**COURSE SYLLABUS**

**APBI 313:** Experimental analysis of animal behaviour

**AANB 550:** Graduate Section

University of British Columbia

Applied Animal Biology, Faculty of Land and Food Systems

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**Class Time & Place:** Tuesday and Thursday 9:30-11:00am TBD

**COURSE OVERVIEW**

Students in animal welfare require knowledge about what guides the behaviour of individual animals. In this course, we will cover the proximate mechanisms behind animal behaviour, with a focus on motivation and learning. Using case studies, we will cover complex concepts within Pavlovian and operant control of behaviour of individual animals as well as the ways in which various behavioural principles interact to create complexity in behaviour (i.e., animal cognition) and contribute to our understanding of animal welfare. You will become acquainted with the individual-subject research methods used in the scientific study of proximate causes of behaviour and the basic theories and principles of how and why animals do what they do. The key activities in the course are (1) learning complex principles of animal learning and motivation, (2) communicating an understanding of these principles through discussion, in-class probes, written case studies, and online quizzes.

The class will meet twice per week synchronously. Classes will begin with a case study of either a common behavioural problem encountered by handlers or an interesting phenomenon in animal cognition. The case study will serve as the basis of discussion and lecture on the specified topic. The lecture portion of each class will focus on presenting unifying principles and theories in animal learning and introduce the students to various topics in the field of experimental analysis of animal behaviour. Some classes will begin with a short probe, which will test the student’s understanding of the topic of the lecture from the previous class and/or the required reading. At the end of the semester, the lowest 5 probe grades will be dropped.

Graduate Section: Students will be expected to come to class prepared to discuss the required reading of influential research papers in the topic of animal learning during each class. All of the assigned research papers will be available online at least one week prior to the class.

Students will also try their hand at incorporating the principles of behaviour and learning to their personal research interest. This semester-long project will consists of the student identifying a topic of interest, assembling the relevant literature, identifying a unique research project , preparing a research proposal. This paper will go through several stages of review and edits prior to earning a final grade.

Learning materials will include a textbook (Behavior Analysis and Learning. (2004) W. David Peirce and Carl D. Cheney, Third Edition (ISBN 0-8058-4489-9)), assigned reading prvided by the instructor prior to some classes as indicated on the schedule, comments and feedback on assignments, and lecture slides will provide examples and details on the topics.

Credit exclusion: Credit will be granted for only one of APBI 313 (this course) or PSYCH 363

Pre-requisites and core-requisites: None.

**LEARNING OBJECTIVES**

At the end of this course, the student will be able to:

1. Develop an appreciation of the interesting ways in which basic learning principles result in complex animal behaviour as evidenced by class participation in discussion, in-class probes, case studies, and online quizzes;
2. Effectively integrate ideas from the lecture material, book chapters, and assigned journal articles to compose an evaluation of the determinants of animal behaviour case studies;
3. Compose a research proposal on a topic of your choosing integrating your research interests and animal learning using a single-subject experimental design (Graduate Section).

**COURSE FORMAT**

Probes- undergraduate: 20%; graduate: 12.5%

There will be 15 probes conducted during class, each worth 2 points. Part of the purpose of these probes is to provide credit for class attendance; therefore, which classes they will be given on will not be announced in advance. You will typically receive the first point for turning in any attempt at answering the probe question, and the next point for a correct response. Probes will range from requiring one word to a few sentences to complete, and will cover the assigned readings for and/or the material presented during the class on which they are administered.

Online Quizzes- undergraduate: 30%; graduate: 18.75%

There will be 10 online quizzes, each worth 5 points. The best 6 out of 10 will be used for the final mark. An online quiz will be due on that day, before class begins. The online quiz will include multiple-choice questions on the material that will be needed when discussing and answering questions about the case studies. The online quizzes are intended to help you identify the information that you need to review.

