Cass County Conservation Board
6th- High School Grades Program List

Next Generation Science Standards

Welcome to the Cass County Conservation 6th grade - High School Curriculum revised to reflect the Next Generation Science Standards. Here you will find any in-school programs we offer and field trip options. Feel free to contact Lora Kanning at lkanning@casscoia.us or 712-769-2372/712-254-0105 (cell) with any questions. The Cass County Conservation Board is dedicated to wildlife habitat development, management and preservation. These goals are reached by purchasing land for wildlife, by improving habitat quality and by providing educational programs for the citizens of the county.

There is specific programs listed for the High School grades and there is also a basic layout for all of the general classes CCCB offers across grades. We have put the programs in the best fit grade by the Disciplinary Core Idea, feel free to still ask for this program even though it might not be listed in your grade level. The general classes tie into the standards by utilizing several of the crosscutting concepts and science and engineering practices. If you don't see a class that meets your needs please contact a naturalist to see if we can customize a class for your classroom.

- THE GREAT BACKYARD BIRD COUNT will be held February, 16-19 2018. Everyone is needed to participate, even if they can only correctly identify one kind of bird! I will help them with their identification skills when I visit your classroom and help them understand their important role in this national program. Atlantic has consistently been in the top 5 communities, for submitting the most checklists! Can we do it again?

LS2.C Ecosystem Dynamics, Functioning, and Resilience

Ecosystems are dynamic in nature; their characteristics can vary over time. Disruptions to any physical or biological component of an ecosystem can lead to shifts in all its populations. (MS-LS2-4)

- Resource Managers- HS-Introduce your students to the natural resource job field with this indoor classroom activity! Overhead Projector use required.

LS2.C Ecosystem Dynamics, Functioning, and Resilience

Moreover, anthropogenic changes (induced by human activity) in the environment—including habitat destruction, pollution, introduction of invasive species, overexploitation, and climate change—can disrupt an ecosystem and threaten the survival of some species. (HS-LS2-7)

ESS3.C Human Impacts on Earth Systems

Human activities have significantly altered the biosphere, sometimes damaging or destroying natural habitats and causing the extinction of other species. But changes to Earth's environments can have different impacts (negative and positive) for different living things. (MS-ESS3-3)

The sustainability of human societies and the biodiversity that supports them requires responsible management of natural resources. (HS-ESS3-3)

Scientists and engineers can make major contributions by developing technologies that produce less pollution and waste and that preclude ecosystem degradation. (HS-ESS3-4)

- Fire Ecology- HS- (four weeks notice required) Explore Fire Ecology inside and outside the classroom. Spring works best but can be offered in the fall. Students identify and evaluate the positive and negative effects that forest or grassland fires have on wildlife.

LS2.C Ecosystem Dynamics, Functioning, and Resilience

A complex set of interactions within an ecosystem can keep its numbers and types of organisms relatively constant over long periods of time under stable conditions. If a modest biological or physical disturbance to an ecosystem occurs, it may return to its more or less original status (i.e., the ecosystem is resilient), as opposed to becoming a very different ecosystem. Extreme fluctuations in conditions or the size of any population, however, can challenge the functioning of ecosystems in terms of resources and habitat availability. (HS-LS2-2),(HS-LS2-6)

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- Rock It- Focus on rocks, minerals and fossils and where they come from.

ESS1.C The history of the planet earth

The geologic time scale interpreted from rock strata provides a way to organize Earth's history. Analyses of rock strata and the fossil record provide only relative dates, not an absolute scale. (MS-ESS1-4)

Tectonic processes continually generate new ocean sea floor at ridges and destroy old sea floor at trenches. (HS. ESS1.C GBE) (secondary to MS-ESS2-3)

LS4.A Evidence of Common Ancestry and Diversity

The collection of fossils and their placement in chronological order (e.g., through the location of the sedimentary layers in which they are found or through radioactive dating) is known as the fossil record. It documents the existence, diversity, extinction, and change of many life forms throughout the history of life on Earth. (MS-LS4-1)

Anatomical similarities and differences between various organisms living today and between them and organisms in the fossil record, enable the reconstruction of evolutionary history and the inference of lines of evolutionary descent. (MS-LS4-2)

Iowa Core: Science Earth and Space: Understand and apply knowledge of fossils and the evidence they provide of past life on earth. Fossils provide evidence of plants and animals that lived long ago and the nature of the

environment at that time.

- Star ID- HS-Learn about constellations, tailored to the month of your program.

ESS1.A The Universe and Its Stars
Patterns of the apparent motion of the sun, the moon, and stars in the sky can be observed, described, predicted, and explained with models. (MS-ESS1-1)
The star called the sun is changing and will burn out over a lifespan of approximately 10 billion years. (HS-ESS1-1)
The study of stars' light spectra and brightness is used to identify compositional elements of stars, their movements, and their distances from Earth. (HS-ESS1-2),(HS-ESS1-3)

- The Solar System and Beyond- My nine inflatable planets will allow your students to visualize the major size difference of the planets! We will then move outside to look at the distance between planets and discuss rotation and revolution. Students won't soon forget this hands-on lesson!

