



*PROCESS KNOWLEDGE AND SKILLS ARE TO BE TAUGHT THROUGHOUT THE YEAR.*

- Enduring Understandings:
- Field and laboratory investigations must include using safe, environmentally appropriate, and ethical practices.
  - Scientific inquiry methods are used during field and laboratory investigations.
  - Critical thinking and scientific problem solving are used to make informed decisions.
  - Tools methods are used to conduct science inquiry.

1. Demonstrate safe practices during field and laboratory investigations.	6.1A	7. 1A
2. Make wise choices in the use and conservation of resources and the disposal or recycling of materials.	6.1B	7.1B
3. Plan and implement investigative procedures including asking questions, formulating testable hypotheses, and selecting and using equipment and technology.	6.2A	7.2A
4. Collect data by observing and measuring.	6.2B	7.2B
5. Analyze and interpret information to construct reasonable explanations from direct and indirect evidence.	6.2C	
6. Organize, analyze, make inferences and predict trends from direct and indirect evidence.		7.2C
7. Communicate valid conclusions.	6.2D	7.2D
8. Construct graphs, tables, maps, and charts using tools including computers to organize, examine, and evaluate data.	6.2E	7.2E
9. Analyze, review, and critique scientific explanations, including hypotheses and theories, as to their strengths and weaknesses using scientific evidence and information.	6.3A	7.3A
10. Draw inferences based on data related to promotional materials for products and services.	6.3B	7.3B
11. Represent the natural world using models and identify their limitations.	6.3C	7.3C
12. Evaluate the impact of research on scientific thought, society and the environment.	6.3D	7.3D
13. Connect Grade 6/7 science concepts with the history of science and contributions of scientists.	6.3E	7.3E
14. Collect, analyze, and record information to explain a phenomenon using tools including beakers, petri dishes, meter sticks, graduated cylinders, weather instruments, hot plates, test tubes, safety goggles, spring scales, balances, microscopes, telescopes, thermometers, calculators, field equipment, computers, computer probes, timing devices, magnets, and compasses.	6.4A	
15. Collect, analyze, and record information to explain a phenomenon using tools including beakers, petri dishes, meter sticks, graduated cylinders, weather instruments, hot plates, dissecting equipment, test tubes, safety goggles, spring scales, balances, microscopes, telescopes, thermometers, calculators, field equipment, computers, computer probes, timing devices, magnets, and compasses.		7.4A
16. Identify patterns in collected information using percent, average, range and frequency.	6.4B	
17. Collect and analyze information to recognize patterns such as rates of change.		7.4B



MODULE 1: SYSTEMS OF THE HUMAN BODY 8/23/04-9/27/04

- TAKS Test OBJ 1: TEKS Biology/ IPC 1, 2 and IPC 3  
 Objectives: OBJ 2: TEKS Biology 10  
 OBJ 3: TEKS Biology 4 and 9  
 OBJ 5: TEKS IPC 5

- Enduring Understandings:
- Equilibrium of a system may change.
  - There is a relationship between structure and function in living systems.
  - Responses of organisms are caused by internal and external stimuli.
  - Species can change through generations and the instructions for traits are contained in the genetic materials of the organisms.

Class/Lab instruction I.1:

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|--|-------|------|
| 1. Describe how the properties of a system are different from the properties of its parts. | 6.5B  |      |
| 2. Differentiate between structure and function.   | 6.10A |      |
| 3. Identify the systems of the human organism and describe their functions.                |       | 7.9A |

Class/Lab instruction I.2:

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|---|-------|-------|
| 1. Identify how structure complements function at different levels of organization including organs, organ systems, organisms, and populations. | 6.10C |       |
| 2. Identify responses in organisms to internal stimuli such as hunger or thirst.  | 6.12A |       |
| 3. Analyze changes in organisms such as fever or vomiting that may result from internal stimuli.  |       | 7.11A |

