LOW-COST STUDENT RESEARCH IN A NON-MAJORS BIOLOGY LABAORATORY CLASS

Hands-on student research is widely regarded as a valuable component of science education, but can be difficult to achieve in practice. This presentation will describe several research projects conducted with students in BIO 121, Introduction to Ecology Laboratory. General objectives of these projects include modeling the spirit of inquiry, familiarizing students with the scientific method as a means of finding things out for oneself, and the real-world significance of project findings. Course-specific objectives include hypothesis testing via dose-response studies that yield data that can illustrate the toxicological axiom “the dose makes the poison”, and the use and interpretation of linear regression analysis to assess the relative strength of dose-response relationships. Examples of projects included the relationship of sodium chloride concentration (dose) to solution electrical conductivity and fresh weight of germinating seeds, and the effects of acute and chronic exposure of protozoans to a range of ethanol concentrations. The development by faculty members of a diversified “research portfolio” that includes “sure things” as well as “risky” ventures into the unknown will also be discussed.