

**ANT 351E (Unique # 31257)**

**PRIMATE EVOLUTION**

**FALL 2012**

**TTH 2:00-3:30 SAC 5.172**

**PRIMATE EVOLUTION WEBSITE:** <http://www.laits.utexas.edu/shapiro/>

username: shapiro

password: pr1mate (yes that's a 1, not an i)

**Remaining course materials on blackboard:** <http://courses.utexas.edu>

Instructor: Liza Shapiro  
Office Hours: Tues 3:30-4:30 or by appointment  
(feel free to make an appointment with me!)  
SAC 5.128  
Phone: 471-7533  
Email: [liza.shapiro@austin.utexas.edu](mailto:liza.shapiro@austin.utexas.edu)

If you can't come to my office during office hours, please feel free to call at any time and make an appointment! You are also welcome to communicate with me by email.

Prerequisites: ANT 301 (You will be best prepared for this course if you have had ANT 301, ANT 432L, or ANT 348-Human Evolution).

**Course description:**

This course is an in depth examination of the fossil record for nonhuman primate evolution. After a basic grounding in the anatomy, ecology, and systematics (evolutionary relationships) of living primates, we will explore each of the major radiations of fossil primates with respect to adaptive diversity, functional morphology, and systematics.

**Course objectives:** After taking the course, you should understand:

- 1) the systematics of living primates including the basic anatomical differences that distinguish them functionally and phylogenetically.
- 2) current methodologies for reconstructing phylogenetic relationships among primates
- 3) how the study of functional morphology in living primates can be applied to the reconstruction of behavior in fossil primates.
- 4) the adaptations and phylogenetic relationships among fossil primates, and the relationship of fossil primates to living primates.

### Textbooks/Readings/Websites:

**Required Textbook:** Fleagle, J. (1999) Primate Adaptation and Evolution Academic Press. Available at the University Co-op.

**This book is available online as an ebook if you don't want to purchase it. (Look it up through the UT library webpage).**

**Optional but highly recommended textbook:** (a useful reference for comparative primate skeletal anatomy; will facilitate your lab observations and assignments). Available at the University Co-op.

**Whitehead P, Sacco W, and Hochgraf S (2005) A Photographic Atlas for Physical Anthropology. Morton Publishing Company. This book is on reserve in the Life Sciences Library if you don't want to purchase it.**

### Other Required Readings:

#### **On Blackboard:**

In addition to the textbook readings, there will be supplementary readings available in pdf (or links to webpages) format on BLACKBOARD. See Reading list in "Syllabi" on Blackboard. The pdfs will be found under "Assignments" on BLACKBOARD (<http://courses.utexas.edu>).

**PRIMATE EVOLUTION WEBSITE :** <http://www.laits.utexas.edu/shapiro/>. To log on, use username: shapiro, Password: primate. This website has been developed by me, UT Anthro graduate students, and the College of Liberal Arts. You can use this website as a backup to other assigned course readings. You will also be given specific assigned readings from it, and you will be assigned 5 digital laboratories you can link to from the website (see "Lab assignments" below).

NOTE: The Primate Evolution Website is a work in progress. I would appreciate feedback on any bugs you find. Reasonably significant feedback can earn you extra credit in the class.

### Course requirements:

**Lab assignments: You will complete 4 in-class labs using fossil cast material, plus 5 digital labs.**

**In-class labs:** There are four lab assignment sheets available for download from Blackboard. See "Assignments" on Blackboard (<http://courses.utexas.edu>). Labs will be held during regular class hours (see syllabus). You are required to bring your lab assignment with you to class on lab days (along with your class notes). You will hand in your lab answer sheet before you leave class.

**Digital labs** –From the main page of the Primate Evolution Website, <http://www.laits.utexas.edu/shapiro/>, click on **Electronic Laboratories**. This will lead you to the assignments and downloadable answer sheets. You must hand in the answer sheets **no later than the beginning of class** on the following dates (see syllabus):

<b>Digital Lab 1:</b> Early Primates:	Due October 18
<b>Digital Lab 2:</b> Early Anthropoids:	Due November 1
<b>Digital Lab 3:</b> Subfossil Lemurs:	Due November 13
<b>Digital Lab 4:</b> Fossil Platyrrhines	Due November 20
<b>Digital Lab 5:</b> Fossil Hominoids	Due November 29

(If you want to hand them in *earlier* than these dates, you are welcome to do so).

