

Aquatic Ecology: Students will learn about the importance of water quality to the overall health of an ecosystem. Students will have the opportunity to study an aquatic ecosystem by capturing and identifying aquatic inhabitants, including invertebrates, amphibians, and fish.

Concepts: ecosystem, biotic/abiotic, energy flow, balance of nature, human & environment interaction, characteristics of water, life cycles, population dynamics predator/prey, classification, adaptation /characteristics/ function, life requirements, food chain/web use/storage, species change over time, habitat, behavior, native/non-native species, biodiversity, indicator species, Earth's features, units of measure.

Archaeology: Students will learn the importance of investigating the past through the careful examination and piecing together of evidence found at a dig site. They will learn about the tools and techniques used in this process. Students will have the opportunity to map an archaeological site, commence a dig, and discover pieces to a puzzle representing a story.

Concepts: Earth's features, units of measure, spatial sense, problem solving, population dynamics, adaptation, balance of nature, human and environment interactions.

Bird Life: Clear Lake is host to an assortment of birds, both resident and migratory. In this class, students will discover the diverse world of Avians. Students will learn about bird adaptations and characteristics, and discuss why birds play a vital role in an ecosystem. Students will also cover survival issues and learn the proper use of binoculars while spending time in the field locating and identifying birds.

Concepts: ecosystem, biotic/abiotic, energy flow, balance of nature, human & environment interaction, life cycles, population dynamics predator/prey, classification, adaptation/ characteristics/function life requirements, food chain/web use/storage, species change over time, habitat, behavior, native/non-native species, biodiversity.

Compass: Basic, practical use of a compass is important in wilderness navigation. Students will become familiar with a typical compass and its function.

Concepts: cardinal directions, spatial sense, numerical sense, position, coordinates, measurement, units of measure, attributes, estimation, problem solving, performing calculations.

Ecosystems and Biodiversity: Students are encouraged to discover widely varied ecosystems from the macro to the micro level, with an emphasis on identifying the multiple elements involved in each and their interconnections. The biodiversity in each ecosystem is investigated and catalogued, and comparisons are made to determine the impact of monocultures and invasive species. Activities include the creation of their own scale model systems depicting the effects of human management for recreational, industrial and agricultural uses.

Concepts: ecosystem, biotic/abiotic, energy flow, balance of nature, human and environment interactions, producers/consumers/ decomposers, life cycles, classification, adaptation/characteristics/functions, life requirements, food chain/web/storage/use, species change over time, habitat, native/non-native species, climax community, Earth's features.

Fire Ecology: Students will learn about the ingredients of fire; weather and environmental conditions which make a location susceptible to fire; positive and negative effects of fire; and reasons and methods for prescribed burns. Students will have the opportunity to investigate an area assigned for a burn by studying and testing soil samples; studying weather conditions; and conducting plant/animal surveys. They will also investigate moisture content's affect on burn rate using pre-harvested and prepared samples.

Concepts: ecosystems, energy flow, balance of nature, human and environmental interactions, life cycles, adaptation/ characteristics/function, life requirements, species change over time, habitat, native/non-native species, biodiversity, succession, Earth's features.

Forest Ecology: Students are guided along one of Clear Lake's nature trails to learn about the inner workings of a forest ecosystem. Emphasis is placed on the interrelation-ships between plants and animals as students study the surrounding forest for signs of habitats. Students will also take part in various activities that illustrate ecological concepts.

Concepts: ecosystem, biotic/abiotic, energy flow, balance of nature, human and environment interactions, producers /consumers/decomposers, life cycles, classification, adaptation/characteristics/ function, life requirements, food chain/web/storage/use, species change over time, habitat, native/non-native species, climax community, Earth's features.

Forestry: Students will learn about Michigan forests and the trees that compose them. Students will learn how a tree works, characteristics of specific trees, aging and identification, forest types, and what constitutes a healthy forest. Students will also learn forest management practices, use of forestry tools, and effects of people on forests.

Concepts: ecosystem, biotic/abiotic, energy flow, balance of nature, human and environment interactions, producers/consumers/ decomposers, life cycles, classification, adaptation/characteristics/function, life requirements, food chain/web/storage/use, species change over time, habitat, native/non-native species, climax community, Earth's features.

GPS (Global Positioning System)/Geocaching: GPS units are becoming very common for navigation in many different professions and hobbies. Students will learn navigational skills, the use of new technology, practice mathematical reasoning and learn the basic principles and hands-on use of a GPS. Topics covered will include satellite positioning, triangulation, and basic GPS navigation techniques.

Concepts: cardinal directions, spatial sense, numerical sense, position, coordinates, measurement, units of measure, attributes, estimation, problem solving, performing calculations.

