



LIFE SCIENCE – Curriculum Guide 2010 - 2011



Course Description: The students in 7th Grade Life Science will develop an understanding of living things, their characteristics and qualities, and understand that God is faithful to sustain all that He has created.

Date	Standards (biblical standards are integrated within scientific standards below)	
	Standard 1	<u>ASKING AND ANSWERING SCIENTIFIC QUESTIONS:</u> Students will establish a crucial cornerstone of rational faith in God as Creator and designer of life, by the practice of critical thinking skills that complement biblical principles for logical examination of evidence, not blind belief. (Proverbs 14:15; Isaiah 1:18; Hebrews 11:1-3)
LS1.1		Describe how both scientific and biblical thinking are mutually founded on evidential faith and therefore are complementary not contradictory
LS1.2		Demonstrate the ability to discern using biblical logic, developing rational faith based upon evidence, instead of blind irrational belief (Proverbs 14:15; Isaiah 1:18; Hebrews 11:1-3)
LS1.3		Demonstrate an understanding of the continuum of sciences ranging from direct objective to indirect subjective
LS1.4		Distinguish historical /origins sciences from experimental and operational sciences
LS1.5		Generate testable questions about objects, organisms, and events that can be answered through scientific investigation
LS1.6		Use varied sources to answer questions
LS1.7		Design, predict outcomes, and conduct experiments to answer guiding questions
LS1.8		Identify independent variables, dependent variables, and variables that should be controlled in designing an experiment
LS1.9		Select and use appropriate equipment, technology, tools, and metric system units of measurement to make observations
LS1.10		Record observations using methods that complement investigations (e.g., journals, tables, charts)
LS1.11		Use consistency and precision in data collection, analysis, and reporting
LS1.12		Use computers and/or calculators to analyze and interpret quantitative data
LS1.13		Identify the difference between description and explanation
LS1.14		Construct, use, and interpret appropriate graphical representations to collect, record, and report data (e.g., tables, charts, circle graphs, bar and line graphs, diagrams, scatter plots, symbols)
LS1.15		Use data and information gathered to develop an explanation of experimental results
LS1.16		Identify patterns in data to explain natural events
LS1.17		Develop models to illustrate or explain conclusions reached through investigation
LS1.18		Identify and explain the limitations of models used to represent the natural world
LS1.19		Use evidence to make inferences and predict trends

LS1.20	Recognize that there may be more than one way to interpret a given set of data, which can result in alternative scientific explanations and predictions
LS1.21	Identify faulty reasoning and statements that misinterpret or are not supported by the evidence
LS1.22	Communicate ideas in a variety of ways (e.g., symbols, illustrations, graphs, charts, spreadsheets, concept maps, oral and written reports, equations)
LS1.23	Write clear, step-by-step instructions that others can follow to carry out procedures or conduct investigations
LS1.24	Distinguish between <i>observations</i> and <i>inferences</i>
LS1.25	Use evidence and observations to explain and communicate the results of investigations
LS1.26	Use relevant safety procedures and equipment to conduct scientific investigations
LS1.27	Provide appropriate care and utilize safe practices and ethical treatment when animals are involved in scientific field and laboratory research
LS1.28	Compare and critique scientific investigations
LS1.29	Use and describe alternate methods for investigating different types of testable questions
LS1.30	Recognize that science uses processes that involve a logical and empirical, but flexible, approach to problem solving
LS1.31	Recognize that investigations generally begin with a review of the work of others
LS1.32	Explain how technology can expand the senses and contribute to the increase and/or modification of scientific knowledge
LS1.33	Describe why all questions cannot be answered with present technologies
LS1.34	Recognize that there is an acceptable range of variation in collected data
LS1.35	Explain the use of statistical methods to confirm the significance of data (e.g., mean, median, mode, range)
LS1.36	Evaluate models, identify problems in design, and make recommendations for improvement
LS1.37	Recognize the importance of communication among scientists about investigations in progress and the work of others
LS1.38	Explain how skepticism about accepted scientific explanations (i.e., hypotheses and theories) leads to new understanding
LS1.39	Explain why an experiment must be verified through multiple investigations and yield consistent results before the findings are accepted
LS1.40	Critique and analyze their own inquiries and the inquiries of others
LS1.41	Explain that, through the use of scientific processes and knowledge, people can solve problems, make decisions, and form new ideas
LS1.42	Identify areas in which technology has changed human lives (e.g., transportation, communication, geographic information systems, DNA fingerprinting)
LS1.43	Evaluate the impact of research on scientific thought, society, and the environment
LS1.44	Compare and contrast the biblical and scientific views for the origin of space, time, matter, energy, and “life”, including the distinction between “nephesh” and “non-nephesh” life.
LS1.45	Develop and communicate a personal understanding of both views
LS1.46	Explain why DNA cannot come into existence without a cell and vice versa
LS1.47	Explain the statistical significance of biblical prophecy that leads to the logical inference of uniquely Divine inspiration/authorship