Class/Lab instruction I.3:

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|--|-------|-------|
| 1. Determine that all organisms are composed of cells that carry on functions to sustain life.   | 6.10B |       |
| 2. Identify cells as structures containing genetic material.   | 6.11B |       |
| 3. Interpret the role of genes in inheritance.   | 6.11C |       |
| 4. Distinguish between dominant and recessive traits and recognize that inherited traits of an individual are contained in genetic material. |       | 7.10C |
| 5. Identify some changes in traits that can occur over several generations through natural occurrence and selective breeding.                | 6.11A |       |
| 6. Identify that sexual reproduction results in more diverse offspring and reproduction results in more uniform offspring.                   |       | 7.10A |
| 7. Compare traits of organisms of different species that enhance their survival and reproduction.  |       | 7.10B |
| 8. Describe how organisms maintain stable natural conditions while living in changing external environment.                                  |       | 7.9B  |
| 9. Identify responses in organisms to external stimuli.  | 6.12B |       |
| 10. Identify responses in organisms to external stimuli found in the environment.  |       | 7.11B |

Seminar I:

Dr. Sherry Herron, Biology Educator, UTD

Round-table discussion I:

Implementation issues/teaching challenges

Teacher presentations I:

Integration of resources and connection to field experience

MODULE II: PROPERTIES AND CHANGES IN MATTER	10/04/04-11/15/04
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TAKS Test OBJ 1: TEKS Biology/ IPC 1, 2 and IPC 3  
 Objectives: OBJ 4: TEKS IPC 7, 8, 9

Enduring Understanding: • Substances have physical and chemical properties.

*Class/Lab instruction II.1:*

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|---|------|
| 1. Demonstrate that new substances can be made when two or more substances are chemically combined and compare the properties of the new substances to the original substances. | 6.7A |
| 2. Identify and demonstrate everyday examples of chemical phenomena such as rusting, tarnishing of metal and burning of wood.   | 7.7A |

*Class/Lab instruction II.2:*

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|---|------|
| 1. Recognize that compounds are composed of elements. | 7.7C |
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*Class/Lab instruction II.3:*

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|--|------|
| 1. Classify substances by their physical and chemical properties.  | 6.7B |
| 2. Describe physical properties of elements and identify how they are used to position an element on the periodic table. | 7.7B |

*Seminar II:*

- Dr. Fred Fifer – Science Educator, UTD

*Round-table discussion II:*

- Implementation issues/teaching challenges

*Teacher presentations II:*

- Integration of resources and connection to field experience



MODULE III: MOTION, FORCES, MACHINES AND ENERGY 11/22/04-1/17/05

TAKS Test OBJ 1: TEKS Biology/ IPC 1, 2 and IPC 3
Objectives: OBJ 5: TEKS IPC 4

- Enduring: There is a relationship between force and motion.
Understandings: Complex interactions occur between matter and energy.

Class/Lab instruction III.1: Newton's Laws of Motion

- 1. Identify and describe the changes in position, direction of motion, and speed of an object when acted upon by force. 6.6A
2. Demonstrate that changes in motion can be measured and graphically represented. 6.6B
3. Demonstrate that an object will remain at rest or move at a constant speed and in a straight line if it is not being subjected to an unbalanced force. 7.6B
4. Relate forces to basic process in living organisms including the flow of blood and the emergence of seedlings. 7.6C

Class/Lab instruction III.2: Work and Machines

- 1. Demonstrate basic relationships between force and motion using simple machines including pulleys and levers. 7.6A

Class/Lab instruction III.3: Energy

- 1. Define matter and energy. 6.8A
2. Identify forces that shape features of the Earth including uplifting, movement of water, and volcanic activity. 6.6C
3. Illustrate examples of potential and kinetic energy in everyday life such as objects at rest, movement of geologic faults, and falling water. 7.8A
4. Identify that radiant energy from the sun is transferred into chemical energy through the process of photosynthesis. 7.8B
5. Identify energy transformations occurring during the production of energy for human use such as electrical energy to heat energy or heat energy to electrical energy. 6.9A
6. Compare methods used for transforming energy in devices such as water heaters, systems, or hydroelectric and wind plants. 6.9B

