QUATERNARY PALEONTOLOGY

BOISE STATE UNIVERSITY, ANTHROPOLOGY 414-001
Spring 2009, Tuesday and Thursday, 9:15-10:30 A.M., ILC204

Instructor: Dr. Christopher Hill; Graduate Assistant: Mr. Garrett Webb

Office Location: HWSC 51; Office Hours: 11:00 A.M.-2:30 P.M.; Tuesday, 10:00 A.M.-1:30 P.M., Wednesday: 10:30 A.M.-1:30 P.M., Thursday; or by appointment.

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Course Summary

This course examines fundamentals of biostratigraphy, paleoecology, taphonomy, and comparative anatomy applied to the study of Pleistocene and Holocene paleobiology. The primary topics include paleobotany and paleozoology as they relate to biogeograohy, adaptation, evolution and extinction. The class emphases connections to environmental-climate change and human interactions during the last 3-2 million years. This course uses a combination of lectures, visual aids (e.g. Powerpoint presentations), readings, student-presentations, summary papers, and computer learning (e.g. BLACKBOARD). It is also designed to provide experience in taking notes, the use of library and internet resources in the preparation of papers and presentations, and develop communication and critical thinking skills.

Content of the Course

Quaternary Paleontology is an introduction to the study of fossils of plants and animals from the last 2-3 million years.

Overview
Concepts, living-extinct taxa and systems, the significance of paleontology.

Quaternary Paleontology and the History of Science
Major figures and their contributions (e.g. Linneaus, Cuvier and Jefferson, Lyell and Darwin, Simpson); concepts and methods; significance.

Time and Taphonomy
Geologic time-scale, relation to fossil assemblages. Assemblage formation: accumulation, dispersal, disarticulation, deposition, burial, modification. Recovery: sampling and interpretation.

Systematics and Cladistics
Systematics: phylum-species; taxa and clades; extinct and living taxa, application to phylogenetic relationships.

Paleobotany
The basics of Quaternary botany (pollen, macrofossils, phytoliths).

Paleozoology
Invertebrates (mollusks, insects) and vertebrates. Osteology: form and function; skull; teeth; post-cranial. Taxa: identification, measurements.

Applications
Geochemistry, environmental archaeology, community co-evolution, morphologic evolution, extinction, conservation and other case studies.

Methods of Evaluation

You are expected to participate with regular class attendance. Come prepared for class, complete the assignments on schedule, and set high standards for your work. No credit will be given for late papers or other assignments. You are responsible for all required readings, information presented in class, and information available on the class BLACKBOARD site. Your final grade will be based on the following requirements:

Environmental Change, Taxonomy Presentations (2 X 2.5% = 5%)

These are short presentations that review information collected about specific subjects.

Papers and Exercises (7 X 5% = 35%)

Papers are based on some of the major topics covered in the readings and in class (environmental change, history, taphonomy, invertebrates). They must incorporate information provided in class and as well as required readings. Exercises are projects on cladistics, paleobotany, faunal osteology, faunal environments. Some of the exercises will require the use of laboratory data, information from the internet, the creation of maps, time charts, and cladograms.

Paleobotany Exercise (10%)

This assignment involves using pollen and macrofossil data to gain experience with the methods used in paleobotany. It will include a short report describing the aims, methods, results, and conclusions regarding the data studied.

Vertebrate Anatomy Notebook with Cladistics and Summary (15%)

There are three parts to this assignment. First, you will observe and identify a set of mammal specimens, maintaining a detailed notebook of labeled drawings. Second, these data will be used to develop a cladogram. Third. You will summarize your findings in a concise laboratory report.

Integration Paper (15%)

This is a paper that uses your knowledge based on the papers and the exercise to evaluate paleobiotic dynamics of the Quaternary. Information from paleobotany and paleozoology will be applied to examine spatial and temporal envronmental patterns.

Annotated Bibliography (of Case Study) (5%)

You will conduct a research project based on a case study in Quaternary paleontology and hand-in an annotated bibliography on your topic.

Case Study Presentations (5%)

The presentations are an organized Powerpoint review of information collected about specific topics (such as systematics, taxonomic comparison, dating and geochemistry, archaeological contexts, or other aspects of Quaternary paleontology).

Summary of Applications and Paper (Case Study) Presentations (10%)

The set of summaries is a review of information collected about the application topics (such as geochemistry, environmental archaeology, community evolution, morphologic evolution, extinction, and conservation) as well as information provided in the case study presentations.