**Exams:** There will be 3 exams; the third exam is given on the last class day and is not cumulative. Each exam will consist of a variety of types of questions, such as multiple choice, short answers, and essays.

**Paper:** Each student will be required to write a 5-8 page paper, double spaced, 12 pt. font, 1 inch margins. The focus of the paper will be to compare primary (journal articles) and secondary (science reports from the popular press) sources on the same topic within primate evolution. Further information on the term paper can be found on a separate handout (see “Assignments” on Blackboard). **No later than Nov. 1, you are required to submit your paper topic to me – at a minimum, you should list your primary source and at least one of your secondary sources. This way, I can let you know if you’re on the right track before it’s too late. Please come for help in advance of Nov. 1 if you’re having trouble!**

In conjunction with the paper, you are required to read a tutorial on plagiarism and take a short test on it. The tutorial can be found at

<http://www.lib.utexas.edu/services/instruction/learningmodules/plagiarism/>.

The plagiarism test is available on Blackboard under “Assignments”.

**Your term paper will not be graded unless you complete the plagiarism test.**

**Manage your time wisely when preparing to write the paper. This may help (even though you’re not “dummies”!):**

<http://www.dummies.com/how-to/content/budgeting-your-time-to-complete-a-research-paper.html>

### **Grading**

Exam 1	20%
Exam 2	20%
Exam 3	20%
Paper	20% (including turning in your topic/sources by Nov 1).
Lab assignments:	20%

Final course letter grades will be assigned using the +/- grading system.

### **Course policies:**

The following policies are not intended to be harsh, but are included to provide clear guidelines on issues that students often face throughout the semester.

### Expectations:

I expect you to do the assigned readings in advance of the lectures and to come to class each day on time. If we have an in-class lab that day, I expect you to come prepared with your assignment sheet in hand (from Blackboard). I will not provide copies of the assignment sheet. If you forget to bring it, you will have to leave class and print it out on campus, which means you will lose precious lab time. *I do not take formal attendance, but I am aware of who consistently comes to class and who doesn't.* Consistent attendance can help boost your grade if you end up with a borderline final grade. Whether you come to class or not, you are responsible for keeping up with what happens in class. This applies to the content of the class, handouts, and announcements about class policies, events, deadlines, etc. Lectures and announcements can be found on Blackboard, but it is easy to miss other pertinent information if you are absent from class.

### **Make-ups**

There will be no make-up exams or in-class labs. Exceptions will be made only 1) with *proof* of dire emergency or illness, 2) due to observance of a religious holy day, or 3) due to military service.

**Note:** The 3<sup>rd</sup> exam is scheduled for the last week of classes. If you have other exams scheduled that week, plan to budget your study time well. This happens often, so I cannot give special consideration to students in this situation. I will also not provide alternative exam times for students who have personal travel plans or commitments, so please don't ask.

Illness or emergency: If you miss an exam or lab due to illness or emergency, contact me *as soon as possible* either before the exam or within 2 days after the exam or lab. You will not be given a make-up unless you can provide documentation regarding the reason for your absence.

Religious holy days. —By UT Austin policy, you must notify me of your pending absence at least fourteen days prior to the date of observance of a religious holy day. If you must miss a class, an examination, a work assignment, or a project in order to observe a religious holy day, you will be given an opportunity to complete the missed work within a reasonable time after the absence.

Absence for military service. In accordance with section 51.9111 of the Texas Education Code, a student is excused from attending classes or engaging in other required activities, including exams, if he or she is called to active military service of a reasonably brief duration. [The maximum time for which the student may be excused has been defined by the Texas Higher Education Coordinating Board as "no more than 25 percent of the total number of class meetings or the contact hour equivalent (not including the final examination period) for the specific course or courses in which the student is currently enrolled at the beginning of the period of active military service."] The student will be allowed a reasonable time after the absence to complete assignments and take exams.

