

**California State University, Fullerton**  
**Department of Biological Science**  
**Biology 517T: Phylogeny Ecology and Behavior**

**Meeting Place:** MH 282A

**Meeting Time:** Thursdays from 5:30-8:20 PM

**Instructor:** Sean Walker

**Office:** MH 389, Lab MH 342

**Office Hours:** MW 10:00 AM-12:00 PM, T 1:00-2:00 PM & by appointment

**Phone:** (Office) 278-3610, (Lab) 278-8204

**Email:** [swalker@fullerton.edu](mailto:swalker@fullerton.edu)

**Web-Site:** <http://biology.fullerton.edu/swalker>

**Course Web Site:** The course website will be available via blackboard.

### **Course Description**

In this course we will examine the fundamentals of the comparative method in Biology. We will discuss historical and current developments in comparative methods and examine how these methods can enrich our understanding of behavior, physiology, and ecology.

**Prerequisites:** Graduate Standing

### **Required Texts:**

Brooks, D.R. & D.A. McLennan. 1991. Phylogeny, Ecology, & Behavior: A Research Program in Comparative Biology. University of Chicago Press. 434 pp.

### **Student Learning Goals:**

1. Students will be able to utilize library resources to find appropriate literature (e.g. BasicBIOSIS, Web of Science, PubMed, JSTOR).
2. Students will be able to demonstrate effective written and oral communication skills.
3. Students will be able to do the following with regard to evaluating primary literature.
  - a. Identify the research question
  - b. Identify the hypotheses
  - c. Evaluate the validity of the predictions made from the hypotheses
  - d. Evaluate if the methodology is appropriate to test the predictions
  - e. Analyze data in the form of figures or tables
  - f. Identify the conclusions
  - g. Evaluate the validity of the conclusions
4. Students will be able to integrate and apply concepts learned in this and previous courses to place readings in a broader context in Ecology and Evolutionary Biology.
5. Students will be able to explain why phylogeny is important when testing hypotheses

about adaptation.

6. Students will learn to frame appropriate hypotheses and test those hypotheses utilizing an appropriate method.
7. Students will be introduced to appropriate computer software for the analysis of comparative data.

### **Course Requirements**

#### ***Student Participation (15%)***

Since this is a seminar class, participation is critical and will be 15% of your final grade. Several articles or book chapters will be required reading for each class meeting and students are expected to have read this material and be prepared to discuss it.

#### ***Summaries & Questions (15%)***

**On the Tuesday prior** to each class meeting every student will send me via e-mail a 1 page summary of the readings and post on the **blackboard discussion board** three questions about the readings. Please do this early because it will facilitate discussion of the material.

#### ***Discussions (20%)***

We will have 8 weeks of discussion on the text and a few other readings. Two discussion leaders will be chosen. The discussion leaders will be chosen at random utilizing the magic hat method (i.e., excel and a random number generator). The discussion leaders will be responsible for maintaining an active discussion during our meetings.

#### ***Presentation (20%)***

Each student is required to give an oral presentation during one of the class meeting times. The subject of this talk should be a topic that you are interested in since you will spend a great deal of time researching the subject and will write a paper on the topic. **FOR YOUR PRESENTATION YOU WILL NEED TO PROVIDE ONE PAPER FROM THE PRIMARY LITERATURE FOR THE CLASS TO READ. THEREFORE YOU MUST CHOOSE A TOPIC/PAPER BY SEPTEMBER 21 AND PROVIDE ME WITH THE PAPER.** You should choose a paper that is doing a comparative/phylogenetic analysis of something you are interested in (e.g. I might look at something examining differences in sexual size dimorphism across taxa) or something related to your thesis work. I will provide examples of acceptable papers on blackboard.

Students will be responsible for giving a 25-30 minute presentation that provides a basic review of the topic, summarizes the required reading, and provides a critical and in depth analysis of the reading. Presenters should provide additional information on the topic by making use of the primary literature. Students are encouraged to use visual aids (hand-outs, chalkboard, overheads, power-point presentations etc.) and following their presentation **will** maintain an active discussion for 25-30 minutes.

#### ***Paper (Percentage of Grade:30% Outline 5% + Draft 10% + Peer Review 5%+Final Paper 10%)***

Students are responsible for preparing a 7-10 page (double spaced, 12 pt maximum font size, not including references) paper on the literature related to their topic. This paper will

critically evaluate the literature related to your topic and should propose new ideas and future research in the area. To begin, you will prepare an outline and conduct a literature review on the topic. In this outline you will briefly summarize (1 page) the topic and will provide a list of relevant articles (at least 15 refereed journal articles) by **October 5, 2006**. In this course, like scientific community, your paper will be reviewed and evaluated by your peers. Thus a draft of your paper is due on **November 9, 2006**. **PLEASE NOTE THAT THIS IS NOT A FIRST DRAFT. THIS SHOULD BE CLOSE TO THE FINAL VERSION OF YOUR PAPER.**

This draft should include a cover letter explaining that you are submitting this paper for evaluation and you should submit two copies of the paper (one for me and one for a reviewer).

**IF** I do not receive it electronically you will only receive half credit for your work. Papers will then be redistributed to the class and each person will critically evaluate the content and writing of another paper and add any other ideas they may have (There will be additional material given out on this). Reviews are due electronically to me on December 1 and the final paper including your response to reviewers is due as a hardcopy and sent electronically on **December 15 2006 by 5 pm. Start this early!** It will require a great deal of time to **thoroughly** review the literature and to read the relevant papers.

This paper should be written in the format of a scientific journal. Specifically, follow the guidelines for formatting (i.e., line spacing, literature citations etc.) from the Instructions to Authors in Animal Behaviour. These guidelines are available in the printed journal and online (Go to <http://authors.elsevier.com> and find Animal Behaviour). All written assignments will be evaluated for content, grammar, originality and style. Please note that it is your responsibility to read and understand the definition of plagiarism and the penalties attached.

