Blackhawk School District

CURRICULUM

Course Title:	**Introduction to Ecology and Botany**
Course Number:	**0410**
Grade Level(s):	**Eleventh-Twelfth**
Periods per week:	**5**
Length of Period:	**42 minutes**
Length of Course:	**Daily (42 minutes)**
Credits:	**1.0 credits**
Faculty Author(s):	**Teresa Adams, Iain Eastman, Anita Mensch, Jamie Moon**
Date:	**May 2012 / Revised October 2012**

MISSION STATEMENT:

The goal of science education is to develop within students an understanding of the world around us by fostering curiosity, developing inquiry skills, and creating an excitement for learning science.

Course Description:

This course provides a basic introduction to ecological concepts for the non-science student. Students must pass Biology (0420) prior to enrolling. Students taking this course should be interested in a hands-on experience focusing on topics such as ecology, plants, natural resources, alternative energy, sustainable agriculture, and ecosystems. This class meets for a single period every day.

PA Common Core Standards for Reading and Writing in Science and Technical Subjects:

Pennsylvania Department of Education has released standards that describe what students in the science and technical subjects' classrooms should know and be able to do with the English language in reading and writing, grade 6 through 12. The standards provide the targets for instruction and student learning essentials for success in all academic areas, not just language arts classrooms. Although the standards are not a curriculum or a prescribed series of activities, Blackhawk School District has used them to develop this science curriculum.

The standards for Reading are available at:
http://static.pdesas.org/content/documents/PA_Common_Core_Standards_for_Reading_in_Science_And_Technical_Subjects_8-7-12.pdf

The standards for Writing are available at:
http://static.pdesas.org/content/documents/PA_Common_Core_Standards_for_Writing_in_Science_and_Technical_Subjects_8-7-12_rev_2.pdf

Introduction to Ecology—2 weeks

Expectations, scientific method, lab procedures, field experiments

Botany—9 weeks

Plant evolution and adaptations, vascular seed plants, plant cells, tissues, & functions, Plant organs, plant hormones & responses, plant reproduction

Possible Lab Activities: Microscope work with plant cells, germination lab, flower dissection, identification of local trees & plants, hydroponics, phototropism & gravitropism lab, chromatography lab, transpiration lab

Natural Resources—9 weeks

Plant & Animal adaptations, value of wildlife, Endangered species, habitat (population interactions, predator/prey dynamics, interspecific competition, intraspecific competition, controlling of animal & wildlife population losses), recycling of organic material within ecosystems, population growth, human impacts on populations

Alternative Energy—3 weeks

Biomass, ethanol production, biodiesel, switchgrass, wood pellets, manure, methane production from livestock,

Sustainable Agriculture—1 week

Intro, Understanding sustainable ag, economics of sustainable ag, decision making for sustainable ag, sustainable ag & sustainable community

Veterinary Science—3 weeks

Basic mammalian body systems, Diseases, Mad Cow Disease

Biotechnology & the Environment—4 weeks

Introduction of unit with review of DNA, genes, chromosomes, Pest population & control, chemical & biological control, pest management, genetic engineering of plants, genetically modified foods, clones & transgenic animals

Ecosystem Ecology—2 weeks

Biogeography of ecosystems, biomes, ecoregions, patterns of species richness, freshwater ecosystems, forests,

Ecological Issues—3 weeks

Animal rights, organic food production (support/opposition), environmental issues (habitat alteration, global environmental change