



Image: Snippets from Animal Behavior Course ('21 & '22)

ANIMAL BEHAVIOR: FUNDAMENTALS AND APPLICATIONS

Why do animals behave the way they do? Why do lions have manes while leopards don't? Why do elephants and bees live in groups but many other species do not? Why does your friendly neighborhood squirrel get so busy late in the fall and again in the spring? Why do certain wolves 'fish' but others never learn the technique? In this course we will explore the fundamentals of animal behavior and use that foundation to understand how we can better manage and conserve animal biodiversity. Labs will include hands-on experience with tools that will allow us to quantify behavior, develop ethograms, and understand species' repertoires. Three hours of lecture/discussion and three hours of laboratory each week.

COURSE LOGISTICS

Instructor: Prof. Stotra Chakrabarti; schakrab@macalester.edu

How to address me: I go by Stotra (*STOW-T-RA*), Prof. Chakrabarti (*CHAAK-RA-BARTI*), or Dr. Chakrabarti. My pronouns are he/him/his.

Want to know about my lab and research? [Check Out the CAB Lab here](#)

Follow me on Twitter for Sci-com: [@StotraChakraba2](#)

Lecture: MWF 10:50 am-11:50 am; OLRI 250

Sports: I try to regularly play ping-pong at the LC and/or soccer. If you are interested in either, join the team 😊

Lab: T 1:20-4:30 pm [some outdoor labs can start earlier or go on for a tad longer – trust me they will be fun because the extra-time is to commute to places where we are going to *rendezvous with wolves and other wild animals*]

Want to Meet? Please sign-up for 20-minute meeting slots [here](#), if you need. **I also have an open-door and/or zoom-friendly policy, even if the door is closed! So, please find me around if you need help. I am always around to listen to you. I would be really keen to meet all of you one-on-one in the first 2 weeks to know more about you and your expectations from the course. Please reach out to schedule a meeting with me in the first couple of weeks.**

Email Policy: I generally respond to emails promptly on weekdays; emails received after 5PM can take longer to respond. I often cannot answer emails over the weekend, so please plan accordingly.

Lab TA: Nalani Tokuhama, ntokuhama@macalester.edu

How to address: I go by Nalani! My pronouns are she/her.

Office Hours: Available by appointment and will have regular office hours Tuesday/Thursday 12:00-1:00 pm over Zoom. Sports: I'm on the volleyball team, so keep an eye out for volleyball games on the 'macalesterscots' Instagram or just ask me about our next game!

Class TA: Lorena Escobosa, lescobos@macalester.edu

How to address: I go by Lorena and my pronouns are she/her.

Office Hours: I will be available during class time and by appointment and I will have regular office hours on Tuesdays/Thursdays from 11:30-12:30 at Smail Gallery or around.

Course Presence: The course primarily relies on experience and exposure (seminar style lectures, paper discussions, hands-on field and analytical labs, interactions with peers and guest speakers), and it will greatly benefit you to 'participate and learn'. **You will earn most of the points if you just show up for class!** I will expect students to attend lectures regularly on time, unless there is an emergency (*which is absolutely fine*). You can take *3 leave of absences without questions* for the whole course, but an intimation would be appreciated, otherwise I will be worried about your well-being. Dida was a famous big-tusked elephant from Tsavo. Also, if you cannot attend class, please let me know and I will try and record the lecture/discussion. Please inform me beforehand if you need more time off. **I am committed to be extra-sensitive towards the flexibility that is required in the special times that we live in currently, so please let me know what I can do to make this course more accessible to you. Please see the Covid Consideration Section at the end of the document for more details.** If you are feeling perpetually low, remember we are going through a severe collective trauma for >2 years. It will have a significant, long-term effect on mental health. If you are getting out of bed and managing to do some things, then you are doing great!

