Full Syllabus' and 'Schedule'. Quizzes will come online at 6:30 PM on Wednesdays, and will be available until 11:59 PM that Friday. You can take the quiz at any time during those ~53 hours, but remember that the 11:59 PM Friday is the submission deadline, not the last start time.

Weekly Reading

Researchers evaluate information from literature and seminars on a daily basis. One cannot overemphasize the importance of analysis based on critical reading and listening skills for a successful scientist. These tools lie at the core of what we do – discover the unknown! As a class, we will discuss articles from primary (experiments) or secondary (reviews) literature on a daily basis. It is crucial to your success in this class that you show up on ready to understand and talk about the assigned articles from Sherman and Alcock (6th edition; available online). To help you prepare for class discussion, you will be assigned a set articles to review prior to class. Please read the assigned paper, underlining (or highlighting if reading the electronic versions) questions, problems, or confusing, then:

- Re-read the paper to try to answer your own questions, and make note of any problems you cannot figure out on your own. I bet your group-mates and classmates will have similar questions.
- Use the template to prepare a critical report with the following elements:
 - 1. Identify the following key aspects to a scientific article (remember, these papers are not primary research articles, but research re-written for American Scientist by the authors themselves):**
 - a. Article Type: Research**
 - i. **Goals:** What is the overall area of their research?
 - ii. **Specific aim:** What was the specific question(s) or hypothesis the authors addressed in this particular paper?

- iii. **Methods:** Summarize what the authors did. What was the result?
 - iv. **Result:** What were their findings?
 - v. **Significance.** How does this result impact the field? What are the future direction of Research that you can think of?
 - vi. **Critique of approach.** Did the authors perform the best experiments for the problem?
 - vii. **Critique of interpretation.** Do you think the authors are properly interpreting their results? Are they misinterpreting or over-interpreting their findings?
- b. **Review Article**
- i. **Goal:** What general topic are they writing about?
 - ii. **Specific Aim:** What specific question (s) or hypothesis are they addressing?
 - iii. **Critique of approach:** How well have they organized the review? Was it very difficult reading? Do they explain the methods and results for each piece of evidence they present? Are they successful in giving you an overall perspective of the field, or that particular question? Do they present conflicting data and any alternate hypotheses? Finally, did they have a comprehensive bibliography that you could use to further research an individual result they cited?
 - iv. **Critique of interpretation:** Do they favor one view over another, when it seems that both views have equally convincing evidence (remember, data rules!)? Do they present enough evidence to support the hypothesis?

2. Clearly identify the following 2 discussion points:

- a. **Questions:** Write 3 questions that came to you after reading the paper. Your questions can be probing, critical, or just plain being at a loss to understand a finding/ analysis/ interpretation.
- b. **Outside source:** Make a connection to an outside article – use this outside source to answer one of the questions you pose in 2(a) above. The article may be from the list of citations, from supplemental reading I give you, or from your own search. This is a chance for you to briefly explore some aspect of the paper that was especially interesting to you, and to take your exploration of the topic in a different direction from most or all your classmates.

You must turn in each journal report at the **beginning of your discussion section** on the due date (See Schedule). Late submissions, or submissions in any other format will not be graded. The PDF version of the Article Report Sheet is available on the Canvas site. Your 6 best scores from 8 reports will count towards 6% of your grade.

Student Groups

You will need to form groups of 4 people each, for lab sections as well as for your research project. Lab groups must be formed at the start of Lab 1 for each section. Lab groups would be best formed by people who are sitting near each other in Discussion/Lab sessions. Once you get to know each other, it may also be a good idea for you to sit near each other in class: that would facilitate discussion and class participation.

Group Project

A major component of the course will be designing, carrying out, and presenting the results of your own Group study. This Group research project will give you the opportunity to choose a species or an aspect of animal behavior that is especially interesting to you. Each research team will pick an animal (found locally) or an aspect of animal behavior of interest, and will design an experiment to test a particular hypothesis regarding that behavior.

You are free to choose your own topic but it must be something that you can test in the available 6-week period with the resources that we have available. Each research team must meet with one their GTF or Instructor at the beginning of the project for advice with project ideas and experimental design. After data collection has started, you should meet the GTF or instructor again to discuss appropriate ways to analyze and present data.

Towards the end of the term, each group will hand in a written report (one per Group), and make a 15 minute presentation. You will also rate each member of your team on a scale of 1 (didn't contribute significantly) to 10 (did their share of the work), to ensure that all members carry their weight.

Each student should start journaling about ideas immediately, and start doing reconnaissance for field sites and animals that are easy to find in the area. Over the 6 weeks between selecting the project title, and completing the project, you should occasionally discuss how your project is going with the Instructor or one of the GTFs. Since you will spend time with your group-mates in the lab and during your research project, it might be advisable for you to site together in class – which will facilitate your interaction and help make class discussion more interesting and fruitful.

