Biology 330, Fall 2014

Plant Physiology


Exams: There will be four midterm exams given during the semester. The final exam will be comprehensive. All exams contain multiple choice and short essays and each is worth 100 points. The midterm exam with the lowest score will be dropped.

Extra Credit: will be given as quizzes at the beginning of the class periodically and is worth up to 40 points

Grading: The course grade will be based on the top three midterm exams and the final exam for a total of 400 points. Extra credit will help with your final grade by up to 10%.

Learning outcome: After completion of this course, students should have a good understanding of the classical and current concepts, principles and approaches regarding the basic mechanisms of plant function underlying growth, development and survival of plants, more specifically, the areas of environmental and developmental signals, plant hormone action, signal transduction, mineral nutrition, water relations, metabolism and photosynthesis.

Disability Accommodation: Iowa State University complies with the Americans with Disabilities Act and Sect 504 of the Rehabilitation Act. If you have a disability and anticipate needing accommodations in this course, please contact (instructor name) to set up a meeting within the first two weeks of the semester or as soon as you become aware of your need. Before meeting with (instructor name), you will need to obtain a SAAR form with recommendations for accommodations from the Disability Resources Office, located in Room 1076 on the main floor of the Student Services Building. Their telephone number is 515-294-7220 or email disabilityresources@iastate.edu. Retroactive requests for accommodations will not be honored.

Academic Dishonesty: The class will follow Iowa State University’s policy on academic dishonesty. Anyone suspected of academic dishonesty will be reported to the Dean of Students Office. [http://www.dso.iastate.edu/ja/academic/misconduct.html](http://www.dso.iastate.edu/ja/academic/misconduct.html)

Dead Week: This class follows the Iowa State University Dead Week policy as noted in section 10.6.4 of the Faculty Handbook [http://www.provost.iastate.edu/resources/faculty-handbook](http://www.provost.iastate.edu/resources/faculty-handbook).

Harassment and Discrimination: Iowa State University strives to maintain our campus as a place of work and study for faculty, staff, and students that is free of all forms of prohibited discrimination and harassment based upon race, ethnicity, sex (including sexual assault), pregnancy, color, religion, national origin, physical or mental disability, age, marital status, sexual orientation, gender identity, genetic information, or status as a U.S. veteran. Any student who has concerns about such behavior should contact his/her instructor, Student Assistance at 515-294-1020 or email dso-sas@iastate.edu, or the Office of Equal Opportunity and Compliance at 515-294-7612.

Religious Accommodation: If an academic or work requirement conflicts with your religious practices and/or observances, you may request reasonable accommodations. Your request must be in writing, and your instructor or supervisor will review the request. You or your instructor may also seek assistance from the Dean of Students Office or the Office of Equal Opportunity and Compliance.

Contact Information: If you are experiencing, or have experienced, a problem with any of the above issues, email academicissues@iastate.edu.
Course Outline

SECTION A: Plant cell, water and solutes, and Photosynthesis (Guo, Aug 25 – Sept 5, 5 lectures; Yin, Sep 8-Sept 24, 6 lectures)

- Introduction to plant cell and gene expression Ch 1-2
- General properties of water and solutions
- Water transport and movement in plants Ch 3-4
- Mineral nutrition
- Solute transport Ch 5-6
- Photosynthesis
  - Light and light absorption. Ch 7
  - Electron transport Ch 7
  - Photophosphorylation Ch 7
  - Photosynthetic carbon assimilation Ch 8
  - Environmental effects on photosynthesis. Ch 9

Midterm exam 1: Sept 22, 9-9:50am

SECTION B: Biochemistry and Metabolism (Yin, Sep 24-Sep 26, 2 lectures; Guo Sep 29 – Oct 15, 8 lectures)

- Phloem Transport Ch10
- Respiration Ch 11
- Lipid metabolism Ch 11
- Assimilation or mineral nutrients Ch 12
- Secondary metabolites and plant defense Ch 13

Midterm exam 2: Oct 17, 9-9:50am

SECTION C: Growth and Development-1 (Guo, Oct 20 – Nov 10, 10 lectures)

- Signal transduction Ch 14
- Embryogenesis, meristems and plant patterning Ch 16
- The control of flowering Ch 25
- and light control Ch 17
  - Blue light responses Ch 18

Midterm exam 3: Nov 12, 9-9:50am

SECTION D: Growth and Development-2 (Guo, Nov 17 – Dec 12, 10 lectures)

- Cell Wall Ch 15
- Role of plant hormones
  - Auxins Ch 19
  - Gibberellin Ch 20
  - Cytokinins Ch 21
  - Ethylene Ch 22
  - Abscisic Acid Ch 23
  - Brassinosteroid Ch 24
  - Abiotic Stress Ch 26

Midterm exam 4 & Comprehensive final exam: Dec 16, 7:30-9:30am