Memorandum

TO: Undergraduate Curriculum Committee
FROM: William Gabrenya, School of Psychology
RE: Adding a new course
Date: February 23, 2004

Please see the attached form and supportive documentation for adding PSY4521: Animal Learning and Behavior, to the curriculum. The course is proposed by Dr. Frank Webbe.

Animal Learning and Behavior will provide a new course in the advanced experimental psychology area of our undergraduate curriculum. Like most psychology programs in the United States, our students are required to take upper level courses (restricted electives) in both experimental (learning, cognition, physiological, etc.) and social (social, personality, developmental, cultural) areas. We have been weak in the experimental area for many years, so this course will provide an additional choice.
### Catalog Description of Course:

Surveys major topics including learning vs. unlearned behavior, communication, reproduction, cognition, social behavior, and tool use. Employs evolutionary, genetic, and environmental perspectives to understand behavior.

### Restrictions

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<th>Restriction</th>
<th>Prerequisite</th>
<th>Corequisite</th>
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<td>Prerequisite</td>
<td>PSY1411 (course number)</td>
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<td>Prerequisite</td>
<td>BIO1010 or EDS1032 (course number)</td>
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### Additional Restrictions

If this course replaces a course currently offered in BANNER, please indicate old course information.

Subject: ________ Course No. ____________
Course Syllabus
PSY3433 Animal Learning and Behavior

Fall, 2004

**Time:** 9:30 am-10:45 am, Tuesday and Thursday  
**Place:** Room PSY-1 Psychology Building

**Instructor**  Frank M. Webbe, Ph.D.  
**Office:** Room P-109, Psychology Building  
**Phone:** (321) 674-8104  
**Email:** webbe@fit.edu


**Objectives:**  Frequently, a discipline can be understood best by looking at the questions that the discipline asks and attempts to answer. In Animal Learning and Behavior, we are interested in knowing the why and the how of behavior. Different from a strict learning theory approach, the search for these answers goes beyond the immediate environment and history of the organism. We look also to the evolutionary and developmental histories of species to find answers that correlate with behavioral facts.

In this course you will learn new information about similarities and differences in the behavior of many species – from ants to antelopes; from people to porpoises; from bats to baboons. You will learn how many species in a similar environment may develop common adaptive behaviors. You will consider questions about the extent to which genes control behavior. In short, you will study facts learned from the observation of behavior, and use these facts in developing a philosophy of the meaning of behavior.

**Evaluation:**  One examination and one major paper will constitute the primary evaluative measures in this course. The examination format will be essay. The exam and the paper each will count 50% of your grade.

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**Schedule of Events**

**Week One Topics and Chapter Assignments**  
**Chapter 1**

**Adopting an Evolutionary Approach to Animal Behavior**

* Questions about Behavior  
* *How* Questions about Proximate Causes  
* *Why* Questions about Ultimate Causes  
* Answering Proximate and Ultimate Questions About Behavior
* Gulls and Egg Shell Removal
* Darwinian Theory and Ultimate Hypotheses

**Week Two Topics and Chapter Assignments**  
Chapter 2

**Proximate and Ultimate Causes of Behavior: How and Why Birds Sing**

* Different Songs: Proximate Causes
* Social Experience and Song Development: the Role of Learning
* The Development of the Song System
* Song Differences Between the Sexes
* Different Songs: Ultimate Causes
* The Adaptationist Approach
* Why Do Only Males Sing?
* Natural Selection and Dialects
* Proximate and Ultimate Causes are Complementary

**Week Three Topics and Chapter Assignments**  
Chapter 3

**The Development of Behavior: A Focus on Heredity**

* The Genetics of Behavior
* Genetic Differences and Human Behavior
* Genetic Differences and IQ Differences
* How Many Genetic Differences Are Needed to Produce a Behavioral Difference?
* The Evolution of Behavior
* Different Selection Pressures, Different Genes, Different Behaviors

**Week Four Topics and Chapter Assignments**  
Chapter 4

**The Development of Behavior: A Focus on the Environment**

* The Interactive Theory of Development
* When To Become a Forager in a Honeybee Colony
* When To Become a Territorial Male
* Early Experience and Recognition of Relatives
* Learning and Behavioral Development
* Evolution and Behavioral Development
* The Adaptive Value of Developmental Flexibility
* Sex Differences in Spatial Learning Ability
* The Evolution of Associative Learning

**Week Five Topics and Chapter Assignments**  
Chapter 5

**The Control of Behavior: Neural Mechanisms**

* How Nerve Cells Control Behavior
* How Do Moths Evade Bats?
Week Six Topics and Chapter Assignments  