## Grading Scale

Score	Letter Grade	Assigned G.P.A.
>95%	A+	4
≥ 90%	A	4
≥ 87%	A-	3.7
≥ 83%	B+	3.3
≥ 80%	B	3
≥ 77%	B-	2.7
≥ 73%	C+	2.3
≥ 70%	C	2
≥ 67%	C-	1.7
≥ 63%	D+	1.3
≥ 60%	D	1
≥ 57%	D-	0.7
< 57%	F	0

## Course Policies

### Attendance

Students are expected to attend and participate in lectures, laboratories and mandatory field trips. If you miss class **YOU ARE RESPONSIBLE** for obtaining the information from classmates **NOT** from the graduate assistant or instructor.

**Late Assignments**

Late work will not be accepted.

**Academic Integrity**

I take all issues regarding academic honesty very seriously. **ALL WORK HANDED IN SHOULD BE YOUR OWN.** Incidents of cheating, turning in work that is not your own or is cited improperly (plagiarism) will result in a zero grade for the course. If plagiarism is suspected you may be asked to submit an electronic version of the assignment in question for checking with one of the available anti-plagiarism software packages. All incidences of academic dishonesty will be reported to the Associate Dean of Student Affairs.

**Withdrawal from courses:** CSUF policy regarding withdrawal from classes (UPS 300.016) will be followed. After the first two weeks of the semester, students may be granted withdrawal **ONLY** by presenting compelling evidence outlining a physical, medical, or emotional condition that prevents completion of the course. **POOR ACADEMIC PERFORMANCE IS NOT EVIDENCE OF A SERIOUS REASON FOR WITHDRAWAL.** Students unable to produce official documentation will be required to take the grade they have earned in the class. Please refer to the course schedule for information on the last day to withdraw with a W grade. Important dates concerning registration or drops are on the inside cover of the CSUF **Fall** 2006 Class Schedule or at:  
[http://www.fullerton.edu/admissions/policy\\_and\\_deadline\\_information\\_.htm](http://www.fullerton.edu/admissions/policy_and_deadline_information_.htm).

**Tentative Schedule (all reading material for student presentations is TBA)**

- 1) August 24 – Introduction to Problems in Comparative Biology
- 2) August 31– Discussion # 1 The Basic Issues-Chapters 1 & 2
- 3) September 7 –Discussion # 2 Speciation, Chapter 3 pp. 71-81 & Chapter 4
- 4) September 14–Discussion # 3 Adaptation Chapter 3 pp. 81-87 & Chapter 5
- 5) September 21-Discussion # 5 Adaptationism grinds to a halt-- Gould and Lewontin- “The Spandrels of San Marco and the Panglossian Paradigm: A Critique of the Adaptationist Programme”; Gould “The exaptive excellence of spandrels as a term and prototype”; Buss et al. “ Adaptations, Exaptations, and Spandrels”
- 6) September 28-Discussion # 6 Cospeciation- Chapter 6 pp. 189-200 & Chapter 7
- 7) October 5 Outline and Literature Survey Due **turn in via email NO MEETING THIS WEEK**
- 8) October 12- Discussion # 7 Coadaptation- Chapter 6 pp. 200-204 & Chapter 8
- 9) October 19- Discussion # 8 Prospective- Chapter 9
- 10) October 26- Student Presentation #1 & 2
- 11) November 2 Student Presentation #3 & 4
- 12) November 9 Student Presentation # 5 & 6  
First Draft of Paper Due (two copies in class & electronically to Sean) \*\*
- 13) November 16- Student Presentation #7 & 8
- 14) November 23 \_ NO CLASS Thanksgiving Day
- 15) November 30 -Student Presentation #9 & 10 \*\*Paper Reviews Due in Class
- 16) December 8 Student Presentation #11 & 12
- 17) December 15 by 5 pm- Final Paper & Response to Reviewers Due (Hardcopy & an electronic copy to Sean)\*\*

**CLASSROOM SAFETY BRIEFING**

- In the event of an emergency such as earthquake or fire:

- Take all your personal belongings and leave the classroom (or lab). Use the stairways located at the east, west, or center of the building.
- Do not use the elevator. They may not be working once the alarm sounds.
- Go to the lawn area towards Nutwood Avenue. Stay with class members for further instruction.
- For additional information on exits, fire alarms and telephones, **Building Evacuation Maps** are located near each elevator.
- Anyone who may have difficulty evacuating the building, please see me after class.
- Dial 911 on any campus phone, pay phone, or blue emergency phones to connect directly to University Police. Dialing 911 on your cell phone will connect with the Highway Patrol. Tell CHP dispatcher that CSUF Police are the responding agency. Stay on the line until asked to hang up.
- If you want to bring visitors to the classroom, you must obtain permission from the instructor in advance and must sign a volunteer form.
- Visitors to the lab must obtain permission from the Chair and must sign a volunteer form.
- There is no smoking within 20 feet of every campus building. This includes the MH balcony.
- **FOR LAB CLASSES:** Specific hazards or risks in the lab will be discussed prior to each experiment. If you have any questions about the safety of an experiment, please contact me or the lab instructor.
  - If there is a spill of a hazardous chemical, notify your TA immediately.
  - Report all injuries to me or the TA immediately.
  - All students must read and sign the departmental, “Laboratory safety procedures” form at the beginning of each semester.
- **FOR CLASSES WITH FIELD TRIPS:**
  - Make sure you submit an Academic Field Trip Waiver and sign the Participant List for each field trip.
  - Students must comply with all State laws regarding possession, sale and use of alcohol or controlled substances while participating in CSUF related activities.