LS1.48	Describe the effect of Adam’s rebellion, emphasizing partial separation from God and the escalating entropy that resulted
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	Standard 2	CELLS AND HEREDITY: Students will develop a foundational awareness of the irreducible complexity that God designed into a cell, the basic unit of life, from its DNA to its full structure and function.
LS2.1		identify cells as structures containing genetic material
LS2.2		differentiate between structure and function
LS2.3		determine that all organisms are composed of cells that function to sustain life
LS2.4		interpret the role of genes in heritance
LS2.5		distinguish between animal and plant cells
LS2.6		draw and label the parts of animal and plant cells
LS2.7		describe cell reproduction
LS2.8		list the steps of mitosis in sequence
LS2.9		identify four life processes
LS2.10		describe how plants that create their own food and animals that find their food have structures to convert energy from one form to another
LS2.11		demonstrate a working knowledge of both photosynthesis and cellular reproduction
LS2.12		describe ATP as the primary energy currency in living systems
LS2.13		recognize the appearance of DNA as double helix in shape
LS2.14		explain the significance of chromosomes, genes, and DNA in cell reproduction and their relationship to inherited characteristics
LS2.15		describe the role of meiosis in the production of sex cells
LS2.16		analyze the basic role of probability in the study of heredity
LS2.17		explain how, during reproduction, the sorting and recombination of parents’ genetic material produces potential variation among offspring
LS2.18		analyze the issues raised by selective breeding and biomedical research
LS2.19		investigate how selective traits affect an organism’s chance of survival
LS2.20		know that new varieties of cultivated plants and domestic animals have resulted from selective breeding for desirable traits
LS2.21		list examples of organisms that reproduce sexually (e.g., clams, salmon) and those that reproduce asexually (e.g., hydra, planaria, bacteria)
LS2.22		construct and use Punnett squares to explain how genetic traits are combined and passed to offspring
LS2.23		describe how mutations always result in a loss of genetic information and how this fact challenges the hypothetical assumptions of macroevolution
LS2.24		describe the basic structure of DNA (A-T, C-G)
LS2.25		explain the basic process of DNA replication and protein synthesis
LS2.26		explore advances in biotechnology
LS2.27		differentiate between artificial selection, natural selection, adaptation, and evolution
LS2.28		explain how mutations are the loss of information and therefore limit natural selection to the production of only horizontal changes in color, size, etc, within a kind
LS2.29		distinguish between the reality of microevolution (horizontal change within a kind)

