

BIOE 424

By Cathy Cripps



BIOM 423 - Mycology and BIOE 424 – Ecology of Fungi are offered in Fall on alternate years: even years for Mycology (BIOM 423 listed under Microbiology) and odd years for Ecology of Fungi (BIOE 424 listed under Ecology).

Sometimes the classes are hard to find on the MSU website but you can always search under Cathy Cripps as Instructor. Classes are limited to around 15 students and fill up early so if you want to take one of these courses, it is best to sign up early. Either course can be taken first as one focuses on the

ecology of fungi and one on the taxonomic groups. I have had many students take both courses to gain a better understanding of fungi. The courses are intended for advanced undergraduates (juniors and seniors) and graduate students although post docs and researchers have attended sections of the course. Each course consists of two lectures per week followed by a two hour lab, although we often stay around to play with fungi after the official lab period ends. Each course has two field trips to nearby habitats. These courses are electives for Plant Biotechnology, Microbial Biotechnology, Plant Pathology, Horticulture, Plant Biology, Organismal Biology, Ecology, Biochemistry, Bioengineering, Microbiology, and some LRES programs.

Ecology of Fungi (BIOE 424) is a more research-oriented course often taken by our Biotechnology students, but students in LRES (restoration, etc.), Biochemistry and Bioengineering also take this course to learn how to handle fungi in the laboratory. This course starts with a section on Fungal Ecology covering fungi as decomposers of various substrates, as pathogens (primarily of plants although epidemiology is not covered), endophytes (often with a visit from Dr. Gary Strobel) and as mutualists. The latter functional group consists of fungi in association with plants (as mycorrhizal fungi), with algae (as lichens), with insects (fungus farming ants, termites and fungi, ambrosia beetles, etc.) and with mammals (as vectors for mycorrhizal spore dispersal). We briefly cover fungal Population Biology and Community Ecology. The course includes a section on basic molecular techniques for extracting fungal DNA, amplifying it with PCR and visualizing it on a gel. The goal is to use a sequence of the ITS region for identification by using a BLAST search in GenBank. Finally, we read papers on molecular tools for ecology, isotope analysis, biogeochemical cycling and conservation of fungi. Each lecture is followed by a lab that includes techniques for handling fungi such as tissue culturing, isolation of fungi from various substrates, mushroom production, dung culturing and use of mycorrhizal methods. A large part (and highlight!) of the course consists of required individual research projects which culminate in a poster session that has been attended by professors, researchers and other students in our department. This is the really fun part of the class: learning how to set up and complete a research project and display it in poster format. Officially, we do not brew beer but there have been some interesting projects on this topic. Two lecture and lab exams are also a requirement.