

SYLLABUS for CLASSICS OF BIOLOGY

January 7, 2009

11:00-12:50 Fridays

Description - Classics by Darwin, Dawkins, Lovelock, Pollan, and Steinbeck will be read and discussed from the biologist's point-of-view. This historical approach will be used to understand the central tenets of modern biology, evolution, natural history, and earth systems science.

Learning outcomes

All biologists need to read and understand in detail some of classical books of the field. When students have completed this class, they will:

- 1) Understand what Darwin, Dawkins, Lovelock, Pollan, and Steinbeck were saying at their time in history.
- 2) Be able to explain how their ideas have changed since they were first introduced.
- 3) Provide a history of why modern biologists believe their general tenets.

Grading

50% Weekly Write-ups of Assigned Reading

Each week, every student is required to do the assigned reading(s). This is evaluated by each student turning in 3 of their own questions based on the reading(s) and a brief written answer for each of the questions. Students can receive up to 5 points for each question/answer pair.

50% Attendance and Classroom Discussions

During each class period, each student will present and lead the discussion of one of their questions on the assigned reading(s). They receive 15 points for doing this each class period.

If a student misses a class discussion, then they must turn in the 3 questions (above) with a one page answer for each. In this case, each one of the questions and answers is graded from 1-10.

Therefore, during each class period each student can earn up to 30 points.

A strict percentage based on points earned divided by total points possible will then be used to calculate the letter grade based on the following scale.

A = 100-90%

B = 89-80%

C = 79-70%

D = 69-60%

F = less than 60%

Extra credit will be in the form of pop quizzes given during some of the class periods. These points will be added to the "points earned" category.

ATTENDANCE IS MANDATORY! This is a discussion class and you need to be there. If you miss a class due to sickness/family emergency, you need to provide proof and make up the daily assignment. To make up a missed class, you need to provide a 3 page summary/write up of all of the chapters assigned for the day you missed.

THE READING SCHEDULE (broken into major themes)...

- timing of these assignments will probably change over the course of the semester

EVOLUTION

Darwin's Origin of Species

Marcia Bjornerud - Reading the Rocks is the supporting book

- Jan 23rd - Discuss goals of class and ordering of books
- Jan 30th - Darwin - Origin of Species (Chapters 1-5)
- Feb 6th - Darwin - Origin of Species (Chapters 6-10)
- Feb 13th - Darwin - Origin of Species (Chapters 11-13)
- Bjornerud - Reading the Rocks (Chapters 1-3)
- Feb 20th - Bjornerud - Finish Origin and Reading the Rocks

How do you make a genome?

- Feb 27th - Dawkins - Selfish Gene (Chapters 1-7)
- Mar 6th - Dawkins - Selfish Gene (Chapters 8-13)

BIOGEOCHEMISTRY and ASTROBIOLOGY

How do you make Earth? How would you identify extraterrestrial life?

Mar 13th - Lovelock - Gaia: A new look at life on Earth

CONSERVATION

Are we destroying the Earth?

- Mar 20th - Carson - Silent Spring (Chapters 1-9) (FLR Gone)
- Mar 27th - Carson - Silent Spring (Chapters 10-17) (FLR Gone)

Apr 3rd - Spring Break

- Apr 10th - Pollan - Omnivore's Dilemma (Chapters 1-8) (Dean Maloy)
- Apr 17th - Pollan - Omnivore's Dilemma (Chapters 9-14) (Dean Maloy)
- Apr 24th - Pollan - Omnivore's Dilemma (Chapters 15-20) (Independent class)

May 1st - Steinbeck - Log of Sea of Cortez (first 100 pages)
& Jackson's Historical Overfishing

May 8th - Steinbeck - Log of Sea of Cortez - Last day of class (rest of the book)

Themes to think about:

Darwin's "Origin of Species" and Dawkin's "Selfish Gene"

How do you make a genome?

Biology at the time - Agazzi, Lamarck, etc

Geology at the time - Lyle's contribution to Darwin

Voyage of the Beagle, what was it like?

Why did it take Darwin 25 years to publish his book?

The Neo-Darwinian revolution

Lovelock's "Gaia: A New Look at Life on Earth"

How did earth systems biology come in to place?

How did we get to Al Gore's version of the world?

Steinbeck's "Sea of Cortez"

Popularization of science

Impact of "Between the Pacific Tides" on marine biology

Cannery Row

Other potential supporting materials:

Margulis and Sagan - Microcosmos

Vernadsky - The Bioshpere

Lapo - Traces of Bygone Biospheres