Seminar III:

- Dr. Tom Butts – Mathematics Educator, UTD

Round-table discussion III:

- Implementation issues/teaching challenges

Teacher presentations III:

- Integration of resources and connection to field experience



MODULE IV: MOTION OF THE EARTH AND MOON 1/24/05-2/28/05

TAKS Test OBJ 1: TEKS Biology/ IPC 1, 2 and IPC 3

Objectives: OBJ 5: TEKS IPC 4

Enduring Understandings:
• Our solar system has many components.

Class/Lab instruction IV.1:

- 1. Identify and describe a system that results from the combination of two or more systems such as in the solar system. 6.5A
2. Identify characteristics of objects in our solar system including the Sun, planets, meteorites, comets, asteroids, and moons. 6.13A
3. Identify and illustrate how the tilt of the earth on its axis as it rotates and revolves around the sun causes changes in seasons and the length of the day. 7.13A

Class/Lab instruction IV.2:

- 1. Describe types of equipment and transportation needed for space travel. 6.13B
2. Relate the Earth's movement and the moon's orbit to the observed cyclical phases of the moon. 7.13B

Seminar IV:

- Dr. Mary Urquhart – Physics Educator, UTD

Round-table discussion IV:

- Implementation issues/teaching challenges

Teacher presentations IV:

- Integration of resources and connection to field experience



MODULE V. EARTH'S ENVIRONMENT 3/7/05-4/25/05

- TAKS Test OBJ 1: TEKS Biology/IPC 1, 2 and IPC 3  
 Objectives: OBJ 2: TEKS Biology 10  
 OBJ 3: TEKS Biology 12, 13  
 OBJ 5: TEKS IPC 6

- Enduring Understandings: • There is a relationship between organisms and the environment.  
 • Natural events and human activities can alter Earth systems.

Class/Lab instruction V.1:

- 1. Identify components of an ecosystem. 7.12A
- 2. Describe energy flow in living systems including food chains and food webs. 6.8C
- 3. Explain and illustrate the interactions between matter and energy in the water cycle and in the decay of biomass such as in a compost bin. 6.8B
- 4. Identify relationships between groundwater and surface water in a watershed. 6.14B
- 5. Describe components of the atmosphere, including oxygen, nitrogen, and water vapor, and identify the role of atmospheric movement in weather change. 6.14C

Class/Lab instruction V.2:

- 1. Observe and describe the role of ecological succession in ecosystems. 7.12D
- 2. Observe and describe the role of ecological succession in maintaining equilibrium in an ecosystem. 7.5B
- 3. Describe how different environments support different varieties of organisms. 7.12C
- 4. Observe and describe how organisms including producers, consumers and decomposers live together in an environment and use existing resources. 7.12B

Class/Lab instruction V.3:

- 1. Summarize the rock cycle. 6.14A
- 2. Analyze affects of regional erosional deposition and weathering. 7.14B
- 3. Describe how systems may reach an equilibrium such as when a volcano erupts. 7.5A
- 4. Describe and predict the impact of different catastrophic events on the earth. 7.14A
- 5. Research and describe energy types from their source to their use and determine if the type is renewable, non-renewable, or inexhaustible. 6.9B
- 6. Make inferences and draw conclusions about affects of human activity on earth's renewable, non-renewable, and inexhaustible resources. 7.14C

Seminar V:

- Dr. Homer Montgomery – Geosciences Educator, UTD

Round-table discussion V:

- Implementation issues/teaching challenges

Teacher presentations V:

- Integration of resources and connection to field experience

FINAL PROJECT EVALUATION 5/2/05