

Lecture Outline (subject to change)

- I. Introduction -- chapter 1 (review Botany 2104 notes on biomolecules, cell structure, plant cells and tissues)
- II. Water relations -- chapters 3, 4 (review Botany 2104 notes on membranes)
- III. Photosynthesis -- chapters 7, 8, 9 (review Botany 2104 notes on photosynthesis)
 - A. The nature of light
 - B. The light reactions
 - I. The Z-scheme
 - ii. Photolysis
 - iii. Photophosphorylation
 - C. Calvin cycle
 - D. Photorespiration
 - E. C4 photosynthesis
 - F. Crassulacean acid metabolism (CAM)

End of material to be covered on the first exam on February 21.

- IV. Respiration and related metabolism -- chapter 11 (review Botany 2104 notes on respiration)
 - A. Glycolysis
 - B. Krebs cycle
 - C. Electron transport chain
 - D. Oxidative phosphorylation
 - E. Alternate pathway
 - F. Pentose phosphate shunt
 - G. β -Oxidation
 - H. Gluconeogenesis
- V. Mineral nutrition -- chapters 5, 12, CD (review Botany 2104 notes on mineral nutrition)

- A. Mineral uptake mechanisms and kinetics
- B. Mineral assimilation, excluding nitrogen
- C. Nitrogen assimilation and metabolism

End of material to be covered on the second exam on March 25.
Note: Material for the second exam is dependent on material from the first exam. You will be responsible for comparing and contrasting photosynthesis and respiration on the second exam.

- VI. Plant growth and development -- chapters 16-25
 - A. Plant hormones
 - I. auxin
 - ii. gibberellin
 - iii. cytokinin
 - iv. abscisic acid
 - v. ethylene
 - vi. brassinosteroids
 - vii. jasmonates, salicylates, and peptide hormones
 - viii. florigen
 - B. Phytochrome
 - C. Blue light responses
- VII. Tools in plant physiology – ch 14 (online), CD
 - A. Antibodies
 - B. Recombinant DNA
 - C. Model organisms

End of material to be covered on the third exam on April 29.
The third exam is not formally cumulative, but there is an assumption that you remember material from earlier in the semester.