Steps towards completing your project:

1. Each team member should write a list of possible project ideas
2. Discuss among team members and choose a topic (discuss with your GTF or Instructor before spending too much time on it)
3. Submit the topic Title (deadline: Mon, Apr 20th before 2359 h)
4. Submit a brief written report (Deadline: May 27th before 2359 h)
5. Present results in class for Instructor and Peer evaluation (5/29 or 6/5)

Note: Ethical and scientific rules must be followed. Project methods MUST be approved by one of the Instructors before you start gathering data.

GROUP PROJECT TOPIC:

1. Submit as Text via Canvas
2. One sentence in length
3. Submission closes at **2359 h, Monday Apr 20th**

GROUP PROJECT REPORT:

- 1) A **Title** for your project
- 2) An **Introduction** section providing:
 - a) Introductory material on your topic (you will need to research the literature and present background theory from the scientific literature).
 - b) Your hypotheses and predictions. What hypotheses do you plan to test?
Depending on your question, you may have one hypothesis that you will test

or you may have several hypotheses.

- 3) A **Methods** section outlining the methods you will use. This should be detailed and written as it would be in a scientific lab report. You should also include a paragraph or two carefully explaining: what data you will collect and how you will statistically analyze the data.
- 4) A **Results** section with your data presented in at least two ways (text and a chart or graph), plus use of one statistic to test the significance of your findings.
- 5) **Conclusions**: what did you discover about the animal's patterns of behavior or the occurrence
- 6) **List of Citations**: A literature cited section
- 7) Submission closes at **23:59:00 on Thu, May 27th**

GROUP PROJECT PRESENTATION

Each group will present the results of their research project during the last two Discussion sessions (on 5/29 and 6/5). Presentations should 10 minutes or less, with about 5 minutes for discussion. Presentations will be evaluated by peers (3 points) as well as the instructors (4 points) and a significant part of the credit is awarded for evaluating project presentations of other groups (3 points). Presentations should be well designed, with an Introduction, Method and Results sections, and a brief Conclusion. Plan on making 3 or 4 slides, or a short video clip or two.

Discussion/Laboratory Sections

Discussion sections – some of which allow for hands-on experience in observing and analyzing animal behavior – will introduce you to methods scientists use in and out of the laboratory. These sessions will supplement classroom learning, and are an integral part of the curriculum for this course. You will be graded for participation and attendance in the Discussion sections. The best 7 scores from the 8 labs/discussion sessions will count towards 14% of your grade. During the final 2 discussion sections, you will present your group's project report (described above). The list of lab/discussion sections is provided for convenience. Due to the size of the class – each section is at maximum capacity for the room assigned to us – it is not possible to switch sections with another student, or to make up for missed labs.

Suggested sources for finding topics and information for your projects

Books: You may need to refer to books for some background information so that you will be able to understand the terminology in the journal articles.

- Alcock, Animal Behavior
- Goodenough, McGuire, Jakob. Perspectives on Animal Behavior
- Web-resource: [Evolution 101 \(evolution.berkeley.edu/evolibrary/article/evo_01\)](http://evolution.berkeley.edu/evolibrary/article/evo_01)
- E-book: [Animal Behavior: A Wikibook](#)

UO Library: Search the library catalog for other animal behavior and behavioral ecology books. Also search for books providing background information on the system/species you are covering (for example if you are doing a fish foraging topic you may need to refer to a fish biology book to get background information on fish so that you can understand the terminology in the literature).

Journals: A large collection of Journals are available at the University of Oregon [Libraries](#), both in print and online. Please remember that Online versions of journals can only be accessed while on campus, or by connecting to the [UO network using VPN](#).

Databases for a literature search: [PubMed](#); [Psychology and Behavioral Sciences Collection](#); [BioOne](#). Another accessible source is Google Scholar (scholar.google.com).

Lecture Schedule:

Lecture schedule is subject to change, depending on the pace of teaching, quiz + exam performance, and student feedback.