**Students with disabilities:** At the beginning of the semester, students with disabilities who need special accommodations should notify the instructor by presenting a letter prepared by the

Services for Students with Disabilities (SSD) office. To ensure the most appropriate accommodations can be provided, students should contact the SSD at 471-6259. See <http://deanofstudents.utexas.edu/ssd/>

### **Late assignments**

Late term papers or labs will cost you 10 points (out of 100) per day. This could change your grade dramatically. Don't be late!

### **Grades**

The grade you are given, either on an individual exam or assignment or as your final grade, is not the starting point of a negotiation. It is your grade unless an error has been made. If you think an error has been made, let me know within one week of receiving the assignment or exam grade.

**\*\* Important!** I do not offer “extra credit” opportunities. If you are struggling in the course, please come for help *during* the semester when there is still time for me to help you. Take advantage of my office hours or make an appointment with me.

Do not wait until the course is over and ask me to change your grade because you are trying to graduate, or you have had a tough time with your personal life this semester. By then, it is too late for me to help you.

**Honor Code:** Each student in this course is expected to abide by the University of Texas Honor Code.:

*The core values of The University of Texas at Austin are learning, discovery, freedom, leadership, individual opportunity, and responsibility. Each member of the university is expected to uphold these values through integrity, honesty, trust, fairness, and respect toward peers and community.*

### **Scholastic Dishonesty**

Students who violate University rules on scholastic dishonesty are subject to disciplinary penalties, including the possibility of failure in the course and/or dismissal from The University. Scholastic dishonesty" includes, but is not limited to, cheating, plagiarism, collusion, falsifying academic records, misrepresenting facts, and any act designed to give unfair academic advantage to the student (such as, but not limited to, submission of essentially the same written assignment for two courses without the prior permission of the instructor), or the attempt to commit such an act.

For a tutorial and information on plagiarism, see

<http://www.lib.utexas.edu/services/instruction/learningmodules/plagiarism/>

Also, see <http://deanofstudents.utexas.edu/sjs/scholdis.php> and section 11-802 in the General Information Catalog <http://registrar.utexas.edu/catalogs/gi09-10/app/gi09.appc03.html#subchapter-11-800-student-standards-of-conduct>.

**Emergency evacuation:** (Office of Campus Safety and Security, 512-471-5767, <http://www.utexas.edu/safety/> )

- Occupants of buildings on The University of Texas at Austin campus are required to evacuate buildings when a fire alarm is activated. Alarm activation or announcement requires exiting and assembling outside.
- Familiarize yourself with all exit doors of each classroom and building you may occupy. Remember that the nearest exit door may not be the one you used when entering the building.
- Students requiring assistance in evacuation shall inform their instructor in writing during the first week of class.
- In the event of an evacuation, follow the instruction of faculty or class instructors.
- Do not re-enter a building unless given instructions by the following: Austin Fire Department, The University of Texas at Austin Police Department, or Fire Prevention Services office.

### **Other useful information:**

#### **Resources for Learning & Life at UT Austin**

- The University of Texas has numerous resources for students to provide assistance and support for your learning.
  - Sanger Learning and Career Center: <http://lifelearning.utexas.edu/>
  - Undergraduate Writing Center: <http://uwc.utexas.edu/>
  - Counseling & Mental Health Center: <http://cmhc.utexas.edu/>
  - Career Exploration Center: <http://www.utexas.edu/student/careercenter/>
  - Student Emergency Services: <http://deanofstudents.utexas.edu/emergency/>

#### **Behavior Concerns Advice Line (BCAL)**

- If you are worried about someone who is acting differently, you may use the Behavior Concerns Advice Line to discuss by phone your concerns about another individual's behavior. This service is provided through a partnership among the Office of the Dean of Students, the Counseling and Mental Health Center (CMHC), the Employee Assistance Program (EAP), and The University of Texas Police Department (UTPD). Call 512-232-5050 or visit <http://www.utexas.edu/safety/bcal>

