

Kolbe Academy Home School

MIDDLE SCHOOL LIFE SCIENCE *Holt Science and Technology: Modules for Life Science*

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COURSE TITLE: Science

COURSE TEXTS:

- *Microorganisms, Fungi, and Plants*, Holt Science and Technology Modules, Short Course A, 2007, (T4825A)
- *Animals*, Holt Science and Technology Modules, Short Course B, 2007, (T4825B)
- *Cells, Heredity, and Classification*, Holt Science and Technology Modules, Short Course C, 2007, (T4825C)
- *Environmental Science*, Holt Science and Technology Modules, Short Course E, 2007, (T4825D)
- *Kolbe Academy Answer Key for Holt Life Science*, (T4825) optional

→ Please note that Short Course D, *Human Body Systems and Health*, is not used in this course. However, it is available from the publisher for families wishing to include this in their Life Science course.

COURSE DESCRIPTION:

This course covers topics in life science at a middle school level, including: cells and living organisms, animals and plants, heredity and classification, and the environment. There are several website resources that correspond with the Holt Science and Technology series. Extra internet activities are indicated within the textbook margins as "Internet Activity" with the go.hrw.com website referenced. These are extra activities for students who are interested in the subjects being covered in that section.

The science of life may occasionally present the student with some of the bioethical issues that exist in today's world. **It is the role of the parent to discuss these issues with the student and instruct the student in Church Teaching.** We have done our best to point out these controversial issues and to provide guidance on how to address them. For example, the topic of evolution is discussed in 3rd quarter and notes on Church teaching has been included in the course plan where appropriate. These notes should be used as points of discussion between the student and parent and to bring in the Church's important teaching on moral and bioethical issues.

In general, this course is meant to be a survey of several topics in a Life Science course. As such, it does not have the necessary depth for a high school level Life Science course. High school credit, therefore, is not available for this middle school Life Science course. This course prepares students well for high school biology. In general, this course should be completed at some point during the middle school years whether that be in 6th, 7th, or even 8th grade. No particular math skills are needed for successful completion of this course.

SCOPE AND SEQUENCE:

Quarter 1: *Microorganisms, Fungi, and Plants* (Short Course A)

- Chapter 1: Its Alive!! Or Is It?
- Chapter 2: Bacteria and Viruses
- Chapter 3: Protists and Fungi
- Chapter 4: Introduction to Plants
- Chapter 5: Plant Processes

Quarter 2: *Animals* (Short Course B)

- Chapter 1: Animals and Behavior
- Chapter 2: Invertebrates
- Chapter 3: Fishes, Amphibians, and Reptiles
- Chapter 4: Birds and Mammals

Quarter 3: *Cells, Heredity, and Classification* (Short Course C)

- Chapter 1: Cells: The Basic Units of Life
- Chapter 2: The Cell in Action
- Chapter 3: Heredity
- Chapter 4: Genes and DNA
- Chapter 5: The Evolution of Living Things
- Chapter 6: The History of Life on Earth
- Chapter 7: Classification

Quarter 4: *Environmental Science* (Short Course E)

- Chapter 1: Interactions of Living Things
- Chapter 2: Cycles in Nature
- Chapter 3: The Earth's Ecosystems
- Chapter 4: Environmental Problems & Solutions
- Chapter 5: Energy Resources

COURSE PLAN "AT A GLANCE" OUTLINE:

Please note that many chapters are not covered in their entirety. Refer to the course plan that follows for specific guidance. Also, note that there are 8 examinations included instead of the typical 4 quarterly exams.

Quarter 1—Book A

- Weeks 1-3: Chapters 1-3
- Week 4: Exam 1
- Weeks 5-8: Chapters 4-5
- Week 9: Exam 2

Quarter 2—Book B

- Weeks 1-3: Chapters 1-2
- Week 4: Exam 3
- Weeks 5-8: Chapters 3-4
- Week 9: Exam 4

Quarter 3—Book C

- Weeks 1-4: Chapters 1-3
- Week 5: Exam 5
- Weeks 5-9: Chapters 4-7
- Week 9: Exam 6

Quarter 4—Book E

- Weeks 1-4: Chapters 1-3
- Week 5: Exam 7
- Weeks 5-8: Chapters 4-5
- Week 9: Exam 8

INVESTIGATION MATERIALS: There are many experiments within the textbook. Those experiments assigned within the course plan take few materials, of which most can be found in your home or at the grocery store. A list of materials has been provided below of all the materials needed (besides common things such as water, pens, paper, etc.) for doing the laboratory experiments.

