



Educational Program Assessment Outcome
Environmental Science Major

Goal One: Subject Matter Knowledge in the Major

Command of the chosen field to a degree consistent in breadth and depth with the expectations of national professional organizations in that field; ability and record of presenting that knowledge in professional settings; enhanced practical and theoretical skills and perspectives through internships, fellowships, or other appointments providing learning and growth opportunities in the chosen technical area; strong qualifications for subsequent employment or graduate education related to the major.

Goal Two: Skills in Problem Solving, Critical Thinking, and Use of the Scientific Method

Make scientific observation and analysis; design scientifically-sound approaches to answer simple questions in the major field; find, assimilate, and evaluate scientific information (textual, statistical, graphic, and empirical) accurately and objectively and use related information services and databases as they relate to a scientific question or hypothesis; develop lines of reasoning based on data and use of valid arguments and quality evidence in their own work, whether oral or written; know the basis of sciences outside the major (chemistry, physics, mathematics, and computational science); select and apply appropriate methods and knowledge from many disciplines to solve problems.

Goal Three: Capable Use of Quantitative Information

Read and understand information presented in either numerical or graphic formats; determine and perform (whether manually or with a calculator) arithmetic operations quickly and accurately; solve basic algebraic equations and calculus problems and verify their solutions accurately; depict real-life situations as word problems and solve them correctly; employ statistical concepts (such as mean, median, and mode) in treatment of data, as appropriate.

Goal Four: Communications Proficiency

Know how to research an issue using print and electronic resources; develop a hypothesis and select appropriate evidence to investigate that hypothesis; synthesize cogent ideas from a variety of sources (literature, text books, internet, lab work, etc) and coherently present those ideas to technical and lay audiences; possess a basic knowledge of presentation technology and application of appropriate writing conventions; demonstrate competence in working in multicultural teams tackling novel and complex multidisciplinary projects; participate in exchange of knowledge in mentoring and/or tutoring relationships.

Goal Five: Competency in the Use of Technology

Demonstrate skill in the use of technologies appropriate for the specific field of study; demonstrate capability to understand and adhere to professional standards of safety in laboratory, workplace, and field settings (including: responsible management of chemical and biological materials and associated wastes: proper use of glassware, open flames, electrical devices, cutting tools, and similar items: and full protection from injury by wearing goggles, gloves, lab coats, and other gear, as appropriate.)

Goal Six: Adherence to High Standards of Professional Ethics

Know and understand the principles of scientific honesty and integrity, research reporting data handling, plagiarism, citation of references, management of other intellectual property, conflict-of-interest, financial transactions, human subjects studies, treatment of research animals, etc.

Goal Seven: Graduates of this program will have achieved the following specific subject matter Goals:

Design and conduct field studies to delineate natural habitats; use dichotomous keys to identify species of organisms; analyze biological data to characterize ecosystems and habitats; identify and culture microorganisms for testing and evaluation purposes; relate the presences of microorganisms to mechanisms of infection in plants and animals; relate the presence of microorganisms to mechanisms associated with stages of primary and secondary succession; use laboratory instruments to conduct molecular level tests to characterize the genetics of species of organisms; interoperate genetic and environmental information to understand the modes action of toxic agents on organisms and design mitigation procedures to minimize the effects of exposure to toxicants; use the principals of biology, chemistry and mathematics to perform an environmental and human health risk assessment; use the methods and principals of organic and inorganic chemistry to describe and interpret the data relating development and behavior of organism in the environment; design and conduct field and laboratory studies to characterize the structure and functions of ecosystem components; design and conduct field studies and interpret data from such field studies to characterize the hydrology and soils of watershed; select and use instruments to measure the concentration of chemicals and degradation products in the environment; design and conduct field studies characterizing the level and extent of an environmental stressor.