Out of class work expectations: Readings and paper responses should take ~1-2 hours. Longer assignments and group work, will require some more time to be scheduled. If you are having trouble working in a group setting due to personal/professional/scheduling conflicts, please let me know. **I want you to learn in this course but not rush to achieve any goal. Take your time. Also, please do not be afraid to make mistakes, we only learn when we make mistakes. Remember "why do we fall? So that we can learn to pick ourselves up!" We are going to make mistakes and learn together in this course.**

Deadlines: All deadlines are flexible and come with an automatic grace period of 48 hours. However, based on feedback from earlier courses where there were no deadlines, I am bringing in something new this time. There are deadlines this time, to add a little bit of structure and not overwhelm you to remain motivated to submitted. But if you need extra-time, you can choose from a total of **6 flexibility tokens** throughout the course. Each token will grant you an additional 48h of time. The tokens are exclusive of the automatic grace period. **If you wish to avail a token, please reach out to me/Nalani/Lorena in advance of an assignment deadline***. **Grace time/tokens are not applicable for Mini-Quizzes.**

If you gauge that you won't be able to turn in an assignment even after the grace period and/or token time, don't worry, please contact me ASAP so that I can work with you to schedule a deadline that works for you. Otherwise, the assignment portal will automatically expire

Texts: No general textbooks for this course, but book chapters and readings will be made available through Moodle.

Developing your voice in science: Science requires a balance of courage, humility and kindness – this is as true for undergraduates as it is for researchers at leading institutions. You need courage and confidence to pursue and develop new ideas and approaches, confidence to critique others' ideas, and to follow your curiosity. But science also requires humility and empathy – identifying limitations, asking for advice, permissions, help and guidance, accepting appropriate criticism from others, and reflecting on improvements. **ASK QUESTIONS, CRITIQUE PEERS, BUT PLEASE DO SO WITH KINDNESS.** As you develop your thoughts and opinions in this class, be mindful that we are also collectively creating a community of learning.

LEARNING GOALS

This upper-level biology course will introduce you to the fine nuances of animal behavior. *While, there will be no ‘wand-waving’ or ‘incantations’ in my course, we can definitely believe in some MAGIC – the magic of how to understand wild animals and their environments.* This course will examine the ecology and evolution of animal behavior, and what it takes to become a thoughtful and inclusive ‘ethologist’. **The course is designed to expose you to the fundamentals of animal behavior through seminar styled lectures, discussions, reviewing current scientific literature, hands-on exposure to different techniques, and interactions with researchers from around the world who are experts in their fields.** By the end of this course, you should be able to:

- Appreciate and wonder at the natural world.
- Understand what animals have to tell us!
- Interpret, critique, and evaluate scientific articles on animal behavior.
- Ask and formulate behavioral questions.
- Gain familiarity with the scientific study of animal behavior.
- Learn techniques used to study animal behavior for different species.
- Demonstrate the ability to synthesize and communicate concepts and case studies through scientific as well as popular formats

ASSESSMENTS (for deadlines and flexibility tokens please refer to page 2, timing of assignment submissions are in the weekly schedule as well as the one-page syllabus, and on moodle)

DEADLINES CAN BE MADE FLEXIBLE --- I WANT YOU TO LEARN AND NOT RUSH!

Mini Quiz: MQs will be held as given in the class schedule. It will comprise of 5 ‘applied’ question quizzes based on class lectures and information. Open-book but **no google allowed** collaborative format. You are encouraged and recommended to take the quiz from class, class time will be set aside for taking the quiz. After completing the quiz (30 min), we will discuss them as a group.

Paper Responses: Each response entails the summarization and your insights from a scientific literature assigned in class. Paper responses will be due on the day indicated in the course schedule. The reading material as well the rubric will be made available ahead of time on Moodle so that you have ENOUGH time to prepare. Please check Course schedule/Moodle for updates and timings.

Twitter summary: This will comprise of a gist of the reading material/scientific paper (assigned in class) in the form of 5-6 tweets. Students are allowed/expected to be creative in the use of images, memes, gifs etc. **There will be one twitter summary throughout the course.** Please check Course schedule/Moodle for timings.

Lab Reports: Lab reports should comprise of a brief synthesis of the lab activities. Specific instructions will be given in each lab handout (check Moodle). **The report for a lab is usually due by 10 am on the next lab day (at least a week from the current lab).** Most of the work will be done in the lab - you will get at least week to edit, organize, beautify and submit! **Labs are required, many of the labs are outdoors and cannot be replicated, unfortunately 😞**

Sci-com group project: Students in groups will review a paper or concept together, and represent the key aspects through any creative popular format – a *sketch, poem, skit, a bunch of memes* etc. Examples of previous projects will be made available for reference.

