

DOWNEY UNIFIED SCHOOL DISTRICT  
Middle School Course Outline

**Course Title:** Adventures in Science (One Semester)  
**Grade Level:** 7, 8  
**Prerequisites:** Recommendation of science teacher and student earning A or B in current/most recent science course.

**Course Description:**

This elective course presents science units, which extend beyond the traditional required middle school science curriculum. Topics of study will be presented in an integrated manner combining subjects such as mathematics and art with science. The instructional approach will be activity-based. Topics may include some or all of the following units: Electricity and Magnetism; Waves - Light and Sound; Consumer Product Awareness; Conducting a Scientific Project; Science Crime Busters; Where and What in Nature; Flight; Structure and Design; and, Preserving Our World.

**Student Performance Objectives for this Course:**

Students will

***ELECTRICITY AND MAGNETISM UNIT***

*The purpose of this unit is to serve as a review and/or extension of any other lessons previously covered in the subject matter. This unit will consist mostly of lab activities with a minimum of directed instructions and a maximum of hands-on projects.*

1. Relate parts of the atom to production of charge in electricity.
2. Demonstrate the properties of static electricity and set up experiments showing the positive and negative charges.
3. Classify materials according to their conductivity by lab experimentation.
4. Study and construct electrical current models in series or parallel circuits.
5. Demonstrate the direct connection between electricity and magnetism by constructing an electromagnet model and explaining the relationship.

## **Adventures in Science - continued**

### ***LIFE SCIENCE***

1. Living Structures
  - a. Observe, relate, compare, and/or illustrate the characteristics of living things: how the structures of living things perform their functions; how they interact with each other; and, how they contribute to the maintenance and growth of the organism. Emphasis will be on the human body and health
  - b. Classify living things based on their shared characteristics

### ***CONSUMER AWARENESS UNIT***

*The purpose of this unit is to enable students to evaluate common products used in their everyday lives as well as reinforce the use of the scientific method. It will also relate the use of this method to consumer awareness and evaluation.*

1. Use the scientific method in evaluating commonly used products.
2. Following model experiments, design their own experiments to test a product.
3. Convert test data to scores.
4. Compile and compare test results.
5. Present procedures and results to class.
6. As a class, form a decision based upon test results, and make recommendations on product value.

### ***SCIENTIFIC PROJECT UNIT***

*The purpose of this unit is to give the student the opportunity to design an experiment, apply the procedures for laboratory study, record and interpret data, consider error analysis, and draw conclusions. Students will also keep a written report, properly display their experiment, and explain it in oral or written form.*

1. Design an experiment.
2. Follow the scientific method in all procedures.
3. Keep a log of all procedures.
4. Display project.
5. Explain all procedures in oral or written form

## **Adventures in Science - continued**

### ***SCIENCE CRIME BUSTERS***

1. Test for unknown substances.
2. Identify individual clues (hair, fingerprints, etc).
3. Utilize logical deduction to solve a "crime".

### ***WHERE AND WHEN IN NATURE***

1. Demonstrate an understanding of the biome.
2. Identify tracks, prints, etc.
3. Utilize field guides - plant, animal.
4. Complete the mapping of terrain.

### ***FLIGHT***

1. Research the theory of aerodynamics of flight.
2. Explain the role of energy in flight.

### ***STRUCTURE AND DESIGN***

1. Demonstrate an understanding of the engineering of structures.
2. Research the response to force, studying the structure's reaction.

### ***PRESERVING OUR WORLD***

1. Demonstrate an understanding of current facts learned through ecological research.

## Adventures in Science - continued Instructional Strategies

1. Lecture/note-taking
2. Observation/demonstration
3. Laboratory hands-on experimentation
4. Written assignments
5. Group projects
6. Audio-visual aids
7. Tests
8. Games/simulations
9. Reading/responding to text, graphs, charts, magazines

## Instructional Units

<u>Weeks</u>	<u>Unit</u>
5	Electricity and Magnetism Unit
5	Waves: Light and Sound Unit
3	Consumer Awareness Unit
3	Conducting a Scientific Project Unit

The remaining 2 weeks may include units in these areas.

}	Science Crime Busters	}
	Where and When in Nature	
	Flight	
	Structure and Design	
	Preserving our World	

Total: 18 weeks

## Evaluation

1. Scientific projects in the area studies
2. Lab and construction procedures (accuracy, care, safety, cleanliness)
3. Data interpretations
4. Class presentations
5. Written work
6. Teacher observation

## Materials and Resources

Textbooks adopted for this course are from the Prentice Hall Explorer series.

Electricity and Magnetism Unit - Focus on Physical Science  
Waves: Light and Sound Unit - Focus on Physical Science  
Consumer Awareness Unit - Focus on Life Science and/or Focus on Physical Science