Grading
Grades for the course will be based on your total accumulated score from the papers and presentations. The following grading scale will be used as the basis for determining your final grade:

100-96% = A
95-90 = A-
89-88% = B+
87-82% = B
81-80% = B-
79-78% = C+
77-72% = C
71-70% = C-
69-68% = D+
67-62% = D
61-60% = D-
Below 60% = F

Required Readings
You are required to incorporate readings into your papers. These readings supplement the information provided as part of the lectures. A list of papers will be provided for each topic.

General Checklist of Requirements for the Presentation-Review

1. Base your presentation on at least 1 journal article or book.
   a) You must get your article and topic approved by the instructor.
   b) You can supplement your article with internet materials.
2. For full credit you need to use Powerpoint.
3. Follow the time limits (10-15 minutes).
4. Contents--
   Include title, your name.
   Provide an outline of presentation.
   Include an introduction and a summary.
   Be prepared to answer questions.
   Your presentation-review should demonstrate the use of research technologies and methods—properly cite references, include appropriate books and peer-reviewed journals.
5. Distribute a list of references used along with your presentation. This list should include: name of author, date of publication, title of article, journal or book published in, editor if applicable, publisher, place of publication. Make sure that it is possible for someone to know your where you obtained all the information from your presentation.

General Checklist of Requirements for the Paper-Summaries

1. Topic of Paper
2. Author (Your name)

3. Class (Anth 414-Quaternary Paleontology)
4. Date
5. Text: Include a general introduction and a conclusion. Papers will be partially evaluated based on the use of proper grammar, sentence structure, and spelling. Certain papers will include incorporating exercises in the identification and measurements of faunal materials, and the evaluation of spatial and temporal patterns. The text should:
   a) Demonstrate knowledge of current findings and conclusions on the topic;
   b) Clearly communicate issues or hypotheses, and provide information on alternatives (effective written communication and critical thinking);
   c) Contain an analysis of patterns of continuity and variability within the data sets or literature pertaining to the topic;
   d) Explicitly apply theory, concepts, and methods and relate these to real-world issues.
   e) Utilize information provided by in-class presentations and other data-sets.
6. Bibliography (Publications or References Cited)
   a) Must include name of author, date of publication, title of articles, journals or books published, editor if applicable, publisher, place of publication.
   b) Make sure that it is possible for someone reviewing your paper to know where you obtained all the information in your paper.
7. Deadline. No credit for papers handed in after the due date (see schedule).

Quaternary Paleontology (Spring 2009)		
Date	**In Class Topics**	**Assignments**
January 20, Tuesday	*Introduction, Outline and Overview*	
January 22, Thursday	*History*	
January 27, Tuesday	*History*	Environmental Change Paper (5%) Presentation (2.5%)
January 29, Thursday	*History/Time & Taphonomy*	
February 3, Tuesday	*Time & Taphonomy*	History Paper (5%)
February 5, Thursday	*Time & Taphonomy/Systematics & Cladistics*	
February 10, Tuesday	*Systematics & Cladistics*	Taphonomy Paper (5%)
February 12, Thursday	*Systematics & Cladistics/Paleobotany*	Taxonomy Presentation-Blackboard Submission (2.5%)
February 17, Tuesday	*Paleobotany*	Cladistics Exercise (5%)
February 19, Thursday	*Paleobotany*	
February 24, Tuesday	*Paleozoology*	
February 26, Thursday	*Paleozoology*	Paleobotany Exercise (10%)
March 3, Tuesday	*Paleozoology*	
March 5, Thursday	*Paleozoology*	Invertebrate Paper (5%)
March 10, Tuesday	*Paleozoology*	
March 12, Thursday	*Paleozoology-Lab*	Faunal Osteology Exercise (5%)
March 17, Tuesday	*Paleozoology-Lab*	
March 19, Thursday	*Paleozoology-Lab*	
March 24, Tuesday	*Spring Break*	
March 26, Thursday	*Spring Break*	
March 31, Tuesday	*Paleozoology-Lab*	
April 2, Thursday	*Paleozoology-Lab*	
April 7, Tuesday	*Paleozoology-Lab*	
April 9, Thursday	*Applications*	Vertebrate Anatomy Notebook with Cladistics (20%)
April 14, Tuesday	*Applications*	Faunal Environments Exercise (5%)
April 16, Thursday	*Applications*	
April 21, Tuesday	*Applications*	Integration Paper (5%)
April 23, Thursday	*Applications*	
April 28, Tuesday	*Applications*	Annotated Bibliography (10%)
April 30, Thursday	*Case Studies*	Presentations (5%)
May 5-7, Tuesday	*Case Studies*	Presentations
May 7, Thursday	*Overview*	
May 11, Monday	*Exam Week*	Applications-Presentations Paper Summary(10%)