

Psychology 4R03-Special Topics in Animal Behaviour

Time: Thursdays 9:30-12:20
Sept 7 - November 30, 2017

Location: Psych 204

Instructor: Dr. Sigal Balshine Ext - 23024

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Web page: Psych 4R03 on Avenue to Learn

Course description and objectives: In this advanced 4th year seminar course we will explore the topics of conflict and cooperation. This is a discussion-based course drawing on foundations presented in Psych 2TT3, 3S03, 3T03, and 3F03. The course assumes a working knowledge of animal behavior, evolution and the process of adaptation. Some of you will have additional background from advanced courses in other areas. In this course we will consider how pre-and post copulatory competition work and why cooperation exists in a competitive world. We will be thinking about the evolutionary explanations for how individuals manage to get along with strangers and relatives. The topics that will be covered include sexual selection, alternative reproductive tactics, sperm competition, and cooperation. We will explore these topics by using the relevant theories and empirical research and integrating approaches from evolutionary biology, psychology, anthropology, and economics.

General Goals: We will examine the major topics in competition and cooperation research with an emphasis on the interplay among theory, and mechanism and explore the ways in which theory and hypotheses are tested. You will be provided with ample opportunities to read primary sources, contribute to class discussion, work in small groups, make presentations, and improve critical thinking and verbal communication skills. The **seminar format** demands a free, interactive exchange and evaluation of ideas -- your ideas, those of your colleagues, and those you find in readings. I expect all of you will improve on the following (1) trying out your ideas in public, (2) arguing from varied perspectives and (3) critiquing the ideas of your peers and instructors. By the end of the course you ought to have gained a better appreciation for how research is conducted and designed.

One goal of the course is to develop scientific literacy skills and a familiarization with the field of animal behaviour. We will develop the research design skills and interpretation skills. Students will be expected to evaluate the literature especially theory, models, and hypotheses and tests of them. A **second goal** is to expand your ability to develop your own ideas and ways to test them. A **third goal** is to improve your ability to present, defend and revise your ideas and those of others. **Please read this handout periodically to remind yourself of these goals.**

| | <u>Date</u> | <u>Module Title</u> |
|--|--|--------------------------------------|
| Module 1. | September 7 | How do we know what we know? |
| <u>Mini Lecture 1:</u> Papers 1 & 2 In Class Exercise: | Tinbergen's Four questions: Proximate/Ultimate Explanations Tinbergen (1963) / Bateson & Leland 2013 The Elevator Pitch | |
| <u>Mini Lecture 2.</u> Papers 3 & 4 In Class Exercise: | Scientific Disagreements Gould & Lewontin 1979 / Queller 1995 Examining the Evidence and Avoiding Bias –3MT presentations | |
| Module 2. | September 14 | Paternity & Parental Care |
| <u>Mini Lecture 3.</u> Paper 5 In Class Exercise: | Male parental care Neff 2003 How to make a concept map? Individual & Group mapping Cartooning Methods | |
| <u>Mini Lecture 4.</u> In Class Exercise: | Observing, Describing and Measuring Behaviour Goose Focal Follows | |
| Module 3. | September 21 | Competition |
| <u>Mini-Lecture 5.</u> Paper 6 Guest Lecture: In Class Exercise: | Competitive Interactions Simmons 1986 Carling Baxter Concept Mapping, Cartooning, Annotating and Discussion | |
| Module 4. | September 28 | Evolution of ARTs |
| <u>Mini-Lecture 6.</u> Paper 7 In Class Exercise: Guest Lecture: | What are ARTs? And how are they maintained? Moczek & Emlen 2000 Testing the Alternatives And Future Research Directions Aneesh Bose | |
| Module 5. | October 5 | Sperm Competition |
| <u>Mini-Lecture 7.</u> Paper 8 In Class Exercise: Guest Lecturers: Take-home Mid-term Exam | Sperm Competition: fair vs loaded raffles Malo et al 2005 Skills for Grad School and Graduate Student Speed Networking David Filice, Jessica Miller | |
| Reading week | October 12 | No class |

Grades:

Your final grade will be based on a take-home exam (20%), an in-class group presentation of a lecture (40%), lecture exercises and assessment materials (20%), four homework assignments (worth 10%) and in-class discussion/participation (worth 10%).

Each student will be assigned to one of five general animal behaviour topics and be asked to develop a lecture, class exercises, and lecture/assessment materials on that topic. You will have lots of scope to personalize your lecture within the broad topic. You will be asked to work together in groups with two or three other people who have been assigned the same topic. Together you will create a lecture presentation on this topic and jointly present it to the class.

Breakdown of marks

Take-home exam (individual project) = 20%

Oral Lecture Presentation (group project) = 40%

Written Lecture Material = 20%

Homework assignments 5% each (we will use best 2 marks) = 10%

Participation and Contributions to class discussion = 10%

Total = 100%

Note. Extensions will not be offered. Late assignments will not be accepted.