High Ropes: The high ropes course challenges preconceived notions of self and of peers by taking youth out of standard “comfort zones” and by requiring them to reassess where their strengths lie. It consists of a series of elements 18 feet off the ground. Using certified equipment, each participant maneuvers through the course attached to an overhead cable by two safety lines. Each station presents a different challenge. Students are given instruction in equipment and proper utilization of the course before beginning. They are supervised and assisted by trained, certified facilitators.

Concepts: personal achievement, goal setting, positive encouragement, partnering/support, overcoming preconceptions.

Insects (Aquatic or Terrestrial): Students will be introduced to the largest class of organisms in the world, one that can have profound impact on human health and society. They will learn general guidelines and characteristics common to insects, such as body structure, adaptations, and metamorphosis. Students will have the opportunity to capture and study insects in various habitats. Students will also discuss the environmental importance of insects and their benefits to humans.

Concepts: ecosystem, biotic/abiotic, energy flow, balance of nature, human & environment interactions, life cycles, population dynamics, producers/consumers/decomposers, predator/ prey, classification, adaptation/characteristics/function, life requirements, food chain/web/storage/use, species change over time, habitat, behavior native/non-native species, biodiversity.

Low Ropes: The low ropes course is a great tool to increase group cohesion. It entails a series of ground-based, problem-solving experiences. Before beginning, students discuss the value and importance of teamwork as well as what constitutes an effective and efficient team. Then they work together to complete each element of an obstacle-style adventure course and learn how to use these concepts on the course and in real life. It requires openness to ideas and opinions that are expressed by peers and creates a positive environment in which to explore possibilities for success.

Concepts: Cooperation, communication, goals, objectives, problem solving, group cohesion, efficiency, leadership.

Maps: Practical understanding of maps is a highly useful skill for everyday life as well as in many professions. Students will become familiar with topographical maps and their uses. Students will learn about map symbols, colors, scales, and contour lines. They will also learn how to orient a map, measure distances, calculate elevation, and find a position on a map.

Concepts: cardinal directions, spatial sense, numerical sense, position, coordinates, measurement, units of measure, attributes, estimation, problem solving, performing calculations.

Orienteering: Map reading and Compass will be taught together and followed by practical experience in their use as students try to find their way through a predetermined course.

Concepts: cardinal directions, spatial sense, numerical sense, position, coordinates, measurement, units of measure, attributes, estimation, problem solving, performing calculations.

Predators: Students will determine adaptations of animals which make them predators, which predators inhabit the Upper Peninsula, why they are important in ecosystems, and how they can be misunderstood. Students will be presented with facts surrounding current predator hunt issues and asked to form opinions regarding their efficacy.

Concepts: ecosystems, biotic/abiotic, energy flow, balance of nature, human and environment interaction, life cycles, population dynamic, predator/prey, classification, adaptation/characteristics/ function, life requirements, food chain/web/use/storage, species change over time, habitat, behavior, native/non-native species, biodiversity.

Raptors: Students will learn what classifies a raptor, which raptors are found in the Clear Lake ecosystem, how raptors hunt, what raptors eat, why raptors are an important part of the food chain. Students will study what dangers raptors face and take part in a service project: creating tail sheaths for the birds at the Raptor Rehab Center.

Concepts: ecosystems, biotic/abiotic, energy flow, balance of nature, human and environment interaction, life cycles, population dynamic, predator/prey, classification, adaptation/characteristics/ function, life requirements, food chain/web/use/storage, species change over time, habitat, behavior, native/non-native species, biodiversity.

Voyageur Life: Understanding past and present cultures and our local history is helpful for the development of self-awareness as a state and as a nation. By experiencing the life of the voyageurs, students will discover part of Michigan's past. In this class students will learn about the local history of the Voyageurs, discuss the importance of the Voyageur's travel and trade (especially that of furs) to the region, experience paddling a voyageur canoe, and learn how to make fry bread and cordage.

Concepts: Location and characteristics of people, places and cultures; locations and characteristics of economic activities, trade, migration, and their interrelationships.

Wildlife Ecology: Students will learn about the mammals that inhabit Michigan's great outdoors. They will discuss how these creatures have adapted to the northern climate. Participants will have the opportunities to experience life in the wild through games, experiments, and activities.

Concepts: ecosystems, biotic/abiotic, energy flow, balance of nature, human and environment interactions, life cycles, population dynamics, producers/consumers/ decomposers, predator/ prey, classification, adaptation characteristics/ functions, life requirements, food chain/web/storage/use, species change over time, habitat, behavior, native/non-native species, biodiversity.