



INTRODUCTION

Welcome to *Exploring Creation with Human Anatomy and Physiology*. This unique course explores the human body using engaging text, exciting activities, interesting experiments, and proven methods to help your students remember what they've learned. The text is written directly to the students, making it very appealing to kids from six to thirteen. The material is presented in a conversational style that will make science enchanting and memorable for your students, creating an environment in which learning is a joy.



Lesson Increments

There are 14 lessons in this text. Each lesson should be broken up into manageable time slots depending on your family's schedule and the ages and attention spans of your children. Most lessons can be divided into two-week segments. The *Anatomy Notebooking Journal*, designed to accompany this text, includes a suggested schedule that follows a two-week sequence. This schedule takes the "guess work" out of how to efficiently complete the course. However, if you choose to complete the course without the notebooking journal, simply read half the lesson during the first week and the other half during the second week, leaving time for the various assignments, projects and experiments.



I believe notebooking and narration are superior methods for facilitating retention and for providing documentation of your children's education. At the end of each lesson, your students will be assigned various activities that utilize these methods. Their learning will be enhanced through narration, notebooking activities, projects and experiments. In addition, your students will complete a Personal Person Project that is unique to this course. Each of these learning activities is detailed below.

Narration

The act of narrating is an ancient and effective method, stimulating a child's mind to focus his attention on the information he has just heard or read. When the student is required to "retell" this information through narration prompts, he becomes engaged with the material as an active learner. Greater retention is achieved as a result.

Throughout each lesson of the text, the student is asked to "tell back" or narrate the information learned from what he has read or heard. The "What Do You Remember?" questions near the end of each lesson can be used for oral narration. If your student has the *Anatomy Notebooking Journal*, you'll find templates for these questions that can be used for written narration. Whether oral or written, narration will propel your students forward in their ability to effectively and clearly communicate with others what they have learned.

Notebooking Activities

At the end of each lesson, various notebooking activities are assigned to the students. They include illustrating concepts, writing essays, and completing other types of written exercises. These will be placed in each student's notebook. There are templates provided for each of these activities in the *Anatomy Notebooking Journal*. You will find these notebooking activities to be important tools for providing a record of progress and learning as well as documentation for review. Notebooking is flexible and allows for multi-aged learning. A twelve-year-old student may write a brief essay, while a six-year-old may illustrate his learning through a simple drawing. Both, however, will retain what they've learned through their unique and personal expressions of the topic.

Personal Person Project

This is a fun and unique project that allows students to create a paper model of the human body. Throughout the course, students are given instructions for adding the organs they've studied to a human form they have created. This project is designed to engage the students in a hands-on application of what they've learned – serving to solidify not just the facts about the organs, but where they are actually located in the body. The human form is personalized with the student's face and is placed in his course notebook.

As students progress through the lessons, they will draw and cut out the organs, taping them to their Personal Persons. Again, if your students have the *Anatomy Notebooking Journal*, images of each organ are located in the appendix for your students to cut out.

Projects and Experiments

Every lesson ends with a project or experiment. Many of these experiments will help your children develop the skills needed to conduct valid and scientifically accurate experiments, both now and in high school. It is recommended that your students complete at least a few of these experiments so as to become familiar with the scientific method. Though many experiments utilize household items, some require science supplies only available through specific sources. Because of this, Apologia has provided a science kit to accompany this text. However, if you wish to purchase the supplies yourself, a list of supplies is provided starting on page 15.

Course Website

If your students would like to learn more about the topics discussed in this course, there is a course website that allows them to dig even deeper into the topic of human anatomy and physiology. To go to the course website, simply type the following address into your web browser:

<http://www.apologia.com/bookextras>

You will see a box on the page. Type the following password into the box:

Godmadeyou

Make sure you capitalize the first letter, and make sure there are no spaces in the password. When you hit “enter,” you will get an “access granted” message. Click on the link there to go to the course website.