		and the hypothetical assumptions of macroevolution (vertical evolution from one kind to another)
	LS2.30	describe how certain traits and environmental conditions can perpetuate species or cause their extinction
	LS2.31	understand that adaptations are structures, functions, or behaviors that enable species to survive
	LS2.32	explain that if a species does not include traits that enable it to survive in its environment, it can become extinct like the dinosaurs
	LS2.33	examine the geological and paleontological evidence (fossils, sedimentary rock layers, radiometric dating), and discern whether it best fits the biblical record of a catastrophic, global flood or the various uniformitarian models of geologic formation
	LS2.34	display a basic knowledge of the classification system, including the seven levels within each kingdom
	LS2.35	explain the biblical principle of God creating out of nothing, <i>ex nihilo</i> (Hebrew “ <i>bara</i> ”), as the only rational solution for the origin of space, time, matter, energy, and life (Gen 1:1-3; Heb 11:1-3)
	LS2.36	demonstrate knowledge of the fact that all known mutations never add new genetic information to the DNA genome, which demonstrates God’s principle of creation according to “kinds” (Genesis 1), with <i>limited</i> ability for adaptive variation within each kind
	LS2.37	explain God’s principle of fruitful multiplication and adaptation made possible by God’s built-in <i>potential</i> for variability, which gave rise to such a wide variety of sizes, colors, etc, within each separate kind (Gen 1; Gen 9)
	LS2.38	describe the difference between a creation-based classification system emphasizing and glorifying a common Designer, versus the modern systems emphasizing an assumed common ancestor (Gen 1; Romans 1)
	LS2.39	discuss how evolution as a philosophy promotes and encourages racism, while the biblical model of creation stands firmly opposed to all forms of racism (Gen 11)
	LS2.40	demonstrate an understanding of how beliefs produce actions (Pro 20:11)
	LS2.41	describe the inevitable fruit of philosophical systems (survival of the fittest vs. cooperation under God’s Way of love) (Gal 5:16-25; 2 Tim 3:1-8)

	Standard 3	BACTERIA TO PLANTS: Students will compare and contrast the similarities and differences among God’s non-nephesh creatures.
	LS3.1	compare the major characteristics of viruses with those of bacteria, especially the reasons viruses are not considered to be living organisms
	LS3.2	describe the basic structure and life cycle of a bacteriophage
	LS3.3	explain the basic structure and life cycle of common bacteria
	LS3.4	demonstrate an understanding of the irreducible complexity of the flagellum
	LS3.5	identify various diseases associated with pathogenic viruses and
	LS3.6	identify the basic characteristics of protists, including examples
	LS3.7	list the basic characteristics of fungi, including examples
	LS3.8	compare and contrast protists with fungi
	LS3.9	identify the structure and function of plants
	LS3.10	describe the basic processes of photosynthesis

	LS3.11	explain the basic reproductive cycle of various plant “kinds
	LS3.12	describe the design characteristics that are common to even the simplest of organisms, and which clearly point to our Designer (Intelligent Design)
	LS3.13	describe the parasitic nature of viruses as an example of the fallen creation

	Standard 4	ANIMALS: Students will develop an understanding of how nephesh creatures are designed with levels of organization for structure and function, including cells, tissues, organs, organ systems, and interdependent communities, in order to demonstrate the glory of God.
	LS4.1	explain basic structures, functions, and characteristics of animals without backbones
	LS4.2	identify the main categories of invertebrates as well as common examples of each
	LS4.3	explain basic structures, functions, and characteristics of animals with backbones
	LS4.4	identify the main categories of vertebrates as well as common examples of each
	LS4.5	define the field of ethology
	LS4.6	identify how and why different animals communicate
	LS4.7	survey the complexity and interdependency of animal behavior patterns
	LS4.8	recognize the interdependent, relational priority of God’s creation (Gen 1:26-31; 2-3)
	LS4.9	distinguish between current characteristics of creation which reflect the image of God’s character versus those reflecting the effects of sin and survival of the cruelest

