

Scope and Sequence

Subject/Title of Unit	Grade	6 Weeks	Estimated Time Frame (# of days)
Aquatic Science Water Chemistry	11 - 12	1 st Six Weeks	3 Weeks
TEKS/Student Expectations		Examples/Specifications:	
<p>Aq.1 Strand: Field & laboratory Investigation (A) demonstrate safe practices during field and laboratory investigations; and (B) make wise choices in the use and conservation of resources and the disposal or recycling of materials.</p> <p>Aq.2 Strand: Scientific Inquiry—Field & Laboratory (A) plan and implement investigative procedures including asking questions, formulating testable hypotheses, and selecting equipment and technology; (B) collect data and make measurements with precision; (C) express and manipulate quantities using mathematical procedures such as dimensional analysis, scientific notation, and significant figures. (D) organize, analyze, evaluate, make inferences, and predict trends from data; and (E) communicate valid conclusions.</p> <p>Aq.3 Strand: Critical Thinking, Problem Solving & Decision Making (A) analyze, review, and critique scientific explanations, including hypotheses and theories, as to their strengths and weaknesses using scientific evidence and information; (B) make responsible choices in selecting everyday products and services using scientific information; (C) evaluate the impact of research on scientific thought, society, and the environment; (D) describe the connection between environmental science and future careers; and (E) research and describe the history of environmental science and contributions of scientists</p> <p>Aq.4 Strand: Components of Aquatic Ecosystems. (A) differentiate among freshwater, brackish, and saltwater</p>		<p>Students will answer:</p> <ul style="list-style-type: none"> • The percent composition of critical components in fresh water dictates its ability to sustain life. • What components of a water environment can we change to increase or decrease the number of organisms that can exist in it? 	

ecosystems;

(B) research and identify biological, chemical, geological, and physical components of an aquatic ecosystem; and

Aq.5 Relationships In Aquatic Environments.

(A) observe and compile data over a period of time from an established aquatic habitat documenting seasonal changes and the behavior of organisms;

(D) evaluate trends in data to determine the factors that impact aquatic ecosystems.

Aq.6 Strand: Roles of Cycles in Aquatic Environments.

(A) identify the role of various cycles such as carbon, nitrogen, water, and nutrients in an aquatic environment;

Aq.7 Strand: Adaptations of Aquatic Organisms.

(D) compare differences in adaptations of aquatic organisms to fresh water and marine environments.

Aq.10 Strand: Origin and Use of Water

(A) identify sources and determine the amounts of water in a watershed including groundwater and surface water;

(B) research and identify the types of uses and volumes of water used in a watershed; and

(C) identify water quantity and quality in a local watershed.

Aq.8 Strand: Aquatic Environments Change.

(A) predict effects of chemical, organic, physical, and thermal changes on the living and nonliving components of an aquatic ecosystem;

(B) analyze the cumulative impact of natural and human influence on an aquatic system;

(C) identify and describe a local or global issue affecting an aquatic system; and

(D) analyze and discuss human influences on an aquatic environment including fishing, transportation, and recreation.

Language of Instruction:

Instructional Resources/Textbook Correlations:

Acid, acid rain, aerobic, solute, solvent, concentration, deposit, deposition, sediment, turbidity, dissolve,

TOPICS:

- 1. pH**
 - a. OH-**
- 2. Water Hardness**
 - a. Calcium, Magnesium, dissolved minerals**
- 3. Dissolved Gases**
 - a. O₂ / CO₂ vs Solubility factors**
- 4. Plant Nutrients**
 - a. Carbon, Nitrogen, nutrient cycles**
- 5. Turbidity**
 - a. Sediment load / sedimentation**
- 6. Stream Flow**
 - a. velocity measurements**

pH Lab
Hard Water Lab
Dissolved Oxygen Lab

Weblinks/Other Resources:

Textbook:
Fluid Earth
Living Ocean
TexTeams Chemistry Vista

Evaluation/External Assessment/Local Assessment:

Best Instruction Timeline:

Daily Work
Homework
Teacher – designed test
Aquariums

