

270.104 History of the Earth and its Biota - Fall 2007

Description: Geologic history of Earth and its ecosystems. The evolution and extinction of many forms of life will be reviewed in the context of a changing global environment. Interactions among the upper earth, ocean, atmosphere, and biosphere will be highlighted (3 credits).

Instructor: Prof. L. Hinnov, hinnov@jhu.edu. Office hours: Mon., Weds., 2-3 pm, 244 Olin Hall.

Teaching Assistant: To be announced. Office hours: Thurs. 1-3 pm, 225 Olin

Textbook: Stanley, S.M. (2005), *Earth System History, 2nd Edition*, W.H. Freeman Co.

Lectures: Mon., Tues., Wed. 1-1:50 pm

Requirements: 3 exams (each 1/3 of final grade); 2/3 on textbook + 1/3 on FOCUS STUDIES.

PART I: MATERIALS, PROCESSES, PRINCIPLES

WEEK 1: Sept 10-12:

Sept. 10: Earth as a system (Chapter 1)

Sept. 11: Rock-forming minerals and rocks (Chapter 2)

Sept. 12: *FOCUS STUDY: Meteorites*

WEEK 2: Sept 17-19:

Sept. 17: Diversity of life (Chapter 3)

Sept. 18: Environments and life (Chapter 4)

Sept. 19: *FOCUS STUDY: Extremophiles*

WEEK 3: Sept 24-26:

Sept. 24: Sedimentary environments (Chapter 5)

Sept. 25: Correlation and dating the rock record (Chapter 6)

Sept. 26: *FOCUS STUDY: Dates and rates*

WEEK 4: Oct. 1-3:

Oct. 1: Evolution and the fossil record (Chapter 7)

Oct. 2: Theory of plate tectonics (Chapter 8)

Oct. 3: *FOCUS STUDY: Polar wander*

WEEK 5: Oct. 8-10:

Oct. 8: Continental tectonics and mountain chains (Chapter 9)

Oct. 9: Major chemical cycles (Chapter 10)

Oct. 10: *FOCUS STUDY: Gaian Earth*

WEEK 6: Oct. 15-17:

Oct. 15: **BREAK DAY**

Oct. 16: **REVIEW Chapters 1-10 and FOCUS STUDIES**

Oct. 17: **MIDTERM EXAM 1**

PART II: THE STORY OF EARTH

WEEK 7: Oct. 22-Oct. 24:

Oct. 22: Archean Eon (Chapter 11)

Oct. 23: Proterozoic Eon (Chapter 12)

Oct. 24: *FOCUS STUDY: Origins of life*

WEEK 8: Oct. 29-31:

Oct. 29: Early Paleozoic (Cambrian-Silurian) (Chapter 13)

Oct. 30: Middle Paleozoic (Devonian-Carboniferous) (Chapter 14)

Oct. 31: *FOCUS STUDY: The glaciated Earth*

WEEK 9: Nov. 5-7:

Nov. 5: Late Paleozoic (Permian) (Chapter 15)

Nov. 6: The Permo-Triassic Extinction (Chapter 15)

Nov. 7: *FOCUS STUDY: Mass extinctions*

WEEK 10: Nov. 12-14:

Nov. 12: **REVIEW Chapters 11-15 and FOCUS STUDIES**

Nov. 13: **MIDTERM EXAM 2**

Nov. 14: *FOCUS STUDY: Astronomical cycles*

WEEK 11: Nov. 19-21:

Nov. 19: Triassic Period (Chapter 16)

Nov. 20: Jurassic Period (Chapter 16)

Nov. 21: *FOCUS STUDY: Pangaean life*

WEEK 12: Nov. 26-28:

Nov. 26: Cretaceous Period (Chapter 17)

Nov. 27: Paleogene Period (Chapter 18)

Nov. 28: *FOCUS STUDY: Global hyperthermia*

WEEK 13: Dec. 3-5

Dec. 3: Neogene Period (Chapter 19)

Dec. 4: The Holocene (Chapter 20)

Dec. 5: *FOCUS STUDY: Human evolution*

WEEK 14: Dec. 10

Dec. 10: **REVIEW Chapters 16-20 and FOCUS STUDIES**

THIRD EXAM TO BE SCHEDULED