Midterm: Midterm will comprise of an aptitude based applied question based on the syllabus covered so far. **Open book, take-home assignment; students are expected to consult with other peers to work on this assignment.** The question will be uploaded on Oct 13th and you will have until the start of Fall Break to submit.

Inspire talks: Students (in groups) will make a short 15/20-minute presentation on a topic of choice. This will be followed by reflections where we will have an active discussion on each presentation. So, make sure to write down

questions and comments for your peers when they are presenting and don't be shy to bring them up during the discussion. More details on Moodle.

Experiential Exam: Finals will comprise of an outdoor observation based 'practical/experiential' test. Nervous? Don't be! You will be observing wolves in a semi-wild condition 😊 Please check for dates on the schedule, and on Moodle.

Seminar Reflection: We have a line-up of 3 amazing guest speakers, **actual living scientists**, who will be speaking to you about their fascinating animal behavior research, and also give you a peek into their professional journey. You are expected to write separate reflections (major take-home messages, what you enjoyed the most, the most stimulating concepts/questions in ~200 words) for **2 seminars**. **This assignment is due at the end of the course; however, I strongly recommend you to choose the seminars you want to write about and submit your reflections soon after the seminar(s).**

GRADING (no overlapping due dates for any assignments)

| Assessment | Due | Points |
|---------------------------------|--------------------------|-------------|
| MQs | As given in the schedule | 10 pts each |
| Lab Reports | As given in the schedule | 20 pts each |
| Paper Responses | As given in the schedule | 20 pts each |
| Twitter summary+Sci-com Project | As given in the schedule | 10 pts each |
| Midterm | Before Fall Break | 50 |
| Inspire Talk | As given in the schedule | 50 |
| Experiential Test | Practical (November 15) | 30 |
| Seminar Reflections | Last Day of Class | 20 each |

| Grade | % |
|-------|---------|
| A | 94-100 |
| A- | 90-93.9 |
| B+ | 87-89.9 |
| B | 83-86.9 |
| B- | 80-82.9 |
| C+ | 77-79.9 |
| C | 73-76.9 |
| C- | 70-72.9 |
| D+ | 67-69.9 |
| D | 63-66.9 |

Extra Points/Credits

You will receive 2 extra points for every assessment that you turn in before or by the due date. There are in total of 7 lab reports, 4 paper responses and 1 twitter summary, which cumulatively adds up to 24 extra points if you submit all assessments on or before time

LEARNING ENVIRONMENT AND INCLUSIVITY

My goal is to promote an inclusive learning environment where diverse perspectives are recognized, respected, and seen as a source of strength. Part of that effort includes a recognition that all humans have implicit biases, and it is our responsibility to do our best to identify them in ourselves and take actions to mediate them. If something in or about this class makes you feel unwelcome, please see me, your advisor, a professor you trust, or a college administrator.

Names and pronouns: You should be addressed in the manner that you prefer. If you want to make sure I address you with a particular name and/or pronoun, please let me know.

Title IX: Macalester College is committed to providing a safe learning environment for all students that is free of discrimination, sexual harassment, sexual assault, domestic violence, dating violence, and stalking. Further details are explained in the college's Title IX regulations (<https://www.macalester.edu/titleix>). If you, or someone you know, experiences a Title IX violation, know that Macalester has staff trained to support you. Macalester faculty members are "responsible employees," which means that if you tell me about a Title IX violation, I must share that information with the Title IX Coordinator. Still, you will control how your case is handled, including whether you wish to pursue a formal complaint. Our goal is to make sure you are aware of the range of options available to you and have access to the resources you need (Title IX Office, 651- 696-6258) including, if you wish, confidential sources on campus who are not subject to the mandatory reporting requirement (see list of "Confidential On-Campus Support" at <https://www.macalester.edu/health-and-wellness/sexual-violence-prevention-education/>).

Accessibility: I want all students to have fair and equitable access to the learning opportunities in this course. If there are aspects of the instruction or design of this course that result in barriers to your inclusion or to accurate assessment of achievement, please notify me as soon as possible. Students are also welcome to contact the disability service office to discuss a range of options to removing barriers in the course, including accommodations (contact Disability Services, 651-696-6275 or disabilityservices@macalester.edu).