Week	Date	Venue	Post-class
1	Mon, Mar 30	Lecture 1	Course Overview; Syllabus; What is Animal Behavior
	Wed, Apr 1	Lecture 2	History and Science of Animal Behavior
	Fri, Apr 3		<i>Lab I</i> Article 1 Due
2	Mon, Apr 6	Lecture 3	Fixed Action Patterns; Tinbergen's 4 Questions
	Wed, Apr 8	Lecture 4	Genetics, Evolution & Behavior
	Fri, Apr 10		<i>Lab II</i> Article 2 Due Quiz 1 due
3	Mon, Apr 13	Lecture 5	Ein Umwelt?
	Wed, Apr 15	Lecture 6	We run on Electricity?
	Fri, Apr 17		<i>Lab III</i> Article 3 Due Quiz 2 due
4	Mon, Apr 20	Lecture 7	Control of behavior: Brain & Hormones
	Wed, Apr 22	Lecture 8	The Hunter and the Hunted
	Fri, Apr 24		<i>Lab IV</i> Article 4 Due Quiz 3 due
5	Mon, Apr 27	Lecture 9	Living in Groups
	Wed, Apr 29	1600; 180 PLC	MIDTERM EXAM
	Fri, May 1		<i>Lab V</i>
6	Wed, May 4	Lecture 10	Foraging & Migration
	Wed, May 6	Lecture 11	Interactions and Fitness
	Fri, May 8		<i>Lab VI</i> Article 5 Due Quiz 4 due
7	Mon, May 11	Lecture 12	Evolution of Eusociality
	Wed, May 13	Lecture 13	Cooperation & Altruism
	Fri, May 15		<i>Lab VII</i> Article 6 Due Quiz 5 due
8	Mon, May 18	Lecture 14	Parental Behavior & Evolution of Infanticide
	Wed, May 20	Lecture 15	Sex Determination & Sexual Behavior
	Fri, May 22		<i>Lab VIII</i> Article 7 Due Quiz 6 due
9	Mon, May 25		MEMORIAL DAY – NO CLASS
	Wed, May 27	Lecture 16	Mating Strategies
	Fri, May 29		<i>Project Presentations I</i> Article 8 Due Proj. Report Due
10	Mon, Jun 1	Lecture 17	Mating Strategies – Monogamy
	Wed, Jun 3	Lecture 18	Human Behavior
	Fri, Jun 5		<i>Project Presentations II</i>
	Thu, Jun 11	1445; 180 PLC	FINAL

NOTE: There will be a review session prior to each exam. Time and location will be announced in class.

Lab Schedule

(Schedule subject to change)

Day	Date	#	Content	Graded*
FRI	4/3	I	Hypotheses, Data, & Science; Designing Projects	Y
FRI	4/10	II	Hermit Crab Lab - Ethograms	Y
FRI	4/17	III	Transects	Y
FRI	4/24	V	Analyze Transect Data	Y
FRI	5/1	V	Fruit-fly lab	Y
FRI	5/8	VI	Analyzing Fruit-fly Lab data	Y
FRI	5/15	VII	Ethograms at the Millrace Pond	Y
FRI	5/22	VIII	Human Mate-Selection Lab	Y
FRI	5/29	IX	Project-presentations – Session 1	
FRI	6/5	X	Project-presentations – Session 1	

* Graded as part of the Lab/Discussion score. Last two are part of the Group Project

Academic Deadlines (*more detailed list [here](#)*)

March 29:	Process a complete drop (100% refund, no W recorded)
April 5:	Drop this course (100% refund, no W recorded)
April 5:	Process a complete drop (90% refund, no W recorded)
April 6:	Drop this course (75% refund, no W recorded; W's after this date)
April 6:	Process a complete drop (75% refund, no W; W's after this date)
April 8:	Add this course
April 8:	Last day to change to or from audit
April 12:	Withdraw from this course (75% refund, W recorded)
April 19:	Withdraw from this course (50% refund, W recorded)
April 26:	Withdraw from this course (25% refund, W recorded)
April 29:	MIDTERM
May 17:	Withdraw from this course (0% refund, W recorded)
May 17:	Change grading option for this course
June 11:	FINAL

Reading List

	Due*	Author	Title (<i>links only work from uoregon.edu domain**</i>)	Page†
1	4/10	Hagen, J	Tinbergen & Stickleback Mating Behavior	--
2	4/17	Skinner, BF	The Experimental Analysis of Behavior	--
3	4/24	Holekamp, K	Why Male Ground Squirrels Disperse	38
4	5/1	May, M	Aerial Defense Tactics of Flying Insects	295
5	5/8	Honeycutt, R	Naked Mole-Rats	107
6	5/15	Borgia, G	Why do Bower-Birds Build Bowers?	233
7	5/22	Warner, R	Mating Behavior and Hermaphroditism in Coral Reef Fishes	148
8	5/29	Getz, L	Prairie-Vole Partnerships	176

*Please bring Completed report to class on Monday (except for #7: due to Memorial Day, there is no class on Monday, so please hand this in at the start of your Discussion session)

**Articles can only be accessed while on campus, or [connected to uoregon.edu via VPN](#)

† Refers to page number in 'Exploring Animal Behavior, 6th edition'.

Further Reading

- Exploring Animal Behavior, 6th ed (Sherman & Alcock)
- [Evolution 101 \(evolution.berkeley.edu/evolibrary/article/evo_01\)](#)
- [Animal Behavior: A Wikibook](#)