

GEO 302M - Spring 2012

TIME & PLACE: T-Th 2 - 3:30 p.m., JGB (formerly GEO) 2.324

INSTRUCTOR: Chris Bell
Office: Geology building 3.316F
Phone: 512-471-7301 (don't bother)
email: cjbelle@mail.utexas.edu
office hours: W 1:30-2:30

LABORATORY INSTRUCTORS:

Alicia Kennedy
email: alicia.m.kennedy@utexas.edu
office hours: TBA

Adam Marsh
email: admarsh@utexas.edu
office hours: TBA

Zach Morris
email: zsmorris@utexas.edu
office hours: TBA

READINGS: There is no text. Readings will be assigned throughout the semester.
Readings will be on open reserve in the Geology Library (4th floor of the Geology building) and are available on-line (see below, under Readings).

GRADING: The grade for the class is based on the following

- 1) Exam #1 20%
- 2) Exam #2 20%
- 3) Final Exam (Lecture) 25%
- 4) Laboratory 25%
- 5) Lecture quizzes 10%

Final course grades will be based on the following scale

A	94-100	C	73-76
A-	90-93	C-	70-72
B+	87-89	D+	67-69
B	83-86	D	63-66
B-	80-82	D-	60-62
C+	77-79	F	59 or less

PREREQUISITES: There are no prerequisites for this course.

EXAMS: Students are required to take all exams. Exams usually will consist of short answer and short essay questions, definitions, and 'special' questions (labeling figures, drawing a graph, etc.). Long essay questions are likely, but you will be warned in advance if one will appear on an exam. Answers must be confined to the space provided and you must write legibly and in complete sentences at all times. All exams will be returned as promptly as possible. There are no make-up exams. Students who arrive more than 10 minutes late to class on an exam day will not be

allowed to take an exam. If you have a scheduling conflict with an exam date, please notify me as soon as possible; failure to notify me prior to exam day will result in a zero for that exam.

QUIZZES: Sporadic and unannounced quizzes will be given in class on the materials presented in the readings. All but the first quiz will be drawn from the readings. The quizzes will be short and will be given immediately following opening announcements. Students who arrive late to class (= after the quiz question is given) on a quiz day will not be permitted to take the quiz. Quizzes constitute 10% of your course grade, so do not ignore this portion of the course!

READINGS: The readings are intended to *supplement* and *complement* the lectures. Reading are **not** redundant with lecture content. The majority of the readings are easy to complete and understand; the more challenging readings toward the end of the semester will take more time to digest, so plan ahead. Readings are on reserve in the Geology library (4th floor of the Geology building) and are available on-line. Ten copies of each are in the *open reserve* filing cabinet in the back room of the library. Open reserve readings are filed under "BELL." Copies on open reserve should not be removed from the library for any reason. You can read it in the library (and then return it to the file) or you can make a personal copy to take with you (copy machines are right next to the open reserve cabinet). Do not wait until the last minute to complete readings! At the end of the semester, I will check open-reserve readings. If all copies are still there, I will add a point to everyone's course grade. If any copies are missing, I will take away a point from everyone's course grade.

Readings also are available on-line via Blackboard.

EXTRA CREDIT: Extra credit will appear on all exams and as special projects announced in lecture. Take advantage of these opportunities to raise your grade!

ATTENDANCE AND ABSENCE: Attendance is required, but I do not waste time taking roll. Past experience shows that students who regularly miss class typically do not pass the class. Course notes are not posted online, and note-taking services are not authorized to take or distribute notes for this course. All class announcements (changes in schedule, comments on readings, current events, etc.) are made in the first few minutes of class and will not be repeated. Quizzes are given early in the lecture period and form 10% of your grade for the course. Please make every effort to arrive on time for class. If you are running late, please enter the room through the doors at the back.

CHEATING: Don't cheat. The University Honor Code reads "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."

FOOD: Food, gum, and drinks (including water) are not permitted in the lab at any time. Mid-afternoon sustenance, caffeine, and water requirements are well appreciated and are permitted in lecture, but there is general agreement that noisy chip bags are obnoxious and distracting; please avoid being obnoxious with food.