How To Use This Book

A Step-By-Step Guide

1. If you have not purchased a supplies kit, you will want to scan the materials list located on pages 15-17 to see what you need for the lesson you are going to do.
2. Begin by reading the lesson to the students (older students may read the lesson themselves). There will be places during the lesson where the students are asked to “tell back” or narrate what they have learned up to that point. These are not written narrations; they are impromptu oral presentations.
3. Occasionally there will be a “Try This!” activity wherein the learners are encouraged to get a few supplies and try a little project or experiment to demonstrate a point made in that section of the book. Ideally, the project should be done right then. However, don’t be discouraged if you do not have the materials. You can always go back and do the project later.
4. You will continue reading until you feel a natural break is at hand. Each family will differ in the amount of reading done in each session. Some families become extremely engrossed and will want to read an entire lesson. Most families will read a quarter to half the lesson. There are many places within each lesson that are natural stopping points. You decide when to stop reading. The book is designed to give a lot of flexibility with this, so that you can complete the book in a year in a way that works for your family.
5. When you end for the day, ask your children to orally tell you what they learned. They do not need to write anything down until they reach the end of the lesson.
6. When you reach the end of a lesson, you will come to a “What Do You Remember?” section. This is a series of specific questions to ask your children in order to prompt their memories about the lesson. Don’t expect young children to remember most of these. Don’t expect older children to remember all of them. However, this is a great time to enter into discussion about what they learned. These are also oral, not written.
7. After your children tell you what they remember, it’s time for the notebooking activity. In this activity, each child will be asked to record in writing all that she wants to remember about the lesson. I would not force her to record every detail of the “What Do You Remember?” section. Also, do not have her write down what you want her to remember. Allow her to decide what she thought was interesting and important. Let her decide what she wants to remember. For non-writers or slow writers, you can type out or write out what they tell you. If your child is struggling to recount her learning, you can encourage her with questions. Make this an enjoyable experience without a lot of correction and nit-picking. Eventually, your child will be able to accurately and systematically recount what she learned. Many children graduate from high school never learning this skill.
8. Occasionally, the notebooking activity will also include some sort of work beyond just recording the information the students found interesting or want to remember. They might be asked to diagram something or produce a creative work associated with the subject.
9. If it is mentioned in the lesson, have the students add an organ to their Personal Persons.
10. The last thing students should do is the experiment for the lesson.

Items Needed To Complete Each Lesson

Every child will need his own notebook (or the *Anatomy Notebooking Journal*), blank paper, lined paper, and colored pencils.

Lesson 1

- Two apples
- Something you can use to peel the apples
- Two bowls
- Baking soda
- Salt
- Measuring cups
- A piece of clear plastic (Plastic wrap works fine.)
- A medicine dropper
- Water
- A sheet of 8-inch x 10-inch paper (Flesh-colored construction paper is recommended.)
- A pencil
- Scissors
- A photograph of your face (between 2 and 3 inches tall)
- Tape
- A sharp steak knife and a parent to use it
- A spoon
- A plate
- A glass or ceramic cereal bowl
- Cooking spray, like Pam
- A box of yellow colored Jell-O
- A box of unflavored Knox Gelatin
- A jelly bean or a peanut M&M candy
- Several Skittles, Everlasting Gobstoppers or M&M candies
- A Starburst Gummiburst or several Smarties
- A Fruit Roll Up
- Nerds or cake sprinkles
- Tubular cake sprinkles or Twizzler Pull and Peels
- A large gumdrop, jaw breaker, or round chocolate truffle

Lesson 2

- Modeling clay
- Toothpicks
- Two eggs
- A plastic container with a lid that seals tightly (only slightly bigger than the eggs)
- Water
- Masking tape

- A tape measure
- A cooked chicken wing
- A pair of rubber or plastic gloves
- White vinegar
- Two plastic containers with lids (just big enough for a chicken wing and some liquid)
- Plastic wrap
- A parent with a knife

Lesson 3

- A calculator
- Bathroom scales
- Beef brisket
- Gloves
- A toothpick
- A magnifying glass
- A timer
- A nylon stocking that you can destroy
- A ball of clay
- Scissors
- A clothes pin that opens when you squeeze on it and closes when you release
- Graph paper (Only older students need this.)
- A timer
- A pencil
- Paper

