



Survey of Science

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Prerequisite: Open to all students

Level: 9th grade

Credits: 1.0

Additional: This course is accepted as a science credit for H.S. graduation.
This course is not accepted as a science credit for college admission.
This course is not accepted as a science credit by the NCAA.

Course Description

This course introduces the students to a broad view of both life and physical sciences. The students leave this course with a better understanding of global weather conditions, ecological interactions, earth's resources, types of and preventions of disease, physical science of flight, and human genetics.

Course Objectives

- Students will demonstrate knowledge in the area of weather prediction.
 - Students will know and apply the causes and effects of storms.
- Students will demonstrate an understanding of the balance of ecosystems and how change affects us all.
 - Students will distinguish between renewable and nonrenewable resources and give types of each.
 - Students will know and apply all the different parts of the cycles of our world.
- Students will classify diseases as communicable or non-communicable on the basis of their mode of transmission.
 - Students will demonstrate knowledge of the intricacy of our body systems.
 - Students will know and apply the principles of aerodynamics.
 - Students will know and apply the fundamentals of Mendelian genetics.
- Students will know and apply the methods of DNA replication, RNA synthesis and protein synthesis.

Course Outline

Science: A Tool for Problem Solving

- Scientific Methods
- Deductive and Inductive Reasoning
- **Weather Prediction**
- Observing Weather from the Ground
- Using Technology to Measure Weather
- Mapping and Using Weather Data
- **Severe Weather**
- Moving Air
- The Anatomy of Thunderstorms
- Hurricanes: The Heavyweight of Storms
 - **The Effects of Storms**
 - The Moving Storm
 - Agents of Destruction
 - After the Storm

Biotic and Abiotic Factors

- Biotic Factors in Ecosystems
- Abiotic Factors in Ecosystems

Ecosystems in Balance

- Interactions Among Organisms
 - Cycles in Ecosystems
- Changes in Ecosystems**
 - Population Growth
 - Ecosystem Change
- Biochemistry**
 - Food Chemistry and Food Energy
- Speeding up your Body's Chemical Reactions
- Food: The Journey from Mouth to Body Cells
 - Chemistry of Food
 - Fighting the Pests
 - Food Preservation
 - Preparing for Dinner

Resources Nonrenewable and Renewable Resources

- **Recyclable and Reusable Resources**
 - **The Formation of Resources**
 - Igneous Rocks
 - Sedimentary Rocks
 - Metamorphic Rocks
 - Recycling**
 - Why Recycle
 - **Recyclable Parts of a Car**
 - Types of Disease**
 - Health and Disease
 - **Communicable Diseases**
 - **Non-communicable Diseases**
- Preventing and Treating Disease**
 - Lines of Defense
 - The Immune System
- **Preventing and Treating Disease**
 - Detecting Disease
 - Observing Disease
- **Chemical Tools for Detection**
- **Technical Tools for Detection**
 - Physics of Flight**
 - Forces of Acceleration
 - Force of Gravity
 - Structures of Flight**
 - **The Structure of Birds and Planes**
 - Getting up to Speed
 - **Flight Adaptations for Plants**
 - **Fundamentals of Genetics**
 - Mendel's Legacy
- **Genetic Crosses and Punnett Squares**
- **Nucleic Acids and Protein Synthesis**
 - DNA
 - RNA
 - Protein Synthesis

Teaching Methods

This class is taught by lecture, laboratory, videos, computer software, and demonstration. Students will have individual daily assignments and some group assignments.

The students will have a project or lab for each chapter covered. There are some assignments that will require a written report and others that will require an oral presentation. Each will be assessed using a pre-discussed rubric.

Assessment

- Daily assignments will be assessed on the basis of content. Each chapter there will be approximately as many points for daily assignments as there will be for the chapter test.
- There will be lab and mini-labs for almost every chapter we cover. The students will be graded on the basis of lab technique and skills as well as a lab write up for each.
- There will be a chapter test for each chapter covered. There will be quizzes periodically.

Text

