EARTH 100
VERTEBRATE PALEONTOLOGY

Hilde Schwartz
Winter, 2020

LECTURE, LAB AND READING SCHEDULE

CLASS	DATE	TOPIC	READING*	LAB
1	1/7 (T)	*Bad to the Bone*: Course Logistics, **Bone:** Composition, Microstructure, and Evolution	MJB, Ch. 3 (49-50)/ **Article 1**	None
2	1/9 (Th)	*The Remains of the Day:* Vertebrate Preservation, Taphonomy, Quality of the Vertebrate Fossil Record	MJB, Box 1.3; Ch. 2 (29-36; 39-41)/ **Articles 2, 3**	
3	1/14 (T)	*Come to Order:* Systematics, Macroevolution, Molecular Phylogeny	MJB, Ch. 2 (36-43)/ **Article 4**	**#1:** Vertebrate Systematics
4	1/16 (Th)	*In the Beginning:* Vertebrate Origins	MJB, Ch. 1, Ch. 3 (46-53)/ **Arts. 5, 6**	
5	1/21 (T)	*Start to 'Finnish':* The Paleozoic 'Fish' Revolution	MJB, Ch. 3/ **Article 7**	**#2:** Preservation & Taphonomy
6	1/23 (Th)	*A Foot in the Door:* Early Tetrapods ***Term project topic/outline due***	MJB, Ch. 4/ **Articles 8, 9**	
7	1/28 (T)	*Boom and Bust:* Amniotes and other Paleozoic Vertebrates Meet the 'Mother' of Mass Extinctions	MJB, Ch. 5/ **Arts. 10, 11**	**#3:** Vertebrate Bauplan **A**: 'Fishes'
8	1/30 (Th)	*Triassicism:* Strange Beasts of the Post-Apocalypse ***1st paper critique due***	MJB, Ch. 6/ **Article 12**	
9	2/4 (T)	***1st Exam***	None	#4: Exam review/ **Lab practical**
10	2/6 (Th)	*Mesozoic Magnificence*: Diapsids Great and Small	MJB, Ch. 8/**Articles 13, 14**	
11	2/11(T)	*Feathered Friends:* Dinosaurs Get Fancy	MJB, Ch. 9/ **Arts. 15, 16**	**#5:** Vertebrate Bauplan **B**: Tetrapods
12	2/13 (Th)	*Just Keep Swimming:* Mesozoic and Cenozoic Fishes	MJB, Ch. 7/ **Article 17**	
13	2/18 (T)	*Enter the Rug Rats:* Mammal Origins and Mesozoic Diversity	MJB, Ch. 10 (318-343)/ **Article 18**	**#6:** Soft Tissue Interpretation
14	2/20 (Th)	*The End of Middle Earth:* 'Whodunnit' mass extinction ***debate***	MJB, Ch. 8 (259-263)/**Arts. 19-22**	
☺	2/22 (Sat)	**FIELD TRIP**: Local Mio-Pliocene marine vertebrate fossils/taphonomy	See website	
15	2/25 (T)	*Run Amok:* Cenozoic Marsupials, South American Mammals, Afrotheria, Plate Tectonics, and the Diversification of Placentals	MJB, Ch. 10 (343-360)/ **Articles 23, 24**	**#7:** Bone Histology and Petrography
16	2/27 (Th)	*Northern Lights:* Boreoeutherians and Laurasiatherians ***2nd paper critique due***	MJB, Ch. 10 (361-388)/**Arts. 25, 26**	
17	3/3 (T)	*The Big Chill*: Late Cenozoic Adaptation, Evolution, Extinction	MJB, Ch. 10 (389-391)/**Article 27**	#8: Mammal teeth & marine mammals
18	3/5 (Th)	*Thinking Outside the Box:* Primates ***Term paper due*: 5 p.m.**	MJB, Ch. 11/ **Article 28**	
19	3/10 (T)	*Anthropocene 2.0*: The Future of Vertebrates on Earth	**Articles 29, 30**	**#9:** Exam review/ **Lab Practical**
20	3/12 (Th)	***2nd Exam***	None	
Final	3/16 (M)	***Project presentation 'slam'*** (8 – 11 a.m.)		