Lesson 4

- An old baby tooth (An animal tooth will do.)
- A soda pop like Coke or Pepsi
- A saltine cracker
- A mirror
- Cheese
- Two Ziploc bags
- A piece of bread
- Water
- A measuring tape
- Cooking oil
- A bowl
- Water
- A fork
- Liquid dishwashing soap



Lesson 5

- A cool window
- Iodine solution (available at drug stores)
- Several items of food to test
- A brown paper bag
- Scissors
- A hair dryer
- Food from the pantry
- A banana
- A vitamin C tablet
- Juice, freshly squeezed from different fresh fruits or vegetables that you think might contain vitamin C (oranges, tomatoes, strawberries, peaches, etc.)
- Cornstarch
- A medicine dropper
- A juice glass
- Several small cups or test tubes
- A measuring cup
- Measuring spoons
- A small pot
- A stove
- A spoon
- A Scientific Speculation Sheet

Lesson 6

- Honey
- Two pieces of cardboard
- A mirror
- Plastic food storage container
- Thin and thick rubber bands
- A grape
- A straw
- Cellophane tape
- An empty plastic large-mouth drink bottle
- Scissors
- Two balloons
- Tape
- A 2-liter plastic soda bottle
- A 1-foot-long piece of flexible tubing (like the kind you use for aquariums)
- A mixing bowl
- A measuring cup
- A jump rope
- A timer

Lesson 7

- A mirror
- A flashlight
- A bowl
- 1 cup of corn syrup
- $\frac{3}{4}$ cup of candy red hots
- A white jelly bean
- Candy sprinkles
- Iron-fortified cereal
- A Ziploc bag
- A strong magnet
- A mallet
- A blood typing kit

Lesson 8

- Graham crackers
- Blue frosting and red frosting (or white frosting that has been colored blue and red with food coloring)
- Toothpicks
- Large and small marshmallows
- A toothpick
- A small ball of clay
- A nine-inch balloon
- A small plastic funnel
- 18 inches of vinyl tubing (from a hardware store)
- Tape

Lesson 9

- Six different colors of clay
- Different colored pieces of paper on which you will write down your questions. Each color will represent a different body system.
- A file folder to create your game board
- Colored markers to draw your game board
- Game pieces made out of self-hardening clay in the shape of people or body parts
- Dice

Lesson 10

- A scrap of paper about 4 inches square
- Six different colors of clay
- Four pennies
- A ruler
- Someone to help you
- Two eggs
- A plastic Easter egg (larger than the real eggs)
- Karo syrup or molasses

Lesson 11

- A few bites of something you like to eat
- A bottle of vanilla
- A variety of herbs from your kitchen
- Four paper plates
- A pencil
- A mirror
- Five small custard cups
- Five Q-tips
- Saltwater
- A lemon
- Sugar
- Unsweetened cocoa or ground coffee
- Saltine crackers
- A glass
- A mug
- Chocolate milk
- Foods with familiar tastes and textures
- Something with which you can cut the foods
- A Slinky
- A blindfold
- Someone to help you
- A pencil
- A cup
- A timer
- A darkened room with a mirror
- A flashlight
- Colored pencils or crayons
- A few friends
- A piece of paper for each friend
- A magnifying glass
- A sheet of paper
- A pencil
- Index cards
- A partner
- Two markers with brightly colored lids
- A Nerf ball

- A volunteer willing to taste foods while blindfolded
- A variety of foods with sweet, salty, bitter, sour, and umami (savory) tastes
- Straws for testing liquids
- Spoons for putting the food on the volunteer's tongue

Lesson 12

- A damp cloth
- A mirror
- A strand of hair
- Three bowls of water: one hot, one cold, one lukewarm
- A rubber band
- A stamp pad
- Several sheets of paper
- A photocopy of the braille chart
- White school glue
- A volunteer
- Five large paper clips
- A ruler or tape measure
- A chart with all the body parts you intend to test

Lesson 13

- A bacteria testing kit with agar and Petri dishes
- Q-tips
- Tape

Lesson 14

- Photos of when you were a baby, toddler and small child