MATERIALS NEEDED FOR LABORATORY EXPERIMENTS	Reference to Section
Safety Goggles	Most!
Mushroom	Quick Lab (p. 64), Week 3, Day 3
Magnifying Glass	Quick Lab (p. 64), Week 3, Day 3
Plastic Knife	Quick Lab (p. 64), Week 3, Day 3
Baby powder	Activity, Week 4, Day 4
Eyedropper	Activity, Week 4, Day 4
Journal/notebook for observation	Activity (p. 96), Week 5, Day 2
Lima Bean	Quick Lab (p. 87), Week 6, Day 1
Toothpick	Quick Lab (p. 87), Week 6, Day 1
Plastic bag	Connection to Chemistry (p. 112), Week 7, Day 4
Rubber band	Connection to Chemistry (p. 112), Week 7, Day 4

COURSE PLAN METHODOLOGY:

Kolbe Academy has worked diligently to create the best possible course plans with the home schooling family in mind. Remember, however, that our program is intended to be flexible. Per the principle of subsidiarity, these course plans are a **suggested** course of study. As the teacher, you should adapt and modify them to meet the individual learning needs of your child. **Do not feel obligated to follow these course plans exactly.**

In the course plans that follow, *Holt Life Science* is represented by the abbreviation **HLS**. Each weekly assignment is summarized in the first line of the week's daily course plan. The specific daily assignments are outlined in the following lines indicated by the **DAY 1, DAY 2, DAY 3, and DAY 4** abbreviations. Parent daily guidelines are given to the right of the student assignments. This outline can be altered; a family's schedule can and should vary as needed.

A weekly grade book is included at the end of the week's course plan *as a convenience*. Parents should use the grade book only as a help to their homeschooling and not as a hindrance. It includes a cumulative list of written assignments from the week's course plan as well as space for additional assignments, if needed. **Kolbe Academy does not require that you keep record of all student work.** If you intend to report your student's work to Kolbe Academy for an official record, only one sample of written and graded work is required per quarter per course along with the signed and filled out report card. The weighting suggestion in the end of quarter grade book is there for *convenience* and may be modified as the parent deems fit. Please consult the welcome packet for a full tutorial on using the grade book.

This science course contains 36 weeks broken into four 9-week quarters. You should use the review days as time to catch up if necessary and then go over the subject matter. **If you intend to use the tests provided, look them over *before* teaching the subjects and make sure you review the material in the tests throughout the quarter.**

Finally, begin every class with a prayer. This is a good way to help the student memorize new prayers. Repeat the same ones every day until they are known. Be sure to explain the meanings of the prayers. Repetition in all areas of study is most beneficial.

◆◆◆ FIRST QUARTER ◆◆◆

WEEK 1		
◆◆◆ UNIT 1: Living Things ◆◆◆		
Book	Weekly Breakdown	Goals and Notes for the Week
HLS	Chapter 1 Sections 1, 2	<p>Be sure to take note of the question numbers assigned in each Section Review. Questions assigned within the scope of Kolbe Academy's course plan are the only questions that are answered in the Kolbe Academy Answer Key for <i>Holt Life Science</i>.</p> <p>VOCABULARY: cell, stimulus, homeostasis, sexual reproduction, asexual reproduction, heredity, metabolism, producer, consumer, decomposer, protein, carbohydrate, lipid, phospholipid, ATP, nucleic acid</p>
<div style="border: 1px solid black; padding: 2px; margin-bottom: 5px;">Notes</div>		
Student Daily Assignments	<input checked="" type="checkbox"/>	Parent Daily Guidelines
DAY 1	HLS Read Section 1	<p>This section discusses properties that are common to all living things, along with processes, such as homeostasis and metabolism that all living things undergo in order to survive. Students should be able to know and understand these commonalities and processes after reading this section. Have the student read Section 1 and do Section 1 Review: 2, 3, 5.</p>
	Section 1 Review	
DAY 2	HLS Read Section 2	<p>This section describes the main requirements living things need in order to survive. Students should be able to identify these requirements, as well as describe how they will support the organism. Additionally, students should gain an understanding of the molecules that support cellular function. Have the student read Section 2. Do Section 2 Review: 5, 6, 7, 9.</p>
	Section 2 Review	
DAY 3	HLS Chapter 1 Review	Review the chapter in preparation for Exam 1.
DAY 4	HLS Math Skills	Have the student complete Math Skills problem 8 (page 13).
	Chapter 1 Review	Have the student do Chapter 1 Review: 1, 2, 3, 6, 9-11, 15

Week 1 Grade Book				
Assignments	Include <input checked="" type="checkbox"/>	(A) Points Earned	(B) Possible Points	A/B x100 =% (C)
Section 1 Review (2, 3, 5)	<input type="checkbox"/>			
Section 2 Review (5, 6, 7, 9)	<input type="checkbox"/>			
Math Skills	<input type="checkbox"/>			
Chapter Review(1, 2, 3, 6, 9-11, 15)	<input type="checkbox"/>			
Other:	<input type="checkbox"/>			
Week 1 Average	Add up column C & divide by number of included <input checked="" type="checkbox"/> assignments =			%