Exam Case Studies- undergraduate: 40%; graduate: 25%

Each class will begin with discussion of a specific case study. At four times during the semester, instead of an exam, the instructor will pick one of the discussed case studies and construct additional questions on the same case study. These questions will form the exams. There will be four such written case studies throughout the semester, each worth 15 points. The case studies will consist of short and long answer questions, in which the students will utilize their knowledge of behaviour principles to provide an analysis of the situation.

Each case study will focus primarily on the information covered since the previous case study; however, as the subject matter covered by the class is cumulative, doing well on later case studies will require mastery of the key concepts presented since the beginning of the semester.

Participation- undergraduate: 10%; graduate 6.25%

Class participation will be marked throughout the term thorugh in-class discussion. Student are expected to come to class having read all required readings and prepared to discuss the topic. Only respectful and constructive discussion will be tolerated.

**Graduate Section**

Research Proposal- graduate 37.5%

There will be one final written project consisting of a research proposal. You will select a topic of your choosing in animal behaviour and synthesize your knowledge gained from the course to develop a research proposal. The proposal will consist of a short literature review to identify a gap in research as well as a single-subject design methodology to address this gap. Students will be encouraged to identify a granting agency and submit the proposal at the end of the semester, if approved by their supervisor. Students will submit a 1) literature review, 2) methodology, 3) a first draft, and 4) a final draft for 15 points (25% of the research proposal grade) each at specific times throughout the term. The total of the 60 available points will be added to the points accumulated from the probes, quizzes, case studies, and participation for the final mark.

**GRADING CRITERIA**

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| --- | --- | --- | --- | --- |
|  | **Points (undergraduate)** | **Points (graduate)** | **Percentage (undergraduate)** | **Percentage (graduate)** |
| In-class probes (best 10 out of 14, 2 marks each) | 20 | 20 | 20% | 12.5% |
| Online quizzes (best 6 out of 10, 5 marks each) | 30 | 30 | 30% | 18.75% |
| Written case-studies (4, 15 marks each) | 40 | 40 | 40% | 25% |
| Participation in class | 10 | 10 | 10% | 6.25% |
| Research proposal  (1) literature review (15 points)  (2) methodology (15 points)  (3) first draft (15 points)  4) final draft (15 points) | - | 60 | - | 37.5% |
| **Total** | **100** | **160** | **100%** | **100%** |

**Class Schedule**

GS= Graduate Section

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| --- | --- | --- | --- |
| **Week** | **Case Study** | **Lecture Topic** | **Reading** |
| 1 | Feces-throwing in a captive chimpanzee | Introduction; levels of selection and functional analysis of behaviour | Ch.1 |
| 2 | Cont. | Single-subject research designs | Ch. 2  GS TBA |
| 3 | Accidental morphine overdose in laboratory rats | Reflex relations; Pavlovian conditioning | Ch. 3  GS TBA |
| 4 | Coyote control and taste aversion | More on Pavlovian conditioning; Biological context of conditioning | Ch. 14  GS TBA |
| 5 | Social cognition (perspective taking) in dogs | Operant behaviour; positive reinforcement | Ch. 4  GS TBA |
| 6 | Unexplained aggression: Orca drowns its trainer | Schedules of reinforcement; extinction | Ch. 5  GS TBA |
| 7 | Dog leash reactivity | Negative reinforcement; aversive control | Ch. 6  GS TBA |
| 8 | Pessimism/ optimism in animals | Stimulus relations | Ch. 8  GS TBA |
| 9 | Cat predation | Motivating operations | No textbook  GS TBA |
| 10 | Capuchin token economy | Conditioned reinforcement | Ch. 10  GS TBA |
| 11 | African Grey parrot counting | Complex stimulus control; Pavlovian-operant interactions | Ch. 7  GS TBA |
| 12 | Husbandry animal training | Choice and preference; quantitative law of effect | Ch. 9  GS TBA |
| 13 | Impulsive pigeons | Delay discounting; behavioural economics | Ch. 9  GS TBA |