

**Geology 110 - Evolution and Extinction
Spring 2006 Course Outline**

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315 Weeks Hall

263-7754

Part 1. The Evolutionary Process

- Jan. 18 introduction
20 themes: interconnectedness, deep time, diversity

23 arranging the diversity of life
25 introduction to natural selection
27 Darwin and Wallace

30 the meaning of historical science
Feb. 1 more on natural selection
3 types of selection; intro to DNA

6 proteins, RNA, and DNA
8 transcription and translation
10 genes and chromosomes

13 Mendelian and "non-Mendelian" genetics
15 sexual reproduction; X and Y
17 **midterm 1**

20 human genetic conditions; regulatory function of DNA
22 genetic engineering; stem cells
24 adaptation and constraint

27 sexual selection
Mar. 1 coevolution
3 how new species arise: reproductive isolation; geography

6 how new species arise: natural selection and genetic drift; Hawaii

Part 2. Evolution as History

- 8 telling time with fossils and rocks
10 the early earth and the origin of life

spring break

- 20 early life
- 22 the Cambrian explosion
- 24 life moves onto land

- 27 ancient and modern reptiles
- 29 dinosaurs and birds
- 31 **midterm 2**

- Apr. 3 the transition to mammals
- 5 monotremes and marsupials
- 7 evolution and natural history of some placental mammals

- 10 primates
- 12 the human fossil record
- 14 human evolution

Part 3. Extinction

- 17 extinction in the fossil record
- 19 major mass extinctions
- 21 Pleistocene extinctions

- 24 extinctions today - 1
- 26 extinctions today - 2
- 28 the value of natural ecosystems - 1

- May 1 the value of natural ecosystems - 2
- 3 population and sustainability
- 5 overview

final exam: Thursday May 11, 2:45 p.m.

Grading: We will have two midterms and a cumulative final exam. Your final grade will be based on the exams and discussion section as follows:

midterm 1	100 points
midterm 2	100 points
final exam	200 points
discussion	100 points
 total	 500 points

Attendance in lecture is extremely important to your understanding of the course. Attendance will be taken from time to time in lecture. Points may be deducted from your overall score for each lecture missed.

**Geology 110 - Evolution and Extinction
Spring 2006 - Discussion and Reading Schedule**

TA's: Our TA's this semester are Morgan Herrick (morganh@geology.wisc.edu; office hours W 8:00-10:30) and Eric Shullenberger (shully@geology.wisc.edu; office hours W 1:00-3:00).

required readings: Tropical Nature, by Adrian Forsyth and Ken Miyata, 1984 (TN)
Coursepack (available at Bob's Copy Shop, Randall Tower)

recommended backup: History of Life, 3rd edition, by Richard Cowen, 2000 (abbreviated HL)

Discussion sections: The purpose of the weekly discussion sections is to: 1) make our rather large class more personal; 2) help you integrate the material from readings and lectures; and 3) give you practice for the exams by taking weekly quizzes.

A note on readings and quizzes: Readings should be completed BEFORE your discussion section for that week. Quizzes cover the reading assignment for the week of the quiz, plus lecture material from the preceding week. ALL of the readings in the coursepack and Tropical Nature will be fair game for quizzes and exams, as will all the lecture material.

week of: readings:

Jan. 18 TN1 (In the Realm of the Tropics)
 TN2 (Fertility)

Jan. 23 Weiner (The Resistance Movement)
 van Oosterzee (Blind to the Rising Sun)
 Bryson (Small World)

Jan. 30 Diamond (The Saltshaker's Curse)
 Diamond (Sweet Death)
 Quammen (The White Tigers of Cincinnati)

Feb. 6 DNA (coursepack)
 Zimmer (Us and Them)
 Zimmer (The Rise and Fall of the Nasal Empire)

Feb. 13 Zimmer (Crystal Balls)
 Carroll (The Origins of Form)
 Judson (Wholly Virgin)

- Feb. 20** Haldane (On Being the Right Size)
Gould (Kingdoms Without Wheels)
Dodson (Lifestyles of the Huge and Famous)
- Feb. 27** Quammen (Spatula Theory)
TN7 ("Eat Me")
TN8 (Bugs and Drugs)
TN11 (Artful Guises)
- March 6** radiometric dating (coursepack)
Gould (Evolution As Fact and Theory)
Asimov (The "Threat" of Creationism)
Quammen (Nasty Habits)
(HL chapter 1)
- March 20** Natural History (Intelligent Design?)
DeGrasse Tyson (The Perimeter of Ignorance)
Walker (The Longest Winter)
(HL chapters 2, 3, 4, 8, 16)
- March 27** Quammen (A Better Idea)
Prothero (The Fossils Say Yes)
TN14 (Singing in the Rain)
(HL chapters 9, 10, 12, 13, 14, 15)
- April 3** TN12 (Southbound)
TN13 (Jerry's Maggot)
TN9 (Creeping Socialists)
TN10 (Army Ants)
(HL chapter 21)
- April 10** Zimmer (Searching for Your Inner Chimp)
Quammen (Superdove on 46th Street)
(HL chapter 22)
- April 17** Ward (When Worlds Collide)
Ward (Overkill)
(HL chapter 6, 18, 23, 24)
- April 24** Quammen (Planet of Weeds)
Davis (White Blood of the Forest)
- May 1** Kolbert (Ice Memory)