Arizona State Science Standards (Grades 4-8 and High School)
satisfied by the Desert Tortoise Tracking Program.

High School
Strand 1

Concept 2: Scientific Testing (Investigating and Modeling)
Design and conduct controlled investigations.

PO 1. Demonstrate safe and ethical procedures (e.g., use and care of technology, materials, organisms) and behavior in all science inquiry.

PO 2. Identify the resources needed to conduct an investigation.

PO 3. Design an appropriate protocol (written plan of action) for testing a hypothesis:
- Identify dependent and independent variables in a controlled investigation.
- Determine an appropriate method for data collection (e.g., using balances, thermometers, microscopes, spectrophotometer, using qualitative changes).
- Determine an appropriate method for recording data (e.g., notes, sketches, photographs, videos, journals (logs), charts, computers/calculators).

PO 4. Conduct a scientific investigation that is based on a research design.

PO 5. Record observations, notes, sketches, questions, and ideas using tools such as journals, charts, graphs, and computers.

Concept 3: Analysis, Conclusions, and Refinements
Evaluate experimental design, analyze data to explain results and propose further investigations. Design models.

PO 1. Interpret data that show a variety of possible relationships between variables, including:
- *positive relationship*
- *negative relationship*
- *no relationship*

PO 2. Evaluate whether investigational data support or do not support the proposed hypothesis.

PO 3. Critique reports of scientific studies (e.g., published papers, student reports).

Concept 4: Communication
Communicate results of investigations.

PO 1. For a specific investigation, choose an appropriate method for communicating the results. (See W09-S3C2-01 and W10-S3C3-01)

PO 2. Produce graphs that communicate data. (See MHS-S2C1-02)

PO 3. Communicate results clearly and logically.

PO 4. Support conclusions with logical scientific arguments.

Strand 3

Concept 1: Changes in Environments

Describe the interactions between human populations, natural hazards, and the environment.

PO 1. Evaluate how the processes of natural ecosystems affect, and are affected by, humans.

PO 2. Describe the environmental effects of the following natural and/or human-caused hazards:

- flooding
- drought
- earthquakes
- fires
- pollution
- extreme weather

PO 3. Assess how human activities (e.g., clear cutting, water management, tree thinning) can affect the potential for hazards.

PO 4. Evaluate the following factors that affect the quality of the environment:

- urban development
- smoke
- volcanic dust

PO 5. Evaluate the effectiveness of conservation practices and preservation techniques on environmental quality and biodiversity.

Concept 2: Science and Technology in Society

Develop viable solutions to a need or problem.

PO 1. Analyze the costs, benefits, and risks of various ways of dealing with the following needs or problems:

- various forms of alternative energy
- storage of nuclear waste
- abandoned mines
- greenhouse gases
- hazardous wastes

PO 2. Recognize the importance of basing arguments on a thorough understanding of the core concepts and principles of science and technology.

PO 3. Support a position on a science or technology issue.

PO 4. Analyze the use of renewable and nonrenewable resources in Arizona:

- water
- land
- soil
- minerals
- air

PO 5. Evaluate methods used to manage natural resources (e.g., reintroduction of wildlife, fire ecology).

Concept 3: Human Population Characteristics Analyze factors that affect human populations.
PO 1. Analyze social factors that limit the growth of a human population, including: • affluence • education • access to health care • cultural influences PO 2. Describe biotic (living) and abiotic (nonliving) factors that affect human populations. PO 3. Predict the effect of a change in a specific factor on a human population.

Strand 4

Concept 2: Molecular Basis of Heredity Understand the molecular basis of heredity and resulting genetic diversity.
PO 1. Analyze the relationships among nucleic acids (DNA, RNA), genes, and chromosomes. PO 2. Describe the molecular basis of heredity, in viruses and living things, including DNA replication and protein synthesis. PO 3. Explain how genotypic variation occurs and results in phenotypic diversity. PO 4. Describe how meiosis and fertilization maintain genetic variation.

Concept 3: Interdependence of Organisms Analyze the relationships among various organisms and their environment.
PO 1. Identify the relationships among organisms within populations, communities, ecosystems, and biomes. PO 2. Describe how organisms are influenced by a particular combination of biotic (living) and abiotic (nonliving) factors in an environment. PO 3. Assess how the size and the rate of growth of a population are determined by birth rate, death rate, immigration, emigration, and carrying capacity of the environment.