	Standard 5	HUMAN BIOLOGY AND HEALTH: Students will survey the “fearfully and wonderfully made” beauty, complexity, and relational design of human biology, revealing the power, love, and wisdom of God (Psalm 139).
	LS5.1	explain how organ systems function due to the contribution of individual cells, tissues, organs, and that the failure of any part can affect the entire system
	LS5.2	demonstrate a knowledge of the major body systems and how each is dependent upon all of the other systems
	LS5.3	survey common diseases and how the body responds in order to return to homeostasis
	LS5.4	differentiate between passive and active immunity
	LS5.5	list new medical methods used to fight disease
	LS5.6	describe the non-physical goal (<i>relationships</i>) for which the human body is designed, including both the vertical relationship with God and the horizontal relationship with other humans
	LS5.7	demonstrate that disease and death are a consequence of the fall and partial separation from God, not a part of God’s original design nor His future new creation (Gen 1:29-31; 9:3; Isaiah 11, 65)
	LS5.8	compare the design of the church, the Body of Christ (1 Corinthians 12), with the human body
	LS5.9	emphasize the good news of resurrection and the guarantee of a glorified body for all those who submit in faith to Jesus as Lord and Savior (John 11)

	Standard 6	ECOLOGY: Students will learn about God’s biblical mandate to man of stewardship over creation and how it applies to the principles and practices of ecology.
	LS6.1	describe the characteristics of populations
	LS6.2	determine how the components of an ecosystem are dependent on each other
	LS6.3	explain the levels of biological organization
	LS6.4	investigate and understand that ecosystems, communities, populations, and organisms are dynamic and change over time (daily, seasonal, and long term)
	LS6.5	investigate and understand how organisms adapt to biotic and abiotic factors in a biome (i.e., differences between ecosystems and biomes; adaptations that enable organisms to survive within a specific biome)
	LS6.6	explain how energy flows through ecosystems
	LS6.7	explore human impact on ecosystems
	LS6.8	define God’s mandated privilege and responsibility to man as stewards over creation (Gen 1-2)
	LS6.9	explain how and why God’s designed ecological interdependence to reveal spiritual principles of relationship (Psalm 147:9; Matt 6:25-34)
	All Biblical Standards Integrated Above	

1st Quarter:

Unit One - Introduction to Scientific Inquiry

Time Frame - 3 weeks

Topics Covered: **The foundational principles necessary for critical (logikos) analysis required for both scientific and biblical thinking, culminating in evidential belief.**

Subtopics Covered:

- Science and the Scientific Method
- Measurement (SI Units)
- Scientific Notation
- Bio-Logikos Thinking
- Indirect vs. Direct Science Continuum
- Critical Thinking towards Beliefs Based on Evidence
- Complementary Fit of Scientific & Scriptural Thinking

Activities:

- Areopagus Group Dialogos: *Learn to defend views using subjects in this unit*
- DVD Presentation / Evaluation: *Including world renowned experts on the unit’s subjects*
- Nature / Creation Adventure Hike: *Applying this unit to our NCS grounds*
- Media Search for Pseudoscience Claims: *Learning to discern using subjects in this unit*
- Microscope Laboratory – Light and Digital Microscopes: *Applied to the unit’s subjects*
- Measurement Laboratory: *Applied to the unit’s subjects*
- Freshwater Aquarium Laboratory: *Applied to the unit’s subjects*
- Classroom Zoo Laboratory: *Applied to the unit’s subjects*

- Special Unit Laboratory: *As time allows – specific to this unit, as time allows*
- Graph Analysis & Interpretation: *Related to this unit’s subject*
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Unit Two - Origins Science

Time Frame - 3 weeks

Topics Covered: **The various models hypothesized for the origin of the universe, life/DNA, and new “kinds” of life, emphasizing a critical comparison of their supportive evidence**

Subtopics Covered:

- Life Defined: Nephesh vs. Non-Nephesh
- Significance & Evidence for Creation vs. Macroevolution
- Biology vs. Thanatology

Activities:

