PSYC 215 Research Methods:
Behavioral Methods in Animal Research
Fall 2015

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Office Location: 003 Judd Hall
Office Hours: Tuesdays between 1-3pm
Course Schedule: 11am - 11:50am Monday, Wednesday, Friday
Class Location: Judd Hall 113

WELCOME! This is a research methods course that provides an understanding of the
different approaches to animal research, particularly those using rodent models. It
provides students with an understanding of the different techniques employed by
researchers and the questions they address. This course provides students with
HANDS-ON EXPERIENCE WITH ANIMAL RESEARCH USING RODENT MODELS.
Students will also get a sense of how to design a behavioral experiment, including the
use of control groups and counterbalancing. The course will follow a lecture/discussion
format where students will learn about different forms of conditioning
(operant/classical) and how these apply to various behavioral tasks such as
autoshaping, self-administration, fear conditioning, etc. (see readings for more
examples). This will be combined with regular class discussion of research articles
dealing with each topic, including some of the earlier reports and more recent
applications. The focus of the course will be on trying to prepare students to design and
carry out behavioral/animal research in a laboratory setting. Students will get to carry
out their own animal research project in the lab. Research projects will last
approximately 2 weeks and will require a heavier time commitment during this time
(including some research over the weekends).

LEARNING GOALS: The goal for each student in this course is to understand and be
able to clearly articulate the key techniques and concepts in the field of animal research,
including: the ethical considerations for animal research, the scientific method, classical
and operant conditioning, and experimental design and data collection. The course will
provide each student with a chance to be involved in animal research and understand
the process of experimental design, experiment planning, data collection, analysis, and
representation. The course will provide students with an opportunity to learn how to
effectively communicate scientific research through a group class presentation and a brief research report. The objective is for students to learn and receive the good grades they deserve for their hard work and full participation in this class and the topics each week. Please make an appointment with me if you have difficulty with your work in this course. It is strongly suggested that students avail themselves of the opportunity to clarify and discuss course material and assignments during faculty office hours. Office hours are not opportunities to obtain information missed during absences from class. Such material should be obtained from classmates.

**LECTURE TOPICS (some topics may span several classes):**
- Course structure and expectations
- Ethical considerations in animal research
- Scientific Method
- Animal Training Workshop
- Introduction to the lab and general rules
- Handling techniques – Hands-on workshop
- Group assignment and project description
- Experimental Design: How to prepare for an experiment
- Control groups and counterbalancing
- Motivation, Learning & Reward
- Conditioned vs. Unconditioned behaviors
- Pavlovian/Classical Conditioning
- Skinnerian/Operant Conditioning
- Techniques: Optogenetics
- Data collection and analysis
- Scientific writing - Writing a research report

**EXAM & ASSIGNMENT SCHEDULE:**
- Midterm I: October 23rd, 2015
- Midterm II: December 11th, 2015
- Project Part I: November 6th, 2015
- Project Part II: December 16th, 2015
- Animal Handling Skills: Before the end of October
- Minute Papers (2% bonus) are due online (Moodle) by Saturday 5pm that week

**READINGS:** Readings will be based on scientific research articles, and will include some of the early or initial papers for each behavioral method (e.g. Ivan Pavlov’s
description of Classical Conditioning). Students are expected to do the assigned readings prior to each and every class and to come prepared to discuss the material and the concepts. No textbook is required for the course and readings will be posted on Moodle.

**COURSE REQUIREMENTS AND GRADING:** Assessment consists of two exams involving multiple choice and short answer questions (based on lecture notes, readings and class discussion), and a research project assignment requiring students to carry out an experiment as a group and write up their results individually in the form of a brief research report (see below). Students must take all assessments. Exams are each worth 30% each, the assignment is worth 35%, and remaining 5% is based on animal handling skills test. There will be no final exam, and research reports will be due during the exam period.

- **Important:** Students must take/submit all assessments. Exams missed, or assignments not turned in or turned in late without adequate justification will receive a 0. All work is expected to be the student’s own.

- **Attendance and participation:** Students are expected to attend all classes and class participation is greatly encouraged. You are expected to do the assigned readings before coming to class. Your participation (and presence) in class is imperative to the structure of the class, so I encourage you to not skip class unless you are extremely sick or have an adequate excuse. Attendance will not be taken, but you will be responsible for all material covered and for any announcements made.

- **Atmosphere:** It is very important that we respect each other in this class (and all courses where sensitive topics are discussed). Please be courteous to your peers and refrain from off-topic comments with your neighbor, using your cell phones (unless it is an emergency), or checking your email/Facebook/Twitter while you are in class. If you cannot refrain from these activities, I may ask you to leave class.

