**NEUROBIOLGY OF ANIMAL COGNITION**

**NE720 – PS720**

**Fall 2023 - Fri 11:15am 2:00pm**

**BOSTON UNIVERSITY**

**Instructor:** Dr. Benjamin Scott

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Office: KCILSE 705C

**Course description**:

Explores the nature of cognition across the animal kingdom. Synthesizes concepts from cognitive science, machine learning and neuroethology to better understand human cognition through the lens of animal behavior. Selected topics include decision-making, collective behavior, reinforcement learning, and mental simulations.

**Learning goals:** After completing this course, students should:

1. Have familiarity with the range of animal models for complex cognitive behavior;
2. Appreciate the evolutionary basis of neural systems that generate learning, memory and cognition;
3. Demonstrate an advanced ability to read, understand, and discuss the primary scientific literature;
4. Understand the experimental advantages and limitations of different animal models.
5. Understand how computational techniques are applied to model animal behavior.

**Prerequisite:** Graduate standing or permission of instructor.

**Office hours:** TBD.

**Web:** https://www.scottcognitionlab.com/teaching/

**Grading:**

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| --- | --- |
| **Discussion/participation** | **Points** |
| Discussion leading | 30.0% |
| Discussion participation | 40.0% |
| Research report | 30.0% |
|  | **100.0%** |

Research report: Students will submit a research report written independently or as a small group. The topic of the report will be selected by the student(s) in consultation with the instructor and should be related to comparative behavior, but something not covered in class. The report may take one of several forms chosen by the student: Option 1: the text of a lecture which could be delivered in class (3-5 pages), Option 2: a review article[[1]](#footnote-1) (3-5 pages), or Option 3: a grant proposal (3-5 pages).

Discussion: This course will be run as a high-level seminar with approximately 1 hour of each class period set aside for discussion of primary literature. These discussions will be led by students on a rotating basis. Between participation and leading, discussion constitutes 70% of your grade. Please consider preparation as your homework commitment outside of class. Effective preparation requires a thorough reading of each article prior to coming to class. In addition, we suggest employing the following strategies: (1) Practice explaining important figures before coming to class. (2) Consult key cited references, especially when they appear in passages critical to the claims of the paper but which are difficult to understand. (3) Rather than relying on class period to ask clarifying questions about the readings, look up unfamiliar terms and concepts as you encounter them. Office hours are available to help address questions, especially before you lead a discussion. Discussion leading will be graded by the clarity and accuracy of your presentation and your ability to stimulate discussion. Discussion participation will be graded based on a combination of attendance and how well you contribute to the conversation. Speaking up regularly (at least once per class) without dominating the conversation is sufficient for full marks in discussion participation.

**Accommodations for Students with Documented Disabilities**: If you are a student with a disability or believe you might have a disability that requires accommodations, please contact the Office for Disability Services (ODS) at (617) 353-3658 or [access@bu.edu](mailto:access@bu.edu) to coordinate any reasonable accommodation requests. ODS is located at 19 Deerfield Street on the second floor (19 Buick Street as of September 1, 2018).

**Attendance & Absences:** Students will be expected to attend all of the classes. Unexcused absences will affect your participation grade in a negative way. Excused absences are available for sanctioned school events, medical or religious reasons. For details of the University Policy on absences for religious reasons see: <https://www.bu.edu/academics/policies/absence-for-religious-reasons>

If you know that you cannot attend a class due to one of the aforementioned reasons, email the instructor ASAP and well in advance of class.

**Academic Conduct:** Students are responsible for knowing and abiding by Boston University’s Academic Conduct Code, which can be found online: <https://www.bu.edu/academics/policies/academic-conduct-code/>

1. In previous year students submitted a review article written for this class for publication in the Journal of Neuroscience through the Journal Club format: https://www.jneurosci.org/content/jneurosci-journal-club [↑](#footnote-ref-1)