Plant Evolution and Diversity

Winter Quarter 2016

Bio 350 / PBC 401

Instructor: Patrick Herendeen (pherendeen@chicagobotanic.org)
Class meets: Lecture- Tuesday 9:00 – 11:50 Lab- Thursday 9:00 – 11:50

Course Description: This course is an introduction to the diversity and evolutionary history of plants for advanced undergraduates and graduate students. It will introduce principles of plant structure, diversity, and paleontology in an evolutionary framework. Morphological, anatomical, molecular and fossil evidence for the evolutionary history and relationships of each group will be presented. Laboratories will focus on diversity and structural characteristics of each group and their fossils.

Field trips will complement lecture and laboratory activities. In addition to lecture and lab, students will prepare a research paper on a topic of their choosing (subject to approval).

Prerequisite: Bio 330 or permission of instructor.

Selected Lecture topics

Origin of life, "algae" and land plants; major features and relationships among green algae and land plants; earliest fossil evidence of land plants

Diversity and structure of early land plants and their interrelationships; evolution of adaptations for terrestrial life; fossil record of early land plants

Carboniferous: the first rainforests; past and present diversity of lycopods and other plants that dominated Carboniferous forests

Ferns- major morphological features of ferns and innovations in their reproductive biology; fossil record of ferns; diversity and phylogeny of ferns

Evolution of seeds- early history and diversity of seed plants;

Gymnospermous seed plants- morphology and diversity of living and extinct gymnosperms

Flowering plants- What is a flower? Theories of angiosperm origins; major morphological features of angiosperms; Early fossil record of flowering plants

Angiosperm diversity- overview of living angiosperm diversity focusing on morphology and evolutionary relationships