Once you have a letter of accommodations, please see me so that we can implement an action plan. Furthermore, I know that at times personal issues, stress, health problems or life circumstances may impact your ability to perform academically. Please contact the Office of Student Affairs at 651-696-6220 (studentaffairs@macalester.edu) for support and ask them to get in touch with your instructors.

Other helpful information to support your experience in the class:

- To address concerns on content or experience in the class, either find me before/after class; email me to set up a time to meet in person, and/or attend TA office hours
- If you need additional writing support, please check out *MAX Center* for writing tutors or *Works in Progress* peer review program (Kagin Commons, first floor)
- You are not able to attend class due to an unexpected event (sickness, family or personal issues) - Contact me as soon as possible to set up a time to talk about options.

Kaa was an Indian rock python

- You are not able to attend class due to religious observance - Please let me know you will be observing ahead of time, so that you can obtain course materials ahead of the absence.
- If you need an extension on the submission deadlines - Please let me know ahead of the deadline either through email or before/after class.
- **Do you need time for yourself? Studentship can be overwhelming, and I want you to take care of yourself. Your wellbeing is of paramount importance and I do not want you to compromise on that, EVER! If you are finding it difficult to follow the scheduling or pace of this course, please let me know. Also please check these [resources](#) out.**

All readings, assignment descriptions, and other information about the course will be on Moodle. Moodle will be updated frequently, so please check regularly.

THIS IS A COURSE TO 'EDUCATE' YOU ABOUT ANIMAL BEHAVIOR AND NOT LOSE OUR WAY IN COMPLEX THEORIES OR JARGONS, SO PLEASE HAVE FUN WHILE YOU WORK THROUGH THE COURSE! ALSO, A SYLLABUS IS NOT A CONTRACT --- WE WILL REMAIN FLEXIBLE MUTUALLY



WEEKLY COURSE SCHEDULE [Tentative, please check moodle for updates & changes]

| WEEK | DAYS | TOPIC | | |
|------|--------------|--|--|--|
| 1 | Sep 4-8 | Monday | Wednesday | Friday |
| | | Labor Day | Peek into Stotra's Research & CAB Lab | Intro to Animal Behavior, Tinbergen's 4 questions |
| | | T: Personal Intro, who's who (if weather's nice we will do this outdoors) | | |
| 2 | Sep 11-15 | Measuring & Describing behavior, Ethics of animal behavior research | Scan/Focal, States-Events | Mini Quiz 1 & Discussion *Paper 1 Uploaded on moodle* |
| | | T: Squirrel watching and wondering (outdoor activity) (no lab report) | | |
| 3 | Sep 18-22 | Living in Groups | Living in Groups | Living in Groups |
| | | T: Lab on meerkat activity (Lab report due Sep 26 at 10 am) | | |
| 4 | Sep 25-29 | Altruism and Cooperation | Paper 1 Discussion | Mini Quiz 2 & Discussion *Paper 2 Uploaded on moodle* |
| | | T: Ordway Lab to Set up Camera Traps (no lab report) | | |
| 5 | Oct 2-6 | Intro to Foraging theory | Foraging theory Case study on foraging in tropical carnivores | Guest Lecture: Eliza King |
| | | T: Lab at Wild. Sc. Centre: observation and data-recording on wolves (Lab report due Oct 10 at 10 am) | | |
| 6 | Oct 9-13 | Paper 2 discussion | Evolutionary Arms Race | Evolutionary Arms Race/Resource Competition |
| | | Intro to predator-prey *Paper 3 Uploaded* (twitter summary paper) | | MID TERM Q UPLOADED |
| | | T: Lab on cooperation & altruism (Lab report due Oct 17, 10 am) | | |
| 7 | Oct 16-20 | Resource Competition | Paper 3 discussion Recap | Guest Lecture: Dr. D.D. Moor |
| | | T: Hot Dog Lab (Lab report due Oct 24, 10 am) | | |
| 8 | Oct 23-27 | Mid Term Discussion | FALL BREAK - YAAY | |
| | | T: NO LAB; Mid Term submission Due (Oct 26, 12 pm) | | |
| 9 | Oct 30-Nov 3 | Catch up *Paper 4 uploaded* | Pumpkin Carving & Anim Behav Costume Party | Mating Systems |
| | | T: Retrieval of Camera Traps (No Lab Report) | | |
| 10 | Nov 6-10 | Sexual Selection & Conflict | Sexual Selection & Conflict | Sexual Selection & DEI |
| | | T: Resource Competition Between Big Cats (Lab Report Due Nov 14, 10 am) | | |
| 11 | Nov 13-17 | Paper 4 discussion | Mini Quiz 3 | Guest Lecture: Dr. Jessica Cusick |
| | | Personalities and cultures in Animals | | |
| | | T: Practical/Experiential Exam (outdoor activity involving observations on wolves, report due Nov 21, 10 am) | | |
| 12 | Nov 20-24 | Brain Break | THANKSGIVING BREAK | THANKSGIVING BREAK |
| | | T: TBD | | |
| 13 | Nov 27-Dec 1 | Behavior & Conservation | Safe Fieldwork Strategies | Making Animal Behavior More Inclusive |
| | | T: Lab on behavior exploration from camera trap data (Lab Report Due Dec 5, 10 am) | | |
| 14 | Dec 4-8 | Animal behavior Concepts Recap | Inspire Talks | TBD |
| | | T: Inspire Talks | | |
| 15 | Dec 11-13 | End of Class celebrations | | |

