16:765:502 Advanced Plant Physiology (3 credits)

Normally Offered:
Spring of odd-numbered years

Instructor:
Dr. Bingru Huang

Pre-requisites and other registration restrictions:
Undergraduate plant physiology or equivalent; organic chemistry

Format:
Two 80-minute lectures.

Description:
Survey of modern aspects of plant physiology with emphasis on recent literature. Topics covered include nutrition, development, stress physiology; and crop physiology. The purpose of this class is to learn basic concepts of plant functions and physiological activities, to understand physiological/molecular mechanisms of plant adaptation to various environmental stresses, and to learn research methods and instruments that can be used to evaluate plant stress tolerance

Topics:
I. Basic concepts of plant physiology
   A. Carbohydrate metabolism
      i. Photosynthesis
      ii. Respiration
      iii. Carbon balance and partitioning
   B. Water relations
      i. Cellular aspect of water potential
      ii. Water uptake and water use
   C. Plant nutrition
      i. Functions of essential nutrient elements
      ii. Nutrient uptake and transport
   D. Plant hormones
   E. Characteristics of major hormones
   F. Functions and environmental regulation
II. Environmental stress physiology
    A. Drought
    B. Flooding
    C. Salinity
    D. Heat stress
    E. Chilling and freezing
    F. Light
III. Biotechnology and environmental stress

Student Assessment:
Lecture:
Test I 15%
Mid-term Exam 25%
Test II 15%
Final Exam 30%

Research project 15%
Paper
Oral presentation

Other requirements:

Attendance is expected by all. No make-up for the exam