LAB: The laboratory is an important portion of this course and constitutes 25% of your course grade. You cannot take the course without the laboratory, and you must attend the lab section for which you are registered.

LAPTOP COMPUTERS: In general, I am opposed to the use of laptop computers in class; they are a visual and auditory distraction to other students, and frequently are used for purposes not connected with the class. A special section of the room will be reserved for those who wish to use laptop computers, and computer use will be permitted in that section unless they are used inappropriately. **After the first inappropriate use by any student, laptop computers will be banned from class.**

SPECIMEN HANDLING: The laboratory portion of this course includes an extensive amount of "hands-on" experience with fossil and modern specimens, many of which are fragile. Apart from powdering a specimen under your foot, most laboratory-incurred damages to specimens can be repaired if we are notified promptly. If you damage a specimen (it happens, trust us), let your TA know right away so that it can be fixed. If you drop a small specimen on the floor, make a general announcement to the class so the specimen can be found and recovered intact (see "powdering" above).

Unfortunately, we do not have enough material to provide each student with an example of each specimen; therefore we have to share material. Always return a specimen to the box or tray from which you took it. Never leave a specimen out on a table when you are finished with it. If you are comparing multiple specimens, keep track of the places from which they came and return them as soon as you are finished with them. **If you get confused** (we do, all the time) **ask for assistance**; at that point it becomes OUR problem to return things to their proper place. Any time you have a question about proper handling, please ask. We anticipate a certain amount of attrition, so don't worry about getting in trouble if you accidentally damage a specimen; just let us know when it happens.

OFFICE HOURS: If you have any questions that are not answered during lecture, or if you are confused by a concept or topic we cover, or if you want more information on a topic, or you don't have anything better to do than keep us company, please come to see us in office hours. If your schedule does not permit you to come to scheduled office hours, make an appointment that suits your schedule. Questions? Comments? Clarifications? Queries? Qualms? Concerns? Call them out in class or come to office hours.

OTHER ISSUES: Please notify Chris as soon as possible of any modifications or adaptations you may require to accommodate a disability-related need. The University of Texas at Austin provides upon request appropriate academic accommodations for qualified students with disabilities. For more information, contact the Office of the Dean of Students at 471-6259, 471-4641.

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Lecture/Discussion Schedule and Readings

Instructor:

Chris Bell

Office: Geology Building JGB 3.316F

Phone: 471-7301 (don't bother)

e-mail: cjbell@mail.utexas.edu

office hours: W 1:30-2:30 or by appointment

Laboratory Instructors:

Alicia Kennedy

email: alicia.m.kennedy@utexas.edu

office hours: TBA

Adam Marsh

email: admarsh@utexas.edu

office hours: TBA

Zach Morris

email: zsmorris@utexas.edu

office hours: TBA

Textbook: There is no text book; readings are assigned throughout the semester and will be on open reserve in the Geology Library (4th floor of the Geology building) and are also available on-line (see Policy Statement).

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| Jan. 17 | Introduction; structure, scope, content and expectations (yours and ours) |
| Jan. 19 | READING: M. Shermer. 1997. "How thinking goes wrong: Twenty-five fallacies that lead us to believe weird things" (chapter 3 in Why People Believe Weird Things, pp. 44-61) |
| Jan. 24 | READING: K. Padian "How to collect and identify a dinosaur" |
| Jan. 26 | READING: K. Chin "On the elusive trail of fossil dung" |
| Jan. 31 | READING: J. E. Hill & G. McKay. Classifying Mammals. Pp. 19-21 in Encyclopedia of Mammals, Second Edition. Academic Press, San Diego, CA. |
| Feb. 2 | READING: J. Hanken. 1999. Why are there so many new amphibian species when amphibians are declining? Trends in Ecology and Evolution 14 (1):7-8. |