*Short 'Article' reading assignments may change – check website for updates

EARTH 100

VERTEBRATE PALEONTOLOGY

"Nothing can happen more beautiful than death."
(Walt Whitman)

GENERAL INFORMATION

Instructor: Hilde Schwartz
Office: A347 (EMS)
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Office hours: M 2-3:30; W 2-3:30

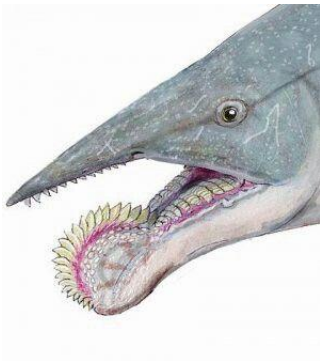
Teaching Assistant: Adrienne Ricker
Email: aricker@ucsc.edu
Office and office hours TBA

COURSE OBJECTIVES

In this course we will discuss major aspects of vertebrate evolution, phylogeny, anatomy, form and function, paleobiology, paleoecology, and paleogeography - from vertebrate origins through major evolutionary events and faunal turnovers to our own human roots. The sequence of topics will be roughly chronological, but we will begin by considering fundamental issues such as bone composition and preservation, the nature of the vertebrate fossil record, geologic time, systematics, evolutionary mechanisms, genetics, and development. These fundamental themes will come up repeatedly throughout the class. *Vertebrate Paleontology* is designed to be more interactive than the average course: *you* will be expected to present, discuss and critique information regularly, in hopes that by doing so you will learn more and hone your ability to synthesize and present scientific data. The lab portion of the course will emphasize comparative anatomy, taphonomy, phylogenetic analysis, petrographic analysis, and form and function.

COURSE REQUIREMENTS: EARTH 100

- Attendance of all lectures. If you miss class, *you* are responsible for obtaining all the information delivered therein (from peers and the course website, *not* from your instructors)
- Completion of all reading assignments *before* relevant lectures
- Satisfactory in-class presentations
- Acceptable performance on two exams
- Successful completion of a term paper and presentation
- Satisfactory field trip participation
- Satisfactory completion of paper critiques



COURSE REQUIREMENTS: EARTH 100L

- Attendance of all nine labs and satisfactory completion of all lab assignments

COURSE WEBSITE

https://people.ucsc.edu/~hilde/migrated/eart100/ username: **eart100** password: **deadbones**

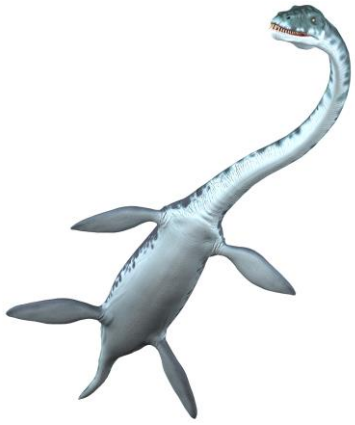
READING MATERIAL: The primary text for this course is "Vertebrate Palaeontology", by Michael J. Benton (4th edition). Additional required readings are posted as *pdf* files on the 'Extra Readings' page of the course website. One copy of the text is on 2-hour reserve at the Reserve Desk in the Science Library.

EARTH 100

VERTEBRATE PALEONTOLOGY

GRADING: EARTH 100

Your EART 100 grade will be based on your performance on the following:



Assignment	Points possible
Exam 1	125 points (18%)
Exam 2	125 points (18%)
Final research paper	200 points (29%)
Research presentation slam *(~5 minutes)*	50 points (7%)
Field trip presentation/ participation/work	50 points (7%)
Two lecture presentations	25 points each; 50 points (total) (7%)
Whodunnit debate	50 points (7%)
2 paper critiques	25 points each; 50 points (total) (7%)