- Areopagus Group Dialogos: *Learn to defend views using subjects in this unit*
- DVD Presentation / Evaluation: *Including world renowned experts on the unit’s subjects*
- Nature / Creation Adventure Hike: *Applying this unit to our NCS grounds*
- Media Search for Pseudoscience Claims: *Learning to discern using subjects in this unit*
- Microscope Laboratory – Light and Digital Microscopes: *Applied to the unit’s subjects*
- Measurement Laboratory: *Applied to the unit’s subjects*
- Freshwater Aquarium Laboratory: *Applied to the unit’s subjects*
- Classroom Zoo Laboratory: *Applied to the unit’s subjects*
- Special Unit Laboratory: *specific to this unit, as time allows*
- Graph Analysis & Interpretation: *Related to this unit’s subject*

Unit Three - Classification

Time Frame – 3 weeks

Topics Covered: **The historical development of methods of categorizing types of creature, culminating in recent advances in cladistics and baraminology**

Subtopics Covered:

- Archaeobacteria to Animalia (characteristics and categories)
- Baraminology (classification according to created “kinds”)

Activities:

- Areopagus Group Dialogos: *Learn to defend views using subjects in this unit*
- DVD Presentation / Evaluation: *Including world renowned experts on the unit’s subjects*
- Nature / Creation Adventure Hike: *Applying this unit to our NCS grounds*
- Media Search for Pseudoscience Claims: *Learning to discern using subjects in this unit*
- Microscope Laboratory – Light and Digital Microscopes: *Applied to the unit’s subjects*
- Measurement Laboratory: *Applied to the unit’s subjects*
- Freshwater Aquarium Laboratory: *Applied to the unit’s subjects*
- Classroom Zoo Laboratory: *Applied to the unit’s subjects*

- Special Unit Laboratory: *specific to this unit, as time allows*
- Graph Analysis & Interpretation: *Related to this unit's subject*

2nd Quarter:

Unit Four - Cell Form and Function

Time Frame – 3 weeks

Topics Covered: **The intricacy of cellular complexity leading to the logical conclusion of intelligent design**

Subtopics Covered:

- Chemistry (chemical basics, chemistry of life)
- Organelles (parts and purposes of a cell)
- Homeostasis & Transport

Activities:

- Areopagus Group Dialogos: *Learn to defend views using subjects in this unit*
- DVD Presentation / Evaluation: *Including world renowned experts on the unit's subjects*
- Nature / Creation Adventure Hike: *Applying this unit to our NCS grounds*
- Media Search for Pseudoscience Claims: *Learning to discern using subjects in this unit*
- Microscope Laboratory – Light and Digital Microscopes: *Applied to the unit's subjects*
- Measurement Laboratory: *Applied to the unit's subjects*
- Freshwater Aquarium Laboratory: *Applied to the unit's subjects*
- Classroom Zoo Laboratory: *Applied to the unit's subjects*
- Special Unit Laboratory: *specific to this unit, as time allows*
- Graph Analysis & Interpretation: *Related to this unit's subject*

Unit Five - Photosynthesis and Cell Respiration

Time Frame – 3 weeks

Topics Covered: **The balancing act involving photosynthesis and respiration that is so vital to sustaining life on Earth**

Subtopics Covered:

- Photosynthesis
- Cell Respiration

Activities:

- Areopagus Group Dialogos: *Learn to defend views using subjects in this unit*
- DVD Presentation / Evaluation: *Including world renowned experts on the unit's subjects*
- Nature / Creation Adventure Hike: *Applying this unit to our NCS grounds*
- Media Search for Pseudoscience Claims: *Learning to discern using subjects in this unit*
- Microscope Laboratory – Light and Digital Microscopes: *Applied to the unit's subjects*

- Measurement Laboratory: *Applied to the unit's subjects*
- Freshwater Aquarium Laboratory: *Applied to the unit's subjects*
- Classroom Zoo Laboratory: *Applied to the unit's subjects*
- Special Unit Laboratory: *specific to this unit, as time allows*
- Graph Analysis & Interpretation: *Related to this unit's subject*

