Animal Behavior
PSYCHOLOGY 220
Spring 2012
Tuesday and Thursday 10 A.M.
Instructor
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Office Hours: Tuesday 2:30 to 4:30 or by appointment
Course Description
This is a course in animal behavior that focuses on the adaptations and modifications of neural systems necessary for animals to survive in their natural environments. Throughout this course we will study individual species and the specific problems that they are faced within their particular environments, and the ways in which the brains of these animals have constructed solutions to these problems. This study of behavioral neurobiology within an ecological setting is often referred to as ‘Neuroethology’.
For example, we will examine how a barn owl can use hearing to precisely locate a mouse running across the floor in the pitch blackness of a barn. We will study locomotor adaptations that allow a crayfish to escape from a predator, and we will examine the learning and memory systems that allow the honey bee, an insect with a brain about the size of a square millimeter, to locate and recognize a food source and convey that information to hive mates. This will be a very challenging but fun and interesting course that will require some real effort. At the end of the semester you will understand the fundamentals of both sensory and motor systems and see how the basics of learning and memory that apply to human beings were first characterized in invertebrate systems. At the completion of the course you will be amazed at how much you have learned that can be applied to all areas of neuroscience and behavior!
Prerequisites
Junior or Senior standing; Psychology 1 and Psychology 109
Course Structure
This course will be organized into three main sections preceded by a general introduction to behavioral neurobiology.
The second section of the class will examine adaptations in sensory physiology. The third section will look at motor strategies, and the fourth and final section will focus on behavioral plasticity underlying learning and memory. The format of the course will consist of lectures and discussion. Don’t be afraid to ask questions! The purpose of this is to give you a thorough (and balanced) introduction to behavioral neurobiology and the mechanisms underlying it.

Required Readings & Textbooks

**A Textbook is required:** *Nerve Cells and Animal Behaviour. 3rd edition* Peter Simmons and David Young, Cambridge Press ISBN:9780521728485

**Academic Honesty Policy**
Participation in this course indicates that your work will be completed in full observance of the UVM Academic Honesty Policy. Academic dishonesty includes cheating on exams, plagiarism, and receiving unauthorized help on take-home assignments. Students engaging in these acts will fail the course, at a minimum.

**Students with Disabilities**
If you have a documented disability, please contact me immediately so we can arrange a meeting time to discuss any accommodations that you may need. Please be advised that I cannot make any accommodations (i.e. extra exam time) for those without written documentation of a disability. If you need to discuss disability-related issues with a specialist, please contact the ACCESS program in University of Vermont Disability Services: 802.656.7753

**Religious Holidays**
It is University policy to excuse absences due to observance of religious holidays. If you need to miss class or an exam due to a religious holiday, you must submit your religious holiday schedule to me in writing by the end of the second full week of classes. You will be permitted to make up the work or exams in a timely fashion without penalty to your grade.

**COURSE OUTLINE**
Grades: There will be one short quiz on introductory material worth 5%
One Midterm worth 25%
One class presentation worth 40%
One final worth 30%
Grades are calculated on the following scale:
A+=97 -100
A=93-96
A-=87-92
B+=83-86
B=77-82
B-=73-76
C+=67-72
C=63-66
C-=60-62
D=57-60
F<57

THERE WILL BE MANY REVIEW CLASSES!
Class presentations: Groups of 3 students. Design a creature. I will give you an ecosystem, you will design a creature to live in it. This includes a sensory and motor system that is adapted to that environment. And a specialized learning system. I will give you detailed instructions in class on how to do this. This is worth 40% of your grade and will include a group class presentation and an individual written report.

PART I: Introduction to Behavioral Neurobiology
We will review basic concepts in neurobiology and go over a brief introduction to the field of neuroethology. This will take approximately the first 3 classes, but more time may be allotted depending on need.
There will be a short quiz on the introduction when these lectures are completed (worth 5% of the final grade).

PART II: Sensory worlds
PART III: Motor strategies
Review for midterm exam
Midterm: 25% of final grade: Probably the Thursday before Spring Break

PART IV: Behavioral plasticity (The most intense part of the course. But really interesting!)
In April: Class presentations (40% of final grade)

Overall review classes before the final exam.
FINAL EXAM (covering the entire course: 30% of total grade:10% on material covered up to the midterm and 30% on Behavioral Plasticity)