

ESCI 402 – Earth History

Instructor:

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Office Hours: Tue 10-12 AM

TAs:

Ryan Cassotto (Nesmith G-13, rkp4@cisunix.unh.edu)

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Lecture: MWF 12:10–1:00 (McConnell 208)

Labs: Mon 1:10–3:30, 3:40–6:00, 6:40–9:00; Tue 2:10–4:30, 6:40–9:00 (Nesmith 226)

Web Page: <http://earth.unh.edu/esci402/esci402.html> (link to this site is available on Blackboard)

Grading: Test 1 (20%), Test 2 (20%), Final Exam (35%), Labs (25%)

Textbook: Levin, H.L., 2006 (8th edition), *The Earth Through Time*, John Wiley & Sons, Inc.

Introduction

Jan. 21 Wed Introduction – What is historical geology and why is it important? (Ch.1)

23 Fri Founding ideas of historical geology (Ch.2)

No Lab

Part 1 – Basic Geological Principles

Jan. 26 Mon Geological building blocks (Ch.4)

28 Wed Minerals and rocks (Ch.4)

30 Fri Rocks and the geological cycle (Ch.4)

Lab 1 Minerals, igneous rocks & metamorphic rocks

Feb. 2 Mon Weathering and sedimentation (Ch.4:66-69)

4 Wed Interpreting sedimentary rocks (Ch. 5: 77-98)

6 Fri Plate tectonics (Ch.7)

Lab 2 Sediments, sedimentary rocks & sedimentary structures

Feb. 9 Mon Plate tectonics (Ch.7)

11 Wed Fossils and preservation (Ch.6:119-124)

13 Fri Principles of stratigraphy (Ch.5:98-116, Ch. 6:139-143)

Lab 3 Fossils: preservation and invertebrate classification

Feb. 16 Mon Stratigraphic relations and correlation (review Ch.7:168-171)

18 Wed The geological time scale (Ch.3)

20 Fri Test 1

Lab 4 Stratigraphic correlation and the time scale

Feb. 23 Mon Numerical dating: calibrating the time scale (Ch.3)

25 Wed Evolution: basic principles (Ch.6:124-139)

27 Fri Evolution: a geological perspective (Ch.6: 153-157)

Lab 5 Geologic maps and cross sections

Part 2 – Case Studies

Case Study 1 – The origin and early evolution of the earth (Ch.8:207-229)

Mar. 2 Mon The solar system and Earth accretion

4 Wed Differentiation and crust formation

6 Fri Evolution of the atmosphere and hydrosphere

Lab 6 James Hall geologic quad and cross section

Case Study 2 – The origin of life and the Cambrian explosion (Ch.8:230-240, Ch.9:255-264, Ch.12:327-335)

- Mar 9 Mon New theories on the origin of life
11 Wed The earliest fossils
13 Fri Burgess shale and evolutionary diversification
Lab 7 James Hall geologic quad and cross section (continued)

SPRING BREAK

Case Study 3 – Appalachian Mountains (Ch.10:267-278,281-290, Ch.11:295-302,306-316, Ch.12:335-352)

- Mar. 23 Mon Taconic orogeny
25 Wed Acadian and Allegheny orogenies
27 Fri Appalachian basins and their paleontological record
Lab 8 James Hall depositional environments

Case Study 4 – Pangaea and the Permo-Triassic boundary (Ch.12:366-369, Ch.13:374-375; Ch.14:407)

- Mar. 30 Mon A world with one continent
Apr. 1 Wed P/T boundary and the nature of extinctions
3 Fri Test 2
Lab 9 Regional Geology of North America – Appalachians

Case Study 5 – Dinosaurs (Ch.12:353-363, Ch.14:405-408,415-436,443-448)

- Apr. 6 Mon Origin and diversification
8 Wed Paleocology: changing views
10 Fri Dinosaur extinction and the K/T boundary
Lab 10 Playing Wegener in a mock world

Case Study 6 – Western Cordillera (Ch.10:278-281, Ch.11:303-306,316-318, Ch.13:378-396, Ch.15:455-469)

- Apr. 13 Mon Ancestral Rocky Mountain uplift and interior seaways
15 Wed Laramide and Sevier style deformation
17 Fri Collapse, extension, and hot spots
Lab 11 Dinosaur Locomotion

Case Study 7 – Mammalian evolution (Ch.14:437-439, Ch.16:499-521)

- Apr. 20 Mon The earliest mammals
22 Wed Mammalian diversification
24 Fri The role of climate in Cenozoic mammalian evolution
Lab 12 Regional geology of North America – Cordillera

Lab 13 Saturday, April 25, Field Trip, Odiorne Point

Case Study 8 – Human Origins (Ch.17)

- Apr. 27 Mon Setting the scene: early primates
29 Wed The geography and environments of hominid evolution
May 1 Fri Origin of *Homo sapiens*
No Lab

Case Study 9 – Pleistocene Glaciation (Ch.15:473-484)

- May 4 Mon How glaciers form and their impact on the landscape
6 Wed Marine and ice core evidence of past glaciations
8 Fri The cause of Pleistocene glaciations
Lab 14 Lab Test

- May 11 Mon Global warming in a geological context

Final Exam: Monday, May 18, 3:30–5:30 PM, McConnell 208