Total points possible: **675**

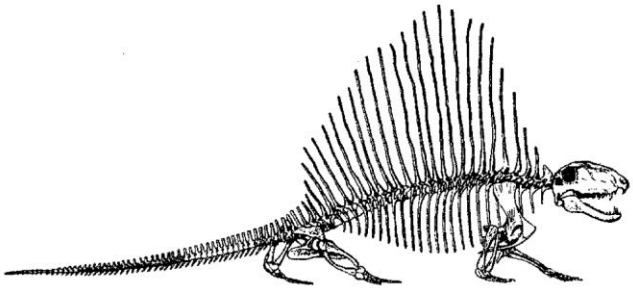
GRADING: EARTH 100L

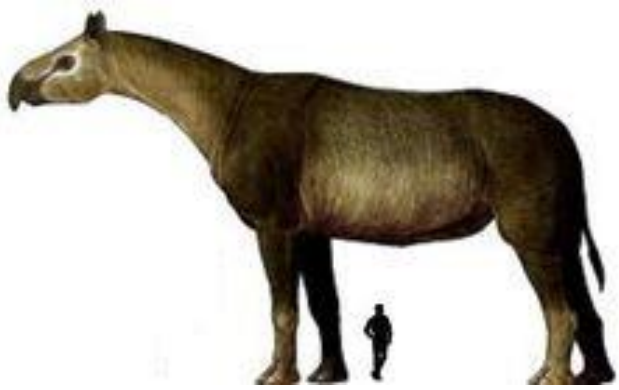
Your EART 100L grade will be based on your performance on the following:

Assignment	Points possible
Seven lab exercises	210 points total (78%)
Two lab practicals	60 points total (22%)

Total points possible: **270**

NOTE: As the lecture and lab material in EARTH 100 is profoundly interconnected, general information covered in lab will be included in the two class exams.





ACADEMIC INTEGRITY

The UC Santa Cruz 'Student Code of Conduct' emphasizes the importance of "integrity, accountability and mutual respect" in our academic community. For your information, parts of section 102.00 ("Grounds for Student Discipline") are reproduced below. If you have any questions about the code of conduct, and in particular about the degree to which you may collaborate with others, the difference between collaboration and cheating, what constitutes plagiarism, etc… in Earth 100, please ask an instructor.

102.11 Cheating
"Cheating is defined as fraud, deceit, or dishonesty in an academic assignment, or using or attempting to use materials, or assisting others in using materials, which are prohibited or inappropriate in the context of the academic assignment in question. This includes, but is not limited to:

a. Providing answers to or receiving answers from others for any academic assignment. In "group assignments" and "cooperative learning" situations, it is the responsibility of the student to ascertain from the instructor to what degree the work must be done exclusively by the student or may be done in collaboration with others;
b. Using notes, information, calculators, or other electronic devices or programs during exams or for assignments from which they have been expressly or implicitly prohibited;
c. Improperly obtaining or using improperly obtained information about an exam or assignment in advance of its availability to other students, or assisting others in doing so;
d. Putting one's name on another person's exam or assignment; or
e. Altering previously graded work for purposes of seeking a grade appeal.

102.012 Plagiarism
Plagiarism is defined as the use of intellectual material produced by another person without acknowledging its source. This includes, but is not limited to:

a. Copying from the writings or works of others into one's academic assignment without attribution, or submitting such works as if it were one's own;
b. Using the views, opinions, or insights of another without acknowledgment; or
c. Paraphrasing the characteristic or original phraseology, metaphor, or other literary device of another without proper attribution.

102.013 Furnishing false information in the context of an academic assignment. This includes, but is not limited to:

a. Writing an exam or term paper for another person;
b. Soliciting another person to take an exam or write a paper for one's own class;
c. Submitting the same piece of work as partial fulfillment of the requirements in more than one course without permission of the instructor;
d. Representing oneself as another person, or failing to identify oneself forthrightly and honestly in the context of an academic obligation; or
e. Representing, explicitly or implicitly, that work obtained from another source was produced by oneself.

102.015 Interference with courses of instruction. This includes but is not limited to:

a. Failure to comply with the instructions or directives of the course instructor; or
b. Disruption of classes or other academic activities