

Instructor:

Patrick Shiu (shiup@missouri.edu)

Course title:

Fungal Genetics and Biology (Bio Sc 8310, 3 credit hours)

(For graduate students from the Division of Plant Sciences, it fulfills an elective requirement for the “Plant Breeding, Genetics, and Genomics” and “Plant Stress Biology” programs.)

Meeting time:

This course is offered every other Spring in even years. One week before the first class, a meeting time convenient to all registrants will be arranged.

Prerequisite:

Graduate standing (or instructor's approval). Previous course work in fungi is not required.

Course description:

This course aims to introduce students to the field of fungal research, with an emphasis on the genetics, biochemistry, molecular biology, and cell biology of various fungi. A number of topics will be discussed during the course of study, including (but not limited to) development, genomics, fungus-plant interaction, and gene regulation. Students will gain experience in giving presentations as well as in the ability to review, discuss, and design fungal research.

Course structure:

The class will meet three hours a week to discuss a specific fungal topic. During each meeting, the instructor will convey the current advances of a given topic, followed by a comprehensive presentation of a research paper (by a student or a guest speaker). Research papers will be made available one week in advance and students are expected to have read the papers thoroughly. After each presentation, the class will discuss the paper and offer constructive criticism to the presenter. Students are also expected to submit brief research proposals for selected topics.

Evaluation (subject to change):

Students will be evaluated on their assignments, presentations, and their participation in class discussion.

Presentations: 50%

Assignments: 30%

Attendance/participation: 20%

(There will be no tests or final exams.)

Sample topics:

Biochemistry & metabolism

Cell Biology & Cytology

Circadian rhythm & Photobiology

Gene silencing

Genomics

Fungal growth and development

Fungus-plant interaction

Heterokaryon incompatibility

Horizontal gene transfer

Industrial Mycology & Biotechnology

Mating types

Medical Mycology

Molecular Biology & techniques

Phylogeny & Evolution

Population Genetics & Ecology

Signaling & gene regulation