ESS1.B Earth and the Solar System
The solar system consists of the sun and a collection of objects, including planets, their moons, and asteroids that are held in orbit around the sun by its gravitational pull on them. (MS-ESS1-2),(MSESS1-3)
Iowa CORE: Science, Earth and Space,
Essential Concept and/or Skill: Understand and apply knowledge of the properties, movements, and locations of objects in our solar system.

- Water Vapor and Water Cycle- during these activity students will become water molecules, and walk their way through the water cycle. After defining terms such as water vapor, condensation, etc. students will again travel through the water cycle, grabbing a partner when they represent a water droplet and will travel alone as water vapor. This active lesson will help your students better understand water vapor and precipitation (large space to play is needed.)

ESS2.C The Roles of Water in Earth's Surface Processes
MS-ESS2-4. Develop a model to describe the cycling of water through Earth's systems driven by energy from the sun and the force of gravity. Water continually cycles among land, ocean, and atmosphere via transpiration, evaporation, condensation and crystallization, and precipitation, as well as downhill flows on land. (MS-ESS2-4)
The complex patterns of the changes and the movement of water in the atmosphere, determined by winds, landforms, and ocean temperatures and currents, are major determinants of local weather patterns. (MSESS2-5)
Global movements of water and its changes in form are propelled by sunlight and gravity. (MS-ESS2-4)
Water's movements—both on the land and underground—cause weathering and erosion, which change the land's surface features and create underground formations. (MS-ESS2-2)
Iowa Core: Science Earth and Space Essential Concept and/or Skill: Understand and apply knowledge of the water cycle, including consideration of events that impact groundwater quality.

- Water Address- Students discover an animals water address and even OUR own! Reinforces water conservation, adaptations, and the watershed concept. Internet access is optional.

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Water's movements—both on the land and underground—cause weathering and erosion, which change the land's surface features and create underground formations. (MS-ESS2-2)
ESS3.C: Human Impacts on Earth Systems
The sustainability of human societies and the biodiversity that supports them requires responsible management of natural resources.
Use critical thinking skills to conduct research, solve problems, and make informed decisions using appropriate technological tools and resources.

- Vermicomposting- HS - Worms eat my garbage!? Find out how these amazing creatures love our leftovers! Many extension activities available!

ESS3.C Human Impacts on Earth Systems

The sustainability of human societies and the biodiversity that supports them requires responsible management of natural resources. (HS-ESS3-3)

- REAL, LIVE, ENDANGERED SPECIES- HS-Your students will get to see a live animal (an ornate box turtle) that is listed as threatened on Iowa's Endangered Species list. I could also bring several mounted critters (Trumpeter Swan, River Otter, and Bobcat) that are, or have been, on the list.

LS4.D Biodiversity and Humans

Biodiversity is increased by the formation of new species (speciation) and decreased by the loss of species (extinction). (secondary to HSLS2-7)

LS4.C Adaptation

Adaptation also means that the distribution of traits in a population can change when conditions change. (HS LS4-3)

Changes in the physical environment, whether naturally occurring or human induced, have thus contributed to the expansion of some species, the emergence of new distinct species as populations diverge under different conditions, and the decline–and sometimes the extinction–of some species. (HS-LS4-5),(HS-LS4-6)

Species become extinct because they can no longer survive and reproduce in their altered environment. If members cannot adjust to change that is too fast or drastic, the opportunity for the species' evolution is lost. (HS-LS4-5)

General Classes for Science and Engineering Practices and Crosscutting Concepts

These general classes tie into the standards by utilizing several of the crosscutting concepts and science and engineering practices

- Leaf ID- With real examples students will learn how to key out leaves to identify the tree species, including evergreen trees.
- Field Trip Opportunities
- IOWATER. 1) I can do a classroom program showing and discussing the macro invertebrates that I have collected from Cass County streams. Your students will enjoy viewing them up close and can try to identify them as well. In conclusion, they will learn what these creatures can tell us about the water quality of the stream. OR 2) Your class can join me in a stream as we look at the stream habitat, look for water critters, complete simple chemical tests, etc. How much you want to do is up to you. (Four weeks advance notice please)

Select and use appropriate tools and techniques to gather, analyze and interpret data.

The use of tools and techniques, including computers, will be guided by the questions asked and the investigations students design. Students should be able to access, gather, store, retrieve, and organize data, using computer hardware and software designed for these purposes.

- Intro to GPS 1.) Classroom program introducing the use of the equipment. 2.) optional geocaching activities in our parks or in the Atlantic city limits. (20 units available)

Apply digital tools to gather, evaluate, and use information.

Demonstrate critical thinking skills using appropriate tools and resources to plan and conduct research, manage projects, solve problems and make informed decision.

Science and Technology:

Identify problem or design an opportunity; propose a design and choose between alternative solutions; implement proposed solution; evaluate solution and its consequences; communicate a problem, process, and solution; use computer software, device interfaces, lab equipment, calculators, and GPS; use presentation software and hardware, communications equipment, and remote sensing equipment; generate and manipulate data; describe the connection between technology and the state of current knowledge,

- ORIENTEERING is a blast for students of all ages. Call me ahead of time and I will set up a course for your students to try after we learn the basics. (Four weeks advance notice please, 20 compasses available) 2.) optional orienteering treasure hunt activities at Outdoor Educational Classroom near Massena.

Use critical thinking skills to conduct research, solve problems, and make informed decisions using appropriate technological tools and resources.