The Organization of Behavior: Neurons and Hormones

* How Neural Command Centers Organize Behavior
* Neural Inhibition among Command Centers
* Clock Mechanisms and Behavioral Schedules
* How Do Circadian Mechanisms Work?
* Long-Term Cycles of Behavior
* The Physical Environment Influences Long-Term Cycles
* Hormones Help Organize Social Behavior

Week Seven Topics and Chapter Assignments  

Adaptation and Anti-Predator Behavior

* The Meaning of Adaptation
* Is the Mobbing of Predators an Adaptation?
* The Comparative Method for Testing Adaptationist Hypotheses
* The Importance of Divergent Evolution
* The Importance of Convergent Evolution
* The Diversity of Anti-Predator Adaptations
* The Value of Body "Decorations"
* The Value of Warning Behavior
* How To Stop a Pursuer
* The Value of Vigilance

Week Eight Topics and Chapter Assignments  

The Evolution of Feeding Behavior

* Locating Food
* The Origins of Prey Locating Mechanisms
* Getting Help From Companions
* The Adaptive Value of Honeybee Dances
* The Information Center Hypothesis
* Locating Prey by Deceit
* Selecting What to Eat
* How To Choose an Optimal Clam
* How To Choose an Optimal Mussel
* The Evolution of Alternative Diets
* How To Open a Whelk
* Why Do Humans Consume Alcohol, Spices and Dirt?

**Week Nine Topics and Chapter Assignments**

**Choosing Where To Live**

* Habitat Selection
* Habitat Preferences in a Territorial Species
* Migration
* The Fitness Costs and Benefits of Migration
* The Migration of the Monarch Butterfly
* Territoriality
* Why Do Territory Holders Almost Always Win?

**Week Ten Topics and Chapter Assignments**

**The Evolution of Communication**

* The Origins and Adaptive Value of a Signal
* The History of a Signal Receiving Mechanism
* The History of Insect Wings
* Sensory Exploitation of Signal Receivers by Signalers
* Sensory Preferences May Precede the Evolution of a Signal
* The Adaptationist Approach to Communication Systems
* Why Do Baby Birds Beg so Noisily?

**Week Eleven Topics and Chapter Assignments**

**The Evolution of Reproductive Behavior**

* The Evolution of Differences in Sex Roles
* Testing the Evolutionary Theory of Sex Differences
* Sexual Selection and Competition for Copulations
* Social Dominance and Male Fitness
* Alternative Mating Tactics
* Three Distinct Strategies: Three Mating Tactics
* Sexual Selection and Sperm Competition
* Mate Guarding
* Sexual Selection and Female Mate Choice
* Sexual Conflict Between Males and Females

**Week Twelve Topics and Chapter Assignments**

**The Evolution of Mating Systems**

* The Adaptive Value of Monogamy?
* Monogamy in Mammals
* Monogamy in Birds
* Polyandry without Polygyny
* Female Defense Polygyny: The Female Perspective
* Resource Defense Polygyny
* Resource Defense Polygyny: The Female Perspective
* Scramble Competition Polygyny
* Lek Polygyny
* Why Do Males Aggregate in Leks?
* Why Do Females Mate with the Same Males at Leks?

Week Thirteen Topics and Chapter Assignments  Chapter 13

The Evolution of Parental Care

* Why is Parental Care More Often Maternal than Paternal?
* Why Do Male Waterbugs Do All the Work?
* Discriminating Parental Care
* Offspring Recognition: Comparative Studies
* Why Adopt Genetic Strangers?
* Can Adoption Benefit Foster Parents?
* The Evolution of Parental Favoritism

Week Fourteen Topics and Chapter Assignments  Chapter 14

The Evolution of Social Behavior

* The Benefits and Costs of Social Life
* The Evolution of Helpful Behavior
* Reciprocal Altruism or Personal Gain?
* Unadorned Altruism and Indirect Selection
* The Alarm Call of Belding’s Ground Squirrel
* The Concept of Inclusive Fitness
* The Evolution of Eusocial Behavior
* Very Close Relatedness Is Not Essential for Eusociality to Evolve
* The Ecology of Eusociality

Week Fifteen Topics and Chapter Assignments  Chapter 15

The Evolution of Human Behavior

* The Adaptationist Approach to Human Behavior
* The Sociobiology Controversy
* Evolution and the Diversity of Human Cultures
* Sociobiology versus Arbitrary Culture Theory
* Adaptive Mating Decisions
* Adaptive Mate Choice by Women
* Adaptive Mate Choice by Men
* Conflict between the Sexes
* Coercive Sex
* Adaptive Parental Care
* Helping Children Marry

**Web Resources:** Many resources for this course will be posted on the class web site. Since this is a project under construction, additions will be announced on the main course page as soon as they become operational. Before logging into the course page, you will need to go to: http://fit.blackboard.com to create a username and password for the Florida Tech Blackboard system if you do not have one already. Once you have completed this task, you can enroll into the course site.