Unit Six - Cell Reproduction and Genetics

Time Frame – 3 weeks

Topics Covered: **Emphasizes the central “information” purpose of DNA and cell reproduction that logically indicates intelligent design rather than random chance**

Subtopics Covered:

- Mitosis (reproduction of body cells)
- Meiosis (reproduction of sex cells)
- DNA (structure of information storage and purposeful expression)

Activities:

- Areopagus Group Dialogos: *Learn to defend views using subjects in this unit*
- DVD Presentation / Evaluation: *Including world renowned experts on the unit's subjects*
- Nature / Creation Adventure Hike: *Applying this unit to our NCS grounds*
- Media Search for Pseudoscience Claims: *Learning to discern using subjects in this unit*
- Microscope Laboratory – Light and Digital Microscopes: *Applied to the unit's subjects*
- Measurement Laboratory: *Applied to the unit's subjects*
- Freshwater Aquarium Laboratory: *Applied to the unit's subjects*
- Classroom Zoo Laboratory: *Applied to the unit's subjects*
- Special Unit Laboratory: *specific to this unit, as time allows*
- Graph Analysis & Interpretation: *Related to this unit's subject*

3rd Quarter:

Unit Seven - Microbiology

Time Frame – 3 weeks

Topics Covered: **An overview of the invisible world of viruses and bacteria**

Subtopics Covered:

- Viruses (alive or not alive, that is the question)
- Bacteria (the good, the bad, and the ugly)

Activities:

- Areopagus Group Dialogos: *Learn to defend views using subjects in this unit*
- DVD Presentation / Evaluation: *Including world renowned experts on the unit's subjects*
- Nature / Creation Adventure Hike: *Applying this unit to our NCS grounds*
- Media Search for Pseudoscience Claims: *Learning to discern using subjects in this unit*
- Microscope Laboratory – Light and Digital Microscopes: *Applied to the unit's subjects*
- Measurement Laboratory: *Applied to the unit's subjects*

- Freshwater Aquarium Laboratory: *Applied to the unit's subjects*
- Classroom Zoo Laboratory: *Applied to the unit's subjects*
- Special Unit Laboratory: *specific to this unit, as time allows*
- Graph Analysis & Interpretation: *Related to this unit's subject*

Unit Eight - Protists

Time Frame - 3 weeks

Topics Covered: **A summary examination of the “catch-all” kingdom of protists**

Subtopics Covered:

- Fungus Like Protists
- Plant Like Protists
- Animal Like Protists

Activities:

- Areopagus Group Dialogos: *Learn to defend views using subjects in this unit*
- DVD Presentation / Evaluation: *Including world renowned experts on the unit's subjects*
- Nature / Creation Adventure Hike: *Applying this unit to our NCS grounds*
- Media Search for Pseudoscience Claims: *Learning to discern using subjects in this unit*
- Microscope Laboratory – Light and Digital Microscopes: *Applied to the unit's subjects*
- Measurement Laboratory: *Applied to the unit's subjects*
- Freshwater Aquarium Laboratory: *Applied to the unit's subjects*
- Classroom Zoo Laboratory: *Applied to the unit's subjects*
- Special Unit Laboratory: *specific to this unit, as time allows*
- Graph Analysis & Interpretation: *Related to this unit's subject*

Unit Nine - Plants

Time Frame - 3 weeks

Topics Covered: **An introductory review of the plant kingdom, including plant structure, classification, and advances in farming.**

Subtopics Covered:

- Seedless Plants (mosses, ferns, etc.)
- Seed Plants (gymnosperms, angiosperms)
- Advances in Agriculture

Activities

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- Areopagus Group Dialogos: *Learn to defend views using subjects in this unit*
- DVD Presentation / Evaluation: *Including world renowned experts on the unit's subjects*
- Nature / Creation Adventure Hike: *Applying this unit to our NCS grounds*
- Media Search for Pseudoscience Claims: *Learning to discern using subjects in this unit*
- Microscope Laboratory – Light and Digital Microscopes: *Applied to the unit's subjects*
- Measurement Laboratory: *Applied to the unit's subjects*
- Freshwater Aquarium Laboratory: *Applied to the unit's subjects*