**ANT 351E (31257) PRIMATE EVOLUTION**  
**FALL 2012**  
**DR. LIZA SHAPIRO**

**SCHEDULE: Lectures, labs, exams**

AUG	30	INTRODUCTION
SEPT	4	Evolution, natural selection and speciation
	6	Cladistics: Reconstructing phylogenetic relationships
	11	What is a primate?
	13	Extant primates I: Strepsirrhines
	18	Extant primates II: Haplorhines - Platyrrhines
	20	Extant primates III: Haplorhines - Catarrhines
	25	<b>In-class Lab 1- Extant primates</b>
	27	Primate origins: Hypotheses
OCT	2	<b>EXAM 1</b>
	4	The Paleocene fossil record + Adapoids I: Morphology and adaptations
	9	Adapoids II: Phylogenetic relationships
	11	Omomyoids I: Morphology and adaptations
	16	Omomyoids II: Phylogenetic relationships
	18	<b>In-class Lab 2: Early primates (hand in Digital Lab 1: Early primates)</b>
	23	Early anthropoids I: Morphology, adaptations of Eocene anthropoids
	25	Early anthropoids II: Morphology, adaptations of Oligocene anthropoids
	30	Early anthropoids III: Phylogenetic relationships
NOV	1	<b>In-class Lab 3: Anthropoid origins (hand in Digital Lab 2: Early anthropoids). Submit paper topic.</b>
	6	<b>EXAM 2</b>
	8	Strepsirrhine evolution
	13	Platyrrhine evolution ( <b>hand in Digital Lab 3: Subfossil lemurs</b> )
	15	Cercopithecoid evolution
	20	Hominoid evolution I: Early Miocene/Adaptations and phylogeny ( <b>hand in Digital Lab 4: Fossil Platyrrhines</b> )
	22	THANKSGIVING: NO CLASS
	27	Hominoid evolution II: Mid-Late Miocene /Adaptations and phylogeny
	29	<b>In-class Lab 4 Miocene primates (hand in Digital Lab 5: Fossil Hominoids)</b>
DEC	4	Review for exam 3 and <b>PAPER DUE TODAY</b>
	6	<b>EXAM 3</b>

**ANT 351E PRIMATE EVOLUTION FALL 2012  
DR. LIZA SHAPIRO**

**READING LIST**

**TB=Textbook (Fleagle)**

**BB= Blackboard . Readings are available online via Blackboard** (Go to Blackboard <http://courses.utexas.edu> and connect to ANT 351E). You can also connect to Blackboard from the Primate Evolution Website (see below).

**PEW= Primate Evolution website: Go to <http://www.laits.utexas.edu/shapiro>** (You can also connect to the PEW from Blackboard: External Links). To log into PEW, use Name: shapiro, Password: primate (note it's a 1 not i).

**Aug 30 Introduction: What is this course about?**

**Sept 4 Evolution, natural selection, and speciation**

BB: Read pages 29-52 in Cartmill, M., Smith, F.H., Brown, K.B. (2009) Chapter 2: Analyzing Evolution.

**Sept 6 Cladistics: Reconstructing phylogenetic relationships**

TB: Fleagle Ch. 1

BB: Read pages 52-62 in Cartmill, M., Smith, F.H., Brown, K.B. (2009) Chapter 2: Analyzing Evolution.

BB: Martin, R. (1992) Classification and evolutionary relationships. (from: The Cambridge Encyclopedia of Human Evolution, Cambridge University Press pp.17-23).

**Recommended reading: Useful websites on cladistics**

<http://www.fossilnews.com/1996/cladistics.html>

<http://www.ucmp.berkeley.edu/clad/clad4.html>

**Sept 11 What is a primate?**

TB: Fleagle Ch. 2

BB: Lewin, R. (1993) Primate Heritage. (from: Human Evolution. An Illustrated Introduction, Blackwell Scientific Publications: Boston, pp. 44-49).

**Sept 13 Extant Primates I: Strepsirrhines**

TB: Fleagle Chapter 4

BB: Martin, R (1990) Are the Malagasy lemurs monophyletic? (pp. 670-676 in Primate Origins and Evolution: A phylogenetic reconstruction. Princeton University Press).

### **Sept 18 Extant Primates II : Haplorhines - Platyrrhines**

TB: Fleagle Ch. 5 esp. Figs 5.4, 5.19

BB: Ford, S (1980) Callitrichids as phyletic dwarfs, and the place of the Callitrichidae in Platyrrhini. Primates, Vol. 21:31-43.

