Lab Topics
Student Outreach Project for Applied Sciences and Technology
University of Minnesota, Crookston

Possible curriculum concepts to complement High School science, food or agricultural class contents include the following suggestions, or UMC will try to develop your request.

**Animal Reproductive Biotechnology:**
Live sperm micro search, uterus anatomy, artificial insemination demo and discussion, cloning and embryo transfer.

**Plant Cloning Biotechnology:** Asexual plant propagation demo and labs such as tissue culturing and micro propagation.

**Identification of pathogens in Milk and What Antibiotics are used for Treatments:** Lab analysis of agar plates inoculated with bacteria and various antibiotic discs for sensitivity.

**Ruminant Digestion:** Microanalysis of microbes from live cow and anatomy of the cow stomach from preserved samples.

**Biotechnology in Environmental Science:** The purpose of this lab is to show enzyme systems needed to clean up waste exists in nature among the decomposers, called “bioremediation”.

**DNA Extraction from Onion or Human Cheek Cells:** Lab to extract visible mass of DNA.

**Identification of Animal Organ Systems:** Examples include labs on muscle fatigue, muscle contraction, and cardiac EKG data collection.

**Introduction to Global Positioning Satellites (GPS):** Lab uses hand held receivers to receive satellite signals for navigation or use in precision agriculture.

**Introduction to Flight:** Lab study of physical laws of airplane flight using a cockpit flight teaching simulator and planes on location at the flight-training center at the airport.

**Electrophoresis:** Biotechnology of chemical fingerprinting such as in DNA separation.

**Lab teams will separate dyes and determine unknown mixtures from known controls.**

**Transit Lab:** Hands-on lab using survey apparatus

**Food Biochemistry:** Lab analysis of various organic foods

**Genetics of the Fruit Fly:** Lab study of normal and mutated body traits using live and preserved flies.

**Equine Riding Styles:** Demonstrations by student riders and explanation of equine science.

**Nutrition:** Labs and demonstrations on food science and food processing/packaging.

**Dahlgren Sunflower Processing Plant:** Tour of food processing from raw to Package.

**Bacteria and Antibiotic Reaction:** Influence of antibiotics on bacteria growth.

**Soils Lab:** Physical and chemical nature.

**Experimental Physics:** Technology labs of various physical concepts.

**Identification of Mammals and Birds:** Lab observation of 50 mounts and skins.

**Turf Grass Management:** Lab germination of various grasses and impact of environments.