WEEK 2						
Book	Weekly Breakdown	Goals and Notes for the Week				
HLS	Chapter 2 Sections 1, 2, 3	VOCABULARY: prokaryote, binary fission, endospore, bioremediation, antibiotic, pathogenic bacteria, virus, host				
Notes						
Student Daily Assignments		<input checked="" type="checkbox"/>	Parent Daily Guidelines			
DAY 1	HLS Read Section 1	<input type="checkbox"/>	This section discusses bacteria and archaea. After completing this section, students should be able to discuss the properties of bacteria and archaea, as well as describe key differences between them. Students should also be able to compare and contrast bacterial producers and consumers, as well as gain an understanding of the three different classes of archaea. Have the student read Section 1. Do Section 1 Review: 1, 3, 5, 6, 9			
	Section 1 Review	<input type="checkbox"/>				
DAY 2	HLS Read Section 2	<input type="checkbox"/>				
	Section 2 Review	<input type="checkbox"/>				
DAY 3	HLS Read Section 3	<input type="checkbox"/>	Section 2 applies the student's understanding of bacteria from Section 1 to "real-life". After reading this section, students should be able to describe how bacteria can be beneficial to people or other organisms, and also how they can be harmful to people. Have the student read Section 2. Do Section 2 Review: 2, 3, 5.			
	Section 3 Review	<input type="checkbox"/>				
Day 4	HLS Chapter 2 Review	<input type="checkbox"/>			In Section 3, students should be able to discuss the main characteristics of viruses and describe how viruses are classified. Students should be able to explain the two kinds of viral reproduction. Additionally, this section discusses how viruses are treated when they infect an organism. Have the student read Section 3. Have the student do Section 3 Review: 1, 2, 4.	
Week 2 Grade Book						
Assignments	Include <input checked="" type="checkbox"/>	(A) Points Earned	(B) Possible Points	A/B x100 =% (C)		
Section 1 Review (1, 3, 5, 6, 9)	<input type="checkbox"/>					
Section 2 Review (2, 3, 5)	<input type="checkbox"/>					
Section 3 Review (1, 2, 4)	<input type="checkbox"/>					
Chapter 2 Review (3, 5, 7, 10, 12, 15)	<input type="checkbox"/>					
Other:	<input type="checkbox"/>					
Week 2 Average	Add up column C & divide by number of included <input checked="" type="checkbox"/> assignments =			%		

WEEK 3				
Book	Weekly Breakdown	Goals and Notes for the Week		
HLS	Chapter 3 Sections 1, 3	VOCABULARY: protist, parasite, heterotroph, host, fungus, spore, hyphae, mold, mycelium, lichen NOTE: Chapter 3 Section 2 is not included in the lesson plan but students are welcome to read as enrichment.		
<div style="border: 1px solid black; padding: 5px; width: 100px; float: left;">Notes</div>				
Student Daily Assignments		<input checked="" type="checkbox"/>	Parent Daily Guidelines	
DAY 1	HLS Read Section 1	<input type="checkbox"/>	Have the student read Section 1. Students should be able to describe the characteristics of protists, and their common traits. Also, students should be able to explain the manner in which different protists get food, either as producers or heterotrophs. Finally, students should also be able to describe the reproductive nature of protists. Do Section 1 Review: 1, 2, 4, 6, 9	
	Section 1 Review	<input type="checkbox"/>		
DAY 2	HLS Read Section 3	<input type="checkbox"/>	Have the student read Section 3. This section introduces the student to fungi. After reading this section, the student should be able to describe the key characteristics of all fungi, including how they get nutrients and how they reproduce. Students should be able to detail the characteristics of the four different classes of fungi. Do Section 3 Review: 1, 3, 4, 5	
	Section 3 Review	<input type="checkbox"/>		
DAY 3	HLS Quick Lab	<input type="checkbox"/>	Have the student complete Quick Lab 3 on page 64. In this lab, the student will examine a mushroom that can be purchased from a supermarket. Students can dissect this mushroom while looking for the different parts of the fungus. Encourage the student to locate the gills, mycellium, and possible spores or hyphae.	
DAY 4	HLS Chapter 3 Review	<input type="checkbox"/>	Review Chapter 3 to prepare for the test during week 4 Do Chapter Review: 1, 6, 9, 12, 14, 19	
Week 3 Grade Book				
Assignments	Include <input checked="" type="checkbox"/>	(A) Points Earned	(B) Possible Points	A/B x100 =% (C)
Section 1 Review (1, 2, 4, 6, 9)	<input type="checkbox"/>			
Section 3 Review (1, 3, 4, 5)	<input type="checkbox"/>			
Chapter 3 Review (1, 6, 9, 12, 14, 19)	<input type="checkbox"/>			
Quick Lab	<input type="checkbox"/>			
Other:	<input type="checkbox"/>			
Week 3 Average	Add up column C & divide by number of included <input checked="" type="checkbox"/> assignments =			%