#### **Recommended additional reading:**

BB: Soligo, C. and Müller A. (1999) Nails and claws in primate evolution. J. Hum. Evol. 36:97-114.

### **Sept 20 Extant Primates III: Haplorhines - Catarrhines**

TB: Fleagle Chs 6 and 7, especially Figs 6.1, 6.3, 7.2

BB: Lewin, R. (1993) Molecular perspectives. (from: Human Evolution. An Illustrated Introduction, Blackwell Scientific Publications: Boston, pp.50-55).

BB: Collard, M. and Aiello, L. (2000). From forelimbs to two legs. Nature 404:339-340.

### **Sept 25 In-class Lab 1 - Extant Primates**

**BRING YOUR LAB ASSIGNMENT TO CLASS (available online in BB)**

### **Sept 27 Primate Origins: Hypotheses**

TB: Fleagle pp. 346-347

BB: Cartmill, M (1992) New views on primate origins. Evolutionary Anthropology 105-111.

BB: Sussman RW (1995) How primates invented the rainforest and vice versa. In Creatures Of The Dark: The Nocturnal Prosimians L. Alterman, G.A. Doyle, M.K. Izard, Editors. New York: Plenum Press.. Pgs: 1-10

### **Oct 2 EXAM 1**

#### **Oct 4: The Paleocene fossil record + Adapoids I: Morphology and adaptations**

TB: Fleagle Chs. 10, 11

TB: Fleagle pp. 353-top of 371

Look over:

Franzen JL, Gingerich PD, Habersetzer J, Hurum JH, von Koenigswald W, et al. 2009 Complete Primate Skeleton from the Middle Eocene of Messel in Germany: Morphology and Paleobiology. PLoS ONE 4(5): e5723.

<http://www.plosone.org/article/info%3Adoi%2F10.1371%2Fjournal.pone.0005723>

PEW: From fossil database page, click on and read:

**Paleocene**

**Eocene**

**Adapoids**

**Optional:** Plesiadapiformes

<b>BETWEEN NOW AND OCT 18, GO TO THE PRIMATE EVOLUTION WEBSITE AND COMPLETE DIGITAL LAB 1: EARLY PRIMATES (due Oct 18)</b>
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#### **Oct 9 : Adapoids II: Phylogenetic relationships**

Switek BJ. Ancestor or adapiform? *Darwinius* and the search for our early primate ancestors. *Evol Educ Outreach*. 2010;3:468–76.

**Optional** (similar to Switek article):

Fleagle, J.G. 2010 The Many Worlds of Ida. *Perspectives in Biology and Medicine*, Volume 53, Number 4, Autumn 2010, pp. 605-612 (Review)

#### **Oct 11: Omomyoids I: Morphology and adaptations**

TB:Fleagle pp.372-388

BB: Martin, R. (1991). New fossils and primate origins. *Nature* 349: 19-20.

PEW: From fossil database page, click on and read:

**Omomyoids**

**Oct 16: Omomyids II: Phylogenetic relationships**

See Oct 11.

**Oct 18 In-class Lab 2 : Early primates**

**BRING YOUR LAB 2 ASSIGNMENT SHEET TO CLASS (available online on BB)**

**HAND IN DIGITAL LAB 1: EARLY PRIMATES**

**Oct 23 : Early anthropoids I: Morphology, adaptations of Eocene anthropoids**

BB: Beard, C.1996 Searching for our primate ancestors in China.

([http://www.carnegiemuseums.org/cmag/bk\\_issue/1996/marapr/beard.htm](http://www.carnegiemuseums.org/cmag/bk_issue/1996/marapr/beard.htm))

BB: Researchers discover fossils of tiny, thumb-length primates

(<http://www.niu.edu/pubaffairs/RELEASES/2000/MAR/primate/Tinyprimates.htm>)

BB: Williams, B. , Kay, R. and Kirk C. (2010) New perspectives on anthropoid origins. Proc Natl Acad Sci U S A. March 16; 107(11): 4797–4804.

