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## *ESC 652 - Paleontology (2007)*

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Will Clyde  
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Email: will.clyde@unh.edu  
Hours: Tues. 11-12:30 (or by appointment)

Lecture: M, W, F; 10:10AM; James 115  
Labs: Wed 1:10-3:30; James 115  
Grading: Test 1 (20%), Test 2 (20%),  
Final Exam (20%), Paper (20%), Labs (20%) Office

### **Textbook**

Prothero, D. R. Bringing Fossils to Life: an Introduction to Paleobiology (2<sup>nd</sup> edition, 2004)

### **Other Reading (\*On reserve in Earth Science office)**

\*Stearn, C. and Carrol, R., Paleontology: The Record of Life (1989)

\*Boggs, S. Principles of Sedimentology and Stratigraphy (3rd Edition, 2001)

\*Boardman, R. S., Cheetham, A. H., and Rowell, A. J.(eds.), Fossil Invertebrates (1987)

Carroll, R., Vertebrate Paleontology and Evolution (1988)

Dodd, J. R. and Stanton, R. J. Jr., Paleoecology: Concepts and Applications (1990)

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### Underlined Reading Assignments are required, others are suggested/optional

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| Sept. | 5  | Wed | Introduction - What is paleontology and why is it important? ( <u>P p.v-viii</u> , S&C Ch.1, BC&R Ch. 1)<br>Lab 1 - No Lab  |
|       | 7  | Fri | <u>Historical foundations</u>   |
|       | 10 | Mon | Fossils, preservation, and taphonomy ( <u>P Ch. 1</u> , S&C Ch.1, BC&R Ch. 5)   |
|       | 12 | Wed | Depositional environments and preservation probabilities ( <u>B Ch. 8</u> )<br>Lab 2 - Fossil preservation, protists, sponges and conodonts ( <u>P. Ch. 11</u> ; BC&R Ch. 8,9,10) |
|       | 14 | Fri | Principles of stratigraphy and the stratigraphic code ( <u>B Ch. 13, Appendix B</u> )   |
|       | 17 | Mon | Biostratigraphy ( <u>P Ch.10</u> ; S&C Ch.13, B Ch. 17, BC&R Ch.7)  |
|       | 19 | Wed | Biostratigraphy ( <u>P Ch.10</u> , S&C Ch.13, B Ch. 17, BC&R Ch.7)<br>Lab 3 - Corals and biostratigraphy ( <u>P Ch. 11</u> ; BC&R 8,9,10)   |
|       | 21 | Fri | Ontogeny and allometry ( <u>P Ch. 2</u> , S&C Ch. 15)   |
|       | 24 | Mon | Species concepts ( <u>P Ch. 3</u> )   |
|       | 26 | Wed | Systematics, classification, and phylogenetic reconstruction ( <u>P Ch.4</u> , S&C Ch.3, BC&R Ch. 6)<br>Lab 4 - Brachiopods & allometry ( <u>P Ch.13</u> , BC&R Ch. 14, 16)       |
|       | 28 | Fri | Phylogenetic reconstruction ( <u>P Ch.4</u> , S&C Ch.3, BC&R Ch. 6)   |
| Oct   | 1  | Mon | Phylogenetic reconstruction (cont.) ( <u>P Ch.4</u> , S&C Ch.3, BC&R Ch. 6)   |
|       | 3  | Wed | Phylogenetic reconstruction - examples ( <u>P Ch.4</u> , S&C Ch.3, BC&R Ch. 6)<br>Lab 5 - Arthropods & phylogenetic analysis ( <u>P Ch. 14</u> ; BC&R Ch. 13, 17, 18)             |
|       | 5  | Fri | <b>LEAVE FOR FIELD TRIP (Return afternoon of Sunday, Oct. 7)</b>  |
| Oct   | 8  | Mon | Functional morphology ( <u>P Ch. 7</u> , S&C Ch.14)   |

- 10 Wed Functional morphology (P Ch. 7, S&C Ch.14)  
**Test 1 during lab session**
- 12 Fri **Fall Break - No Class**
- 15 Mon Biogeography (P Ch. 9, S&C Ch. 18)
- 17 Wed Biogeography (P Ch. 9, S&C Ch. 18)  
Lab 6 - Molluscs; phylogenetic and functional analysis (P Ch 15, BC&R Ch. 14, 16)
- 19 Fri **No Class - SVP - Work on Term Projects**
- 22 Mon Paleocology: autecology (P Ch. 8, S&C Ch. 17)
- 24 Wed Paleocology: synecology (P Ch. 8, S&C Ch. 17)  
Lab 7 -Biogeography and the Paleobiology Database (PBDB)
- 26 Fri Case Study: mammalian paleocology across the Paleocene/Eocene boundary
- 29 Mon Microevolution: Darwin and the modern synthesis (P Ch. 5, S&C Ch. 15)  
Lab 8 - Echinoderms and bryozoans; synecology (P Ch. 13,16; BC&R Ch. 13, 17, 18)
- 31 Wed Microevolution: speciation, punctuated equilibrium vs. gradualism (P Ch. 5, S&C Ch. 15)
- Nov. 2 Fri Heterochrony(P Ch. 2:28-30; S&C Ch.15)
- 5 Mon Macroevolution: species selection, coordinated stasis (P Ch. 5, S&C Ch. 16)
- 7 Wed Macroevolution: mass extinctions (P Ch. 5, S&C Ch. 16)  
Lab 9 - Graptolites, vertebrate morphology & rates of evolution (P Ch. 17; C Ch.2-15)
- 9 Fri **Test 2**
- 12 Mon **No Class - Veterans Day**
- 13 Tue **Monday Schedule** - The origin and early evolution of life (P Ch. 11, S&C Ch. 4)
- 14 Wed The earliest metazoans (P Ch. 12, S&C Ch. 5)  
Lab 10 - Mammals & evolutionary rates (P Ch. 17; C Ch.16-21)
- 16 Fri The Cambrian explosion and the Burgess Shale (P Ch. 12-16; S&C Ch. 5,6)
- 19 Mon Metazoan diversification (P Ch. 12-16; S&C Ch.6,7)
- 21 Wed **Friday Schedule** - The evolution and diversification of land plants (P Ch. 19)  
**No Lab**
- 23 Fri **Thanksgiving - No Class**
- 26 Mon The evolution of vertebrates (P Ch. 17; S&C Ch.9)
- 28 Wed The evolution of tetrapods (P Ch. 17; S&C Ch.9)  
**Lab 11 - FIELD TRIP TO HARVARD MUSEUM**
- 30 Fri Early reptiles and dinosaurs (P Ch 17; S&C Ch.11)
- Dec. 3 Mon Current Issue: Ancient DNA
- 5 Wed Dinosaurs and the evolution of birds (P Ch 17; S&C Ch.11)  
**Lab 12 - Lab Test**
- 7 Fri The origin of mammals (P Ch. 17; S&C Ch.12)
- 10 Mon Mammalian diversification (P Ch. 17; S&C Ch.12)
- 12 Wed Current Issue: The evolution of whales  
**Lab 13 - Presentations**
- 14 Fri Primate evolution (P Ch. 17; S&C Ch.12) - **HAND IN TERM PAPERS**

**Final Exam: Thursday Dec 20, 3:30-5:30 PM, James 115**