WEEK 4				
◆◆◆ UNIT 1 Exam ◆◆◆				
◆◆◆ UNIT 2: Plants ◆◆◆				
Book	Weekly Breakdown	Goals and Notes for the Week		
HLS	Unit 1 Exam Chapter 4 Section 1	VOCABULARY: nonvascular plant, vascular plant, gymnosperm, angiosperm		
Notes				
Student Daily Assignments		<input checked="" type="checkbox"/>	Parent Daily Guidelines	
DAY 1	Chapters 1-3 Review	<input type="checkbox"/>	Continue to review each chapter in preparation for Unit 1 Exam.	
DAY 2	Unit 1 Exam	<input type="checkbox"/>	Have the student do Exam 1.	
DAY 3	HLS Chapter 4 Section 1	<input type="checkbox"/>	<p>Have the student read Section 1.</p> <p>This section introduces the student to plants. After completing this section, the student should be able to describe common characteristics and processes of plants, including: photosynthesis, cuticles, cell wall structure, and reproduction. The student should be able to define each of the four groups of plants.</p> <p>Do Section 1 Review: 2, 4, 5, 6</p>	
DAY 4	HLS Activity	<input type="checkbox"/>	<p>On this day the student will complete an activity that simulates the function of a plant cuticle using baby powder and water.</p> <p>First, have the student rub a few drops of water in between the palms of his or her hands. After thoroughly drying his hands, have the student coat his hands with baby powder. Again, rub a few drops of water between the palms and record observations.</p> <p>How does this simulate the function of a plant's cuticle?</p> <p>A plant's cuticle is a waxy layer coating the plant. It forms a similar barrier to water to prevent the plant from losing moisture.</p>	
Week 4 Grade Book				
Assignments	Include <input checked="" type="checkbox"/>	(A) Points Earned	(B) Possible Points	A/B x100 =% (C)
Exam 1 (Mark in Q1 Gradebook)	No			
Section 1 Review (2, 4, 5, 6)	<input type="checkbox"/>			
Activity	<input type="checkbox"/>			
Other:	<input type="checkbox"/>			
Week 4 Average	Add up column C & divide by number of included <input checked="" type="checkbox"/> assignments =			%

WEEK 5				
Book	Weekly Breakdown	Goals and Notes for the Week		
HLS	Chapter 4 Section 2 and 3	VOCABULARY: rhizoid, rhizome, pollen, pollination		
Notes				
Student Daily Assignments		<input checked="" type="checkbox"/>	Parent Daily Guidelines	
DAY 1	HLS Read Section 2	<input type="checkbox"/>	Have the student read Section 2. Students are introduced to the two types of seedless plants: vascular and nonvascular. They should be able to describe different kinds of these seedless plants and their corresponding life cycles. Students should be able to discuss the importance of seedless plants, both vascular and nonvascular, to our environment.	
DAY 2	HLS Section 2 Review	<input type="checkbox"/>	Have the student do Section 2 Review : 1, 2, 4 Complete the school-to-home activity provided on page 96. Document the different types of plant leaves you can find in your home, and outside. Make notes about the sizes of each leaf and their structures.	
	Activity	<input type="checkbox"/>		
DAY 3	HLS Read Section 3	<input type="checkbox"/>	Have the student read Section 3. Students learn about the key characteristics of seed plants in this section. Gymnosperms and angiosperms are introduced, and students should have an understanding of their respective properties and differences. After reading this, they should be able to discuss the impact this class of plants has for the environment.	
DAY 4	HLS Section 3 Review	<input type="checkbox"/>	Have the student do Section 3 Review : 1, 4, 6 **Prepare for the Quick Lab next week, see Week 6 Day 1**	
Week 5 Grade Book				
Assignments	Include <input checked="" type="checkbox"/>	(A) Points Earned	(B) Possible Points	A/B x100 =% (C)
Section 2 Review (1, 2, 4)	<input type="checkbox"/>			
Activity	<input type="checkbox"/>			
Section 3 Review (1, 4, 6)	<input type="checkbox"/>			
Other:	<input type="checkbox"/>			
Week 5 Average	Add up column C & divide by number of included <input checked="" type="checkbox"/> assignments =			%