



Lessons from the Biosphere

MAP NS-2 course V55-0311
Spring 2008
M&W 12:30 – 1:45 121 Meyer

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SYLLABUS

1. Wednesday January 23: Introduction to course.

No lab meeting this week. Lab sessions start next week.

-----EVOLUTION-----

2. Monday January 28: From the big bang to the origin of Earth (Liebes: pages 4-19 for main text, pages 8-19 for timeline text and images).

3. Wednesday January 30: Earth comes alive *and* The molecules of evolution. (Liebes: pages 21-53 for main text, pages 21-38 for timeline text and images).

LAB 1: Introduction to Lessons from the Biosphere.

4. Monday February 4: Bubblers, bluegreens, & breathers *and* The multicellular cell. (Liebes: pages 53-103 for main text, pages 38-104 for timeline text and images).

5. Wednesday February 6: Multicelled creatures *and* Big life comes ashore. (Liebes: pages 103-140 for main text, pages 104-167 for timeline text and images).

LAB 2: Evidence for Evolution.

6. Monday February 11: Reptiles reign *and* Asteroid impact brings mammals to the fore. (Liebes: pages 141-170 for main text, pages 167-196 from timeline text and images).

7. Wednesday February 13: The great brain experiment. (Liebes: pages 170-208 for main text, pages 196-203 for timeline text and images).

LAB 3: American Museum of Natural History trip (No formal lab meeting, students go on their own time for trip to American Museum of Natural History.)

8. Monday February 18: NO CLASS PRESIDENT'S DAY

-----BIODIVERSITY-----

9. Wednesday February 20: **Exam # 1 — Evolution**

LAB 4: Student Presentations on AMNH trip.

Monday February 25: The great wealth of life: biodiversity. (Bush, chapter 1)

10. Wednesday February 27: Who needs sex anyway? (Bush, chapter 2)

LAB Week 5: Techniques of microscopy.

11. Monday March 3: The power of predators. (Bush, chapter 3)

12. Wednesday March 5: Biomes. (Bush, chapter 4)

LAB 6: Biodiversity of Microscopic Life

13. Monday March 10: Making connections: fisheries. (Bush, chapter 5)

14. Wednesday March 12: Habitat fragmentation and extinction (Bush, chapter 6)

LAB 7: Biodiversity in the marketplace.

Monday March 17 SPRING RECESS

Wednesday March 19 SPRING RECESS

15. Monday March 24: Working to save biodiversity. (Bush, chapter 7)

16. Wednesday March 26: Current topics on biodiversity (Directed readings).

LAB 8: Student Presentations on Endangered Species.

17. Monday March 31: Exam #2 — Biodiversity

-----GLOBAL CYCLES-----

18. Wednesday April 2: Breathing of the biosphere—the carbon cycle. (Volk, chapter 1)

LAB 9: Photosynthesis.

19. Monday April 7: A global holarchy—the nitrogen cycle. (Volk, chapter 2)

20. Wednesday April 9: Outer light, inner fire. (Volk, chapter 3)

LAB 10: Respiration.

21. Monday April 14: The parts of Gaia and worldwide metabolisms. (Volk, chapters 4 & 5)

22. Wednesday April 16: Embodied energy (part 1, the natural biosphere). (Volk, chapter 6)

LAB 11: Part 1 of Student Presentations on Helping the Biosphere.

23. Monday April 21: Earth Day Special Event

24. Wednesday April 23: Embodied energy (part 2, human energy and carbon). (Directed readings)

LAB 12: Part 2 of Student Presentations on Helping the Biosphere.

25. Monday April 28: The music of this sphere. (Volk, chapter 7)

26. Wednesday April 30: Gaia in time and the human guild. (Volk, chapter 8)

Th & F—LAB 13: Wrap-up

27. Monday May 5: Conclusion and Open Review (last class session before final exam).

FINAL EXAM Wednesday May 7 12:00-1:50
(as given in the Spring 2007 Directory, page 20)

Books (3, one specialized for each section of the course):

1. For the "Evolution" section of the course—
Liebes, Sidney; Elisabet Sahtouris, & Brian Swimme. *A Walk Through Time: From Stardust to Us*.

2. For the "Biodiversity" section of the course—
Bush, Mark B. *Ecology of a Changing Planet*. (This is a custom printing of 7 chapters from a larger text, specially chosen for this course).
Plus required directed readings from articles, to be announced.

3. For the "Global Cycles" section of the course—
Volk, Tyler. *Gaia's Body: Toward a Physiology of Earth*.

GRADING:

Labs 35% Test#1 20% Test #2 20% Final 25%

- Labs are important; unexcused labs receive “0”, a total of three unexcused labs results in “F” for the course.

Blackboard: I will use the blackboard site for the course to post this syllabus, previous exams, and other information about the course during the semester. Last year, for instance, the readings for the final third of the course on “global cycles” were all posted, drawn from my own writings on the subject.