It is your responsibility to ensure that you have met all prerequisites listed in the McMaster calendar for this course. If you lack any prerequisites for this course, the Department may cancel your registration at any time.

Course Organization: The organization of the course is as follows. The classes will consist of a mini lecture (20 minutes) given by the course instructor, guest lecturers, in class exercises and discussion of the assigned papers. A critique or homework assignment (~1 paragraph and no more than 1 page) of based on each assigned paper will be submitted to the course dropbox prior to class each week. After reading week students will be divided into groups of three or four according to research topics. Each group will develop a lecture on that topic. Then groups will come together and jointly organize the lecture and create a 20-30 minute formal powerpoint lecture, plus assessment materials and in class exercises that reinforce the concepts or theories that will be presented in the lecture. Everyone in the class will evaluate each other's lectures.

The lectures presentations should communicate the main concepts associated with the research topic but also need to engage the viewers' attention without compromising the viewers' understanding. All group members must participate equally in the lecture. Lectures will be assessed by other students in the class and by the instructor/TAs as well.

Papers: A number of papers will be discussed in class. You should come to class each week prepared to discuss the assigned papers. You could be called upon to explain to the class the point of the paper, a graph, methods of investigation, etc. A 1 paragraph to 1 page critique or homework assignment of each paper will be submitted to course dropbox by each student for each of these papers. These will be marked, but only the best two will count for credit. All assignments must be submitted to ensure full

participation marks. You might choose to summarize the papers, discuss the weaknesses and strengths or be asked to make a concept map of the paper or cartoon the methods. Each homework assignment will be given the week before.

Group lectures: After reading week, you will be broken into groups of 3-4 students and given a topic to build a lecture around. Groups will be given time in class to prepare a lecture. Each member of group is expected to participate in the lecture. Each group will receive 50 minutes to teach about their topic. The lecture and associated materials will be evaluated by the other class members, TAs and the instructor. Each member of a class not involved in the lecture will be expected to write a review and provide feedback, constructive criticism, suggestions for improvement etc. The groups will receive their feedback from other students, from the TAs and from the instructor. Two classes have been put aside to make these lectures.

Assignments and Evaluation: Final grades will be based on marks from homework assignment, take-home exam, group lecture materials and presentations as well as class discussion and participation. There will be no final exam in this course.

Readings

1. Tinbergen, N. (1963). On aims and methods of ethology. *Ethology*, 20(4), 410-433.
2. Bateson, P., & Laland, K. N. (2013). Tinbergen's four questions: an appreciation and an update. *Trends in ecology & evolution*, 28(12), 712-718
3. Gould, S. J., & Lewontin, R. C. (1979). The spandrels of San Marco and the Panglossian paradigm: a critique of the adaptationist programme. *Proceedings of the Royal Society of London B: Biological Sciences*, 205(1161), 581-598.
4. Queller, D. C. (1995). The spaniels of St. Marx and the Panglossian paradox: a critique of a rhetorical programme. *The Quarterly review of biology*, 70(4), 485-489.
5. Neff, B. D. (2003). Decisions about parental care in response to perceived paternity. *Nature*, 422(6933), 716.
6. Simmons, L. W. (1986). Inter-male competition and mating success in the field cricket, *Gryllus bimaculatus* (De Geer). *Animal Behaviour*, 34(2), 567-579.
7. Moczek AP & Emlen DJ 2000. Male horn dimorphism in the scarab beetle, *Onthophagus taurus*: do alternative reproductive tactics favour alternative phenotypes? *Animal Behaviour*, 59, 459-466.

8. Malo, A. F., Roldan, E. R., Garde, J., Soler, A. J., & Gomendio, M. (2005). Antlers honestly advertise sperm production and quality. *Proceedings of the Royal Society of London B: Biological Sciences*, 272(1559), 149-157.
9. Wilkinson, G. S. (1988). Reciprocal altruism in bats and other mammals. *Ethology and Sociobiology*, 9(2-4), 85-100.
10. Fehr, E., & Gächter, S. (2002). Altruistic punishment in humans. *Nature*, 415(6868), 137-140.
11. Krams, I., Krama, T., Igaune, K., & Mänd, R. (2008). Experimental evidence of reciprocal altruism in the pied flycatcher. *Behavioral Ecology and Sociobiology*, 62(4), 599-605.
12. Nowak, M. A., Tarnita, C. E., & Wilson, E. O. (2010). The evolution of eusociality. *Nature*, 466(7310), 1057-1062.
13. Nowak, M. A. (2006). Five rules for the evolution of cooperation. *Science*, 314(5805), 1560-1563.
14. Krupp, D. B., Debruine, L. M., & Barclay, P. (2008). A cue of kinship promotes cooperation for the public good. *Evolution and Human Behavior*, 29(1), 49-55