- Feb. 7 **TWO READINGS:** M. Archer. 1994. Mammals eggstraordinaire. Natural History 103(4):48-49.
- M. Archer. 1994. World Furry-weight champions. Natural History 103(4):44-47.
- Feb. 9 READING: M.J. Novacek "Mammalian phylogeny: shaking the tree"
- Feb. 14 READING: W. de Jong. Molecules remodel the mammalian tree. Trends in Ecology and evolution 13(7):270-275
- Feb. 16 READING: No reading for today! Prepare for your exam
- Feb. 21 READING: No reading for today!
- Feb. 23 READING: Darwin, 1859, "Introduction". Pp. 1-6 *in* On the Origin of Species by Means of Natural Selection.
- Feb. 28 **EXAM #1**
- March 1 READING: S. Gould. 1996. Excerpts from Full House. Part 1; Pp. 144-151, 167-169.
- March 6 READING: S. Gould. 1996. Excerpts from Full House. Part 2: Pp. 169-175.
- March 8 READING: S.J. Gould in "Hen's Teeth and horse's Toes", pp. 313-319
- March 13/15 **SPRING BREAK; no class.**
- March 20 READING: Dingus and Rowe "The Mistaken Extinction" pp. 91-99
- March 22 READING: Dingus and Rowe "The Mistaken Extinction" pp. 130-140
- March 27 READING: No reading today.
- March 29 READING: S. D. Webb. 1994. Successful in spite of themselves. Natural History 103(4):50-53
- April 3 READING: J.J. Ewel, and others "Deliberate introductions of species: research needs" (on reserve)
- April 5 READING: "S. Sarkar "Wilderness preservation and biodiversity conservation - keeping divergent goals distinct"

- April 10 READING: Issues in Ecology #2" Ecosystem services: benefits supplied to human societies by natural ecosystems"
- April 12 **EXAM #2**
- April 17 READING: Woodburne, M. O., A. L. Cione, and E. P. Tonni. 2006. Central American provincialism and the Great American Biotic Interchange. Pp. 73-101 *in* Advances in Late Tertiary Vertebrate Paleontology in Mexico and the Great American Biotic Interchange (Ó. Carranza-Castañeda, and E. H. Lindsay, eds.). Universidad Nacional Autónoma de México, Instituto de Geología, Publicación Especial 4.
- April 19 READING: Issues in Ecology #1 "Human Alteration of the global nitrogen cycle: causes and consequences"
- April 24 READING: Barnosky, A. D., P. L. Koch, R. S. Feranec, S. L. Wing, and A. B. Shabel. 2004. Assessing the causes of late Pleistocene extinctions on the continents. *Science* 306:70-75.
- April 26 READING: A. D. Barnosky, et al. 1996. Climatic fluctuations and the evolution of mammalian communities. Pp. 2-4 *in* Global Warming: Interglacials, Interstadials, Climatic Optima, and Other Events. AMQUA 1996. Program and Abstracts of the 14th Biennial Meeting, May 20-22, 1996. American Quaternary Association.
- May 1 READING: A. J. McMichael and others "Globalization and the sustainability of human health"
- May 3 The future of Mammals: Final comments, concerns, and cautions

FINAL EXAM -- Saturday, May 12 -- 2:00 - 5:00 pm

See below for discussion topics

Topics for Discussion (more or less in order of appearance)

Diversity of mammals: The extant perspective

What is Science? What is a fossil?

Geologic time, uniformitarianism, dating

Bias and the fossil record

Taxonomy, Classification, and Systematics

Phylogenetic Systematics; Definition vs. Diagnosis

What is mammal? The (mammalian) players in the game

Mammalian phylogeny: A changing perspective

Plate tectonics and mammalian biogeography

Introduction to biological evolution

Bias in evolutionary thinking: Lamarckian need; progress, etc.

Inferring process from pattern: A tricky endeavor

Introduction to extinction

The K/T boundary: Mammalian dominance(?) and contingency

Extinction and the origin of modern mammal groups

Australian radiations (including the platypus!)

A modern perspective on Madagascar; differentiation in confined spaces

South American Radiations and the Great American Interchange

Revisiting extinction: Pleistocene extinctions

Climate change and mammals: Using the past to predict the future?

Overview of mainland Africa: data, gaps, challenges, primate evolution

Marine mammals: evolutionary history and modern challenges

Mammalian conservation in a changing world