The Centennial School District Science Curriculum offers multiple elective courses to provide students with content and experience which extends and enriches the required curriculum. Minnesota Outdoor Connections is offered to seniors and integrates concepts and processes from both the physical and biological sciences. It utilizes project based learning and outdoor experiences to teach content.

Connect With Minnesota
  • Basic History
    o Provide example of how diverse cultures, including native from all of the Americas, have contributed scientific and mathematical ideas and technological inventions.
    o Analyze the benefits, costs, risks and trade-offs associated with natural hazards, including the selection of land use and engineering mitigation.
    o Explain how human activity and natural processes are altering the hydrosphere, biosphere, lithosphere and atmosphere, including pollution, topography and climate.
  • Ecology
    o Biomes and Ecosystems
      ▪ Describe a system, including specifications of boundaries and subsystem, relationships to other systems, and identification of inputs and expected outputs.
      ▪ Identify properties of a system that are different from those of its parts but appear because of the interaction of those parts.
    o Flora and Fauna
      ▪ Describe factors that affect the carrying capacity of an ecosystem and relate these to population growth.
      ▪ Explain how ecosystems can change as a result of the introduction of one or more new species.

Navigation and Orienteering
  • Maps
    o Landmarks, contour lines, quadrangles
      ▪ Relate the reliability of data to consistency of results, identify sources of error, and suggest ways to improve data collection and analysis.
      ▪ Demonstrate how unit consistency and dimensional analysis can guide the calculation of quantitative solutions and verification of results.
      ▪ Analyze the strengths and limitations of physical, conceptual, mathematical and computer models used by scientists and engineers.
    o Using maps with a compass
      ▪ Describe how technological problems and advances often create a demand for new scientific knowledge, improved mathematics and new technologies.
      ▪ Determine and use appropriate safety procedures, tools, computers and measurement instruments in science and engineering contexts.
    o Global Positioning Systems
      ▪ Analyze the strengths and limitations of physical conceptual, mathematical and computer models used by scientists and engineers.
      ▪ Describe the properties and uses of forms of electromagnetic radiation from radio frequencies through gamma radiation.
• Understand the engineering designs and products are often continually checked and critiqued for alternative, risks, costs and benefits, so that subsequent designs are refined and improved.

Outdoor Survival
• Backcountry survival
  o Explain how cell processes are influenced by internal and external factors, such as pH and temperature, and how cells and organisms respond to changes in their environment to maintain homeostasis.
  o Describe how the functions of individual organ systems are integrated to maintain homeostasis in an organism.

Minnesota Recreation
• Fishing
  o Minnesota Aquatic Ecosystems and Species
    o Describe factors that affect the carrying capacity of an ecosystem and relate these to population growth.
    o Explain how ecosystems can change as a result of the introduction of one or more new species.
    o Explain how matter and energy is transformed and transferred among organisms in an ecosystem, and how energy is dissipated as heat into the environment.
  o Gear and Techniques
    ▪ Recognize that inertia is the property of an object that causes it to resist changes in motion.
    ▪ Demonstrate that whenever one object exerts force on another, a force equal in magnitude and opposite in direction is exerted by the second object back on the first object.

Final Project
• Fishing rod or Snowshoe Building; Skin Sewing
  o Identify a problem and the associated constraints on possible design solutions.
  o Describe how technological problems and advances often create a demand for new scientific knowledge, improved mathematics and new technologies.
  o Determine and use appropriate safety procedures, tools, computers and measurement instruments in science and engineering contexts.