- Classroom Zoo Laboratory: *Applied to the unit's subjects*
- Special Unit Laboratory: *specific to this unit, as time allows*
- Graph Analysis & Interpretation: *Related to this unit's subject*

4th Quarter:

Unit Ten - Animals

Time Frame - 3 weeks

Topics Covered: **A comparison and contrast of major animal groups, primarily according to morphological characteristics**

Subtopics Covered:

- Invertebrates
- Vertebrates

Activities:

- Areopagus Group Dialogos: *Learn to defend views using subjects in this unit*
- DVD Presentation / Evaluation: *Including world renowned experts on the unit's subjects*
- Nature / Creation Adventure Hike: *Applying this unit to our NCS grounds*
- Media Search for Pseudoscience Claims: *Learning to discern using subjects in this unit*
- Microscope Laboratory – Light and Digital Microscopes: *Applied to the unit's subjects*
- Measurement Laboratory: *Applied to the unit's subjects*
- Freshwater Aquarium Laboratory: *Applied to the unit's subjects*
- Classroom Zoo Laboratory: *Applied to the unit's subjects*
- Special Unit Laboratory: *specific to this unit, as time allows*
- Graph Analysis & Interpretation: *Related to this unit's subject*

Unit Eleven - Human Anatomy Introduction

Time Frame – 3 weeks

Topics Covered: **An introductory survey of some major body systems, illustrating the interdependent hierarchy of organization of cells, tissues, and organs**

Subtopics Covered:

- Skeletal and Muscular Systems
- Digestive and Respiratory Systems
- Nervous and Endocrine Systems

Activities:

- Areopagus Group Dialogos: *Learn to defend views using subjects in this unit*
- DVD Presentation / Evaluation: *Including world renowned experts on the unit's subjects*
- Nature / Creation Adventure Hike: *Applying this unit to our NCS grounds*
- Media Search for Pseudoscience Claims: *Learning to discern using subjects in this unit*
- Microscope Laboratory – Light and Digital Microscopes: *Applied to the unit's subjects*

- Measurement Laboratory: *Applied to the unit's subjects*
- Freshwater Aquarium Laboratory: *Applied to the unit's subjects*
- Classroom Zoo Laboratory: *Applied to the unit's subjects*
- Special Unit Laboratory: *specific to this unit, as time allows*
- Graph Analysis & Interpretation: *Related to this unit's subject*

Unit Twelve - Ecology and Animal Behavior

Time Frame – 3 weeks

Topics Covered: A survey of the major themes in the important field of ecology, emphasizing the vital interdependence among biotic and abiotic environmental factors and the powerful impact humans can have for good or for bad

Subtopics Covered:

- Populations and Communities
- Ecosystems and Biomes
- Living Resources
- Animal Behavior (especially *nephesh* animals and our responsibility to treat them with compassionate empathy)

Activities:

- Areopagus Group Dialogos: *Learn to defend views using subjects in this unit*
- DVD Presentation / Evaluation: *Including world renowned experts on the unit's subjects*
- Nature / Creation Adventure Hike: *Applying this unit to our NCS grounds*
- Media Search for Pseudoscience Claims: *Learning to discern using subjects in this unit*
- Microscope Laboratory – Light and Digital Microscopes: *Applied to the unit's subjects*
- Measurement Laboratory: *Applied to the unit's subjects*
- Freshwater Aquarium Laboratory: *Applied to the unit's subjects*
- Classroom Zoo Laboratory: *Applied to the unit's subjects*
- Special Unit Laboratory: *specific to this unit, as time allows*
- Graph Analysis & Interpretation: *Related to this unit's subject*