

## **BIOLOGY 209: NON-VASCULAR PLANTS 2006**

<b>LECTURERS</b>	<b>E-mail</b>	<b>Office</b>	<b>Phone</b>
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 <b>LABORATORY</b>			
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### **TEACHING ASSISTANTS**

Will Ives, Ying Chang, Eric Johnston, Wyth Marshall

Dr. Berbee is in charge of the course this year, so for general course-related problems see, call, or Email her in Room 1104 or 1128, Biosciences Bldg. However, see Dr. Hawkes for questions involving the algae. See Ms. Ellis for lab related issue and for adding and dropping questions.

For questions about lecture material, see the individual lecturing on that topic.

For laboratory questions see the individuals teaching the laboratory.

**TEXTBOOKS:** The required textbook this year is *Biology of Plants*, by Raven, Evert, and Eichhorn. Either 6th or 7th ed. will be fine.

**FEES:** There is a laboratory fee of \$20.00, covering the cost of lab materials and the lab manual.

**EXAMINATIONS:** There are both lecture and laboratory examinations as well as 3 lab projects. The lecture final exam will be comprehensive with ~25% of the marks related to material from the first midterm, ~25% from the second midterm, and 50% from material presented after the second midterm.

**PLEASE NOTE:** This is an integrated lab/lecture course and exams will draw on both lecture and laboratory material. To pass this course, a student must pass the laboratory portion of the course; a passing grade in lecture will not compensate for a failing laboratory grade.



## **BIOLOGY 209 – 2006: ALGAL PORTION OF COURSE**

### **GENERAL OBJECTIVES**

- **To know** what the algae look like - this means you should be able to make a diagram of a "typical" form for each of the groups studied, with appropriate labels. Such a diagram should include an indication of size, shape, and morphological features such as flagella.
- **To know two** important biochemical characteristics for each group: pigments (type of chlorophyll and presence/absence of phycobilins) and type of storage product(s)
- **To know** for each group its major life history type(s), and to be able to sketch a life history for a typical organism of that group
- **To understand** the place of algae in the evolution of photosynthetic organisms in general, and in the evolution of vascular plants in particular
- **To be aware of** the way in which algae have impact on our lives:
  - As primary producers in fresh and marine waters
  - As producers of toxins and algal blooms
  - As a source of industrially important chemicals
  - As a source of food

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### **BIOLOGY 209\_2006: OUTLINE OF MWH ALGAL LECTURES**

#### **Wed. 6 Sept: Introduction to the course (Berbee & Hawkes)**

- **SLIDE SHOW** of algal biodiversity

#### **Fri. 8 Sept: Algal Biodiversity**

- Definition
- Tree of life – the big picture
- Morphological diversity
- Habitat diversity
- Ecological importance of algae
- Role of algae in biogeochemical cycles
- Important biochemical (pigments, storage products) & ultrastructural features at phylum level (Include Cyanobacteria in this)

#### **Mon. 11 Sept: Algal Biodiversity (cont.)**

- Synopsis of algal reproduction and life histories
  - Sexual vs asexual
  - Gamete types (3)
  - Site of meiosis (4)
  - Life history patterns (3 major)

**Wed. 13 Sept:** Green algal biodiversity

**Fri. 15 Sept:** Tutorial: meet in Bi. 2000. Discuss Marine Ecology & Algal Project

**Algae and Their Environment (emphasis on marine & seaweeds)**

- Global current patterns
- Ocean temperatures
- Light in water
- Salinity
- Upwelling & nutrients
- Tides

**Ecological biogeography:** factors controlling seaweed distribution and abundance

- Zonation: Abiotic and biotic factors

**Mon. 18 Sept:** Red algal biodiversity

**Wed. 20 Sept:** Red algal biodiversity

**Fri. 22 Sept:** Brown algal biodiversity

**Mon. 25 Sept:** Kelp, sea otters, and sea urchins: Ecological and evolutionary perspectives

**Wed. 27 Sept:** Diatoms / Dinoflagellates & Toxic algal blooms

**Fri. 29 Sept:** Economic uses of algae. **SLIDE SHOW**

**Mon. 2 Oct: Algal Mid-Term Exam**

ALGAL PROJECT DUE IN CLASS TODAY (no extensions)