**NOTE:** Drop/Add Period ends on September 18th, 2015.
Fall Break begins at the end of classes on October 23 and ends on October 28 at 8:00 a.m.
Thanksgiving recess begins at the end of classes on November 24 and ends at 8:00 a.m. on November 30.
Last day to withdraw from course: December 4th, 2015.

**ASSIGNMENTS:**

*Project Paper (35% total):*
Students will be divided into groups and each group will be assigned a set of rats. They will learn how to handle them and will be assigned a brief experimental project. Students will be expected to design an experimental protocol as a group and to coordinate with each other to carry out their experiment and collect data. Each student will then be expected to write up his or her results in the form of a brief research paper/report. The research paper will consist of: a brief introduction laying out the context of the research, a methods section detailing how the research was carried out and any problems encountered, a results section with statistical analysis and a brief discussion of the results and any possible further directions. Attention will be paid to the choice and clarity of figures/graphical representation and the ability to communicate scientific results clearly and effectively. Research papers are to be produced solely as individual work by each student.

The written project report will be divided into two sections. First students will submit the introduction and methods which will be graded and count for 10%. The remaining 25% will be assigned to the final submission of the full project paper. Of those 25%, 5% will be based on your team work and contributions assessed by your group.

Assignments not turned in or turned in late without adequate justification will receive a 0.

**Midterm Exams (30% each):**
Two midterms will each count for 30% of the final grade. They will each consist of multiple-choice, fill in the blanks and short answer questions. Questions will be drawn primarily from what was covered and discussed in class but may also cover the assigned readings.

Short answer questions will require students to briefly describe in their own words a concept or function covered in the course or to apply knowledge or reasoning from the course to discuss a topic.

If a student misses one of the midterms with a justifiable reason, the remaining midterm will count for 60% of their grade.

**Animal Handling Skills (5%):**
Students will be given the opportunity to display good animal handling techniques by identifying (tail numbering; 1%) and injecting (SC & IP; 2% each) a rat in the lab. Tail numbering must be legible and follow the instructed guidelines. Injections will be of 0.3ml Saline solution and should cause little to no discomfort to the animal. Animal Handling Skills must be witnessed by Charlotte Freeland (Lab Manager) or myself before the end of October in order to receive credit, and must be performed following animal welfare guidelines. Assessment of skills can be done during class lab sessions or by making an appointment by email, providing at least 48hr notice and with several times to choose from.
EXTRA CREDIT:
**Minute Papers (2% bonus):**
Minute papers will provide the opportunity to reflect on the class briefly. Students will be asked to: briefly summarize the 2-3 main points of each lecture that week, share the most confusing point(s) and provide any comments or feedback on the class so far. Some of the most confusing topics will be addressed at the start of the following lecture. You are strongly encouraged to attend office hours if any topic needs further clarification. Minute papers will be due online (Moodle) at the end of each week and will cover the lecture(s) of that week. In order to receive the 2% bonus, students must submit a Minute Paper for every week (all or nothing). Missed lectures should still be covered by going through slides and any notes from fellow students.

FEEDBACK:
An anonymous message/email form will be posted on Moodle to allow students to directly communicate with me in order to raise questions or issues with the course or the material. This is a place for constructive comments or concerns. Be aware that Moodle does not currently allow me to respond anonymously other than by general announcements in class (if required). A mid- and end of semester course evaluation will be posted on Moodle to provide feedback in order to help improve the course.

STUDENTS WITH DISABILITIES:
Wesleyan University is committed to ensuring that all qualified students with disabilities are afforded an equal opportunity to participate in and benefit from its programs and services. To receive accommodations, a student must have a documented disability as defined by Section 504 of the Rehabilitation Act of 1973 and the ADA Amendments Act of 2008, and provide documentation of the disability. Since accommodations may require early planning and generally are not provided retroactively, please contact Disability Resources as soon as possible. If you believe that you need accommodations for a disability, please contact Dean Patey in Disability Resources, located in North College, Room 021, or call 860-685-5581 for an appointment to discuss your needs and the process for requesting accommodations. Students are responsible for registering with Disabilities Services, in addition to making requests known to me in a timely manner. If you require accommodations in this class, please make an appointment with me as soon as possible, so that appropriate arrangements
can be made. The procedures for registering with Disabilities Services can be found at http://www.wesleyan.edu/studentaffairs/disabilities/Student/index.html

ACADEMIC HONESTY:
You are expected to adhere to Wesleyan’s Honor Code as stated in the Student Handbook (http://www.wesleyan.edu/studentaffairs/studenthandbook/standardsregulations/studentconduct.html) when it comes to cheating and plagiarism. Academic dishonesty is an inexcusable act and none of these will be tolerated in this class. The sanctions provided in this policy will be used to deal with any violations. If I begin to suspect plagiarism, I will have you attach a signed version of the honor code to submitted assignments.