PEW :Section on Early Anthropoids

**BETWEEN NOW AND NOV 1, GO TO THE PRIMATE EVOLUTION WEBSITE AND COMPLETE DIGITAL LAB 2: EARLY ANTHROPOIDS (due Nov 1)**

**Also due Nov 1: your paper topic and list of sources.**

**Oct 25: Early anthropoids II: Morphology, adaptations of Oligocene anthropoids**

TB: Fleagle Ch. 13 up to 417

[Fossil skull fingered as ape–monkey ancestor : Nature News](http://www.nature.com/news/2010/100714/full/news.2010.354.html)

<http://www.nature.com/news/2010/100714/full/news.2010.354.html>

PEW: section on Early Catarrhines: Propliopithecidae

**Oct 30: Early anthropoids III: Phylogenetic relationships**

TB: Fleagle pp. 417-421

[2010 Williams, B. A., Kay, R. F., Kirk, E. C., & Ross C. F. \*Darwinius masillae\* is a strepsirrhine – a reply to Franzen et al. \(2009\). \*Journal of Human Evolution\*. 59: 567-573.](#)

**Nov 1: In-class Lab 3 : Early anthropoids**

**BRING YOUR LAB 3 ASSIGNMENT SHEET TO CLASS (available online on BB)**

**HAND IN DIGITAL LAB 2: EARLY ANTHROPOIDS**

**BETWEEN NOW AND NOV 13, GO TO THE PRIMATE EVOLUTION WEBSITE AND COMPLETE DIGITAL LAB 3: SUBFOSSIL LEMURS (due Nov 13)**

**Nov 6 : EXAM 2**

**Nov 8: Strepsirrhine evolution**

TB: Fleagle 104-110

BB: Martin, R. (2003). Combing the primate record. *Nature* 422: 388-390.

PEW: Section on Subfossil lemurs

*Optional: BB: Stankiewicz, J., Thiart C., Masters J.C., and de Wit M.J. (2006). Did lemurs have sweepstakes tickets? An exploration of Simpson's mode for the colonization of Madagascar by mammals. J. Biogeogr. 33:221-235.*

**Nov 13: Platyrrhine evolution**

**HAND IN DIGITAL LAB 3: SUBFOSSIL LEMURS**

TB: Fleagle Ch. 14

PEW Section on Platyrrhine Evolution

**BETWEEN NOW AND NOV 20, GO TO THE PRIMATE EVOLUTION WEBSITE AND COMPLETE DIGITAL LAB 4: FOSSIL PLATYRRHINES (due Nov 20)**

**Nov 15: Cercopithecoid evolution**

TB: Fleagle Ch. 16

BB: Köhler, M; Moyà-Solà, S. Fossil muzzles and other puzzles. Nature, 388:327 .

PEW: Section on Cercopithecoidea

**Nov 20: Hominoid evolution I: Early Miocene/Adaptations and phylogeny**

**HAND IN DIGITAL LAB 4: FOSSIL PLATYRRHINES**

TB: Fleagle Ch. 13

BB: Read pages 74-78 of Begun, D. (2003) Planet of the apes. Scientific American. 289:74-83

PEW: Hominoid Evolution: Sections on Hominoidea, Proconsulidae, and Incertae Sedis

**BETWEEN NOW AND NOV 29, GO TO THE PRIMATE EVOLUTION WEBSITE  
AND COMPLETE DIGITAL LAB 5: FOSSIL HOMINOIDS (due Nov 29)**

**Nov 22: Thanksgiving – no class**

**Nov 27: Hominoid evolution II: Mid-Late Miocene: Adaptations and phylogeny** (See readings for April 21)

BB: Read pages 78-83 of Begun, D. (2003) Planet of the apes. Scientific American. 289:74-83

BB: Andrews, Peter & David Pilbeam (1996) The nature of the evidence. Nature, 379: 123-124.

PEW: Hominoid Evolution: Hominidae section and its subsections

**Nov 29: In-class Lab 4 : Miocene primates**

**BRING YOUR LAB 4 ASSIGNMENT SHEET TO CLASS (available online on BB)**

**HAND IN DIGITAL LAB 5: FOSSIL HOMINOIDS**

**Dec 4: In-class review for Exam 3 and term paper due today!**

**Dec 6: EXAM 3**