

WVMN Class Description

- Title:** GENERAL ECOLOGY
- Objectives:** Describe the principles of ecology, the branch of biological science that deals with the interrelationships between organisms and their environment. The environment will be considered to include all factors external to an organism that affect that organism in some fashion, either physical or chemical (abiotic), or biological (biotic).
- Class type:** Core curriculum
- Time:** 3 hours
- Optimal season:** Summer, fall
- Materials:** Any equipment that may be used to monitor ecological conditions, i.e., biological oxygen deficiency (BOD Hach kit), alcohol or mercury thermometer, pocket anemometer, sling psychrometer, etc
- Expected outcomes:** The student will gain a basic understanding of basic concepts of ecosystems including population and community concepts.
1. physical and biological factors that affect population dynamics.
 2. energy and nutrient cycles in natural systems.
 3. various types of biomes.
 4. the role of succession in community dynamics.
 5. the concept of species diversity.

WVMN Class Outline

1. Brief overview of the science of ecology
 - a. the ecosystem concept
 - b. population and community concepts
2. Physical factors of environment
 - a. temperature
 - b. light
 - c. moisture/humidity
 - d. spatial complexity
 - e. soils
 - f. seasonality
3. Biological factors of environment
 - a. competition
 - b. predator-prey relationships
 - c. cooperative associations between species/mutualism
 - d. ecological tolerance and homeostasis
4. Energy in ecological systems
 - a. food chains and food webs
 - b. trophic levels/ producers, consumers, and decomposers
 - c. primary and secondary productivities
 - d. ecological efficiencies
 - e. ecological pyramids
5. Nutrient cycles/hydrologic cycle
6. Populations
 - a. population growth
 - b. population cycles: growth and decline
 - c. adaptation and evolution
 - d. r and K selection/survivorship curves
 - e. life histories
7. Ecosystem types - terrestrial biomes
 - a. grasslands
 - b. savanna
 - c. forests
 - d. forest types
 - e. forest layering
 - f. deserts
 - g. tundra and alpine systems
 - h. caves and groundwater systems
8. Ecosystem types - aquatic biomes
 - a. freshwater - streams and rivers
 - b. freshwater - lakes and ponds
 - c. wetlands - perennial and seasonal
 - d. marine biomes
9. Community structure and species diversity
10. Succession
 - a. climax community concept
 - b. seral stages
 - c. ecotone