270.104 History of the Earth and its Biota - Fall 2010

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, 227 Olin Hall.
Textbook: Stanley, S.M. (2008), *Earth System History, 3rd Edition*, W.H. Freeman Co.; online resources at: http://bcs.whfreeman.com/esh3e/default.asp
Lectures: Mon., Weds., Fri. 1:30-2:20 pm, Olin Auditorium.
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: Aug 30-Sept 3:
Aug. 30: Meeting 1: Earth as a system (Chapter 1)
Sept. 1: Meeting 2: Rock-forming minerals and rocks (Chapter 2)
Sept. 3: Meeting 3: *FOCUS STUDY 1: Meteorites*

WEEK 2: Sept 6-10:
Sept. 6: LABOR DAY (No class)
Sept. 8: Meeting 4: Diversity of life (Chapter 3)
Sept. 10: Meeting 5: Environments and life (Chapter 4)

WEEK 3: Sept 13-17:
Sept. 13: Meeting 6: *FOCUS STUDY 2: Extremophiles*
Sept. 15: Meeting 7: Sedimentary environments (Chapter 5)
Sept. 17: Meeting 8: Correlation and dating the rock record (Chapter 6)

WEEK 4: Sept 20-24:
Sept. 20: Meeting 9: *FOCUS STUDY 3: Dates and rates*
Sept. 22: Meeting 10: Evolution and the fossil record (Chapter 7)
Sept. 24: Meeting 11: Theory of plate tectonics (Chapter 8)

WEEK 5: Sept 27-Oct 1:
Sept. 27: Meeting 12: *FOCUS STUDY 4: Polar wander*
Sept. 29: Meeting 13: Continental tectonics and mountain chains (Chapter 9)
Oct. 1: Meeting 14: Major chemical cycles (Chapter 10)

WEEK 6: Oct. 4-8:
Oct. 4: Meeting 15: *FOCUS STUDY 5: Gaian Earth*
Oct. 6: Meeting 16: REVIEW Chapters 1-10; FOCUS STUDIES 1-5
Oct. 8: Meeting 17: EXAM 1

PART II: THE STORY OF EARTH

WEEK 7: Oct. 11-15:
Oct. 12 (Tuesday): Meeting 18: Hadean and Archean eons (Chapter 11)
Oct. 13: Meeting 19: *FOCUS STUDY 6: Origins of life*
Oct. 15: Meeting 20: Proterozoic Eon (Chapter 12)

WEEK 8: Oct. 18-22:
Oct. 18: Meeting 21: Early Paleozoic (Cambrian-Silurian) (Chapter 13)
Oct. 20: Meeting 22: *FOCUS STUDY 7: The glaciated Earth*
Oct. 22: Meeting 23: Middle Paleozoic (Devonian-Carboniferous) (Chapter 14)

WEEK 9: Oct. 25-29:
Oct. 25: Meeting 24: Late Paleozoic (Permian) (Chapter 15)
Oct. 27: Meeting 25: *FOCUS STUDY 8: Pangaean life*
Oct. 29: Meeting 26: Triassic Period (Chapter 16)

WEEK 10: Nov. 1-5:
Nov. 1: Meeting 27: Jurassic Period (Chapter 16)
Nov. 3: Meeting 28: REVIEW Chapters 11-15; FOCUS STUDIES 6-8
Nov. 5: Meeting 29: EXAM 2

WEEK 11: Nov. 8-12:
Nov. 8: Meeting 30: Cretaceous Period (Chapter 17)
Nov. 10: Meeting 31: *FOCUS STUDY 9: Mass extinctions*
Nov. 12: NO CLASS

WEEK 12: Nov. 16-20:
Nov. 16: Meeting 32: Paleogene Period (Chapter 18)
Nov. 18: Meeting 33: *FOCUS STUDY 10: Global hyperthermia*
Nov. 20: Meeting 34: Neogene Period (Chapter 19)

WEEK 13: Nov. 22-26
Nov. 22: Meeting 35: The Holocene (Chapter 20)
Nov. 24: THANKSGIVING
Nov. 26: THANKSGIVING

WEEK 14: Nov. 29-Dec. 3
Nov. 29: Meeting 36: *FOCUS STUDY 11: Human evolution*
Dec. 1: Meeting 37: REVIEW Chapters 16-20; FOCUS STUDIES 9-11
Dec. 3: Meeting 38: EXAM 3

END OF COURSE