Course Dinner: September 23th (5:30-7:30 pm)

Recommended Study Materials

While there is no textbook for this course and all reading materials (book chapters and articles) will be made available on Moodle, I recommend the following books for further reading, which I would also be referring to throughout the course:

1. *An Introduction to Behavioural Ecology*, 2nd Edition, JR Krebs & NB Davies, Blackwell Scientific Publications 1987
2. *An Introduction to Behavioural Ecology*, 4th Edition, NB Davies, JR Krebs & SA West, Blackwell Scientific Publications 2012
3. *Measuring Behaviour: An Introductory Guide*, 3rd Edition, P Martin & P Bateson, Cambridge University Press 2007
4. *Behavioral Ecology & Conservation Biology*, ed T Caro, Oxford University Press 1998

Land Acknowledgement

Our college resides on the ancestral homeland of the Dakota people (particularly the Sisseton and Wahpeton bands) who were forcibly exiled from the land in response to aggressive and persistent settler colonialist oppression. We make this acknowledgement to honor the Dakota people, ancestors and descendants; as well as the land itself.

Covid, Absence & Masking Policy

Masks: **To make class space more accessible I will encourage masking, when indoors, at least for the 1st week.** I will keep masks available in the classroom/lab space, if you need. If you have any special requirement/accommodation regarding the current masking policy at Mac, kindly reach out to me.

For your well-being and for the community: We are living in unprecedented times, and it is our collective responsibility to ease the stress that we are all facing. There are multiple avenues through which you can get help. Please check this [Campus Resource](#) for information regarding immediate issues.

Please stay back if you are not feeling well, nothing is more important than your health and wellbeing, and the wellbeing of the community.

Help re. absence: I will work with you so that you can get all the resources and help you need to make-up for lost lectures/lab. **I generally record all lectures when any student is absent. However, if you cannot attend, it would be really helpful if you could drop me a line before class so that I can get the equipment ready to record the session.** [Help will always be given in my class to those who ask for it and otherwise.](#)

If you are not feeling well, **please stay back.** No class is more important than your well-being --- it is far more meaningful and prudent to rest, heal and get back when you are physically and mentally ready. As mentioned earlier, Nalani, Lorena, and I will work with you so that you can get all the resources you need to make up.

If you are feeling perpetually low, remember we are going through a severe collective trauma for >3 years. It will have a significant, long-term effect on mental health. If you are getting out of bed and managing to do some things, then you are doing great! Your wellbeing is of paramount importance and I do not want you to compromise on that, **EVER!** Also, please check these [resources](#) out.

Buddy-up: While we will always be around to help and work with you, I would strongly suggest that you have a class buddy (/buddies) who you can rely on to share notes and discuss class lectures and labs. This would be of real help IF owing to unforeseen circumstances you have to miss classes/labs – y'all can fill each other in. IT REALLY HELPS! **Learning is all about community and collaborations – it never occurs in containment** 😊

Please be kind and sensitive about asking others regarding their comfort levels in shaking hands/hugs