

# Science At Our House

The Ultimate Science  
Resource for Homeschoolers



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### *Life Science*

Junior High Syllabus

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## Introduction

This syllabus presents the general objectives for an academic year of Life Sciences with ScienceAtOurHouse for the Junior High class. Its purpose is to give parents an overview of what will be covered during the year, and thus to facilitate the purchase/borrowing of books, planning of projects, and use of other resources to match with your children's studies in the program. Along with one highly recommended text, there will be suggestions provided by the team for supplemental resources as well.

As a new course, many aspects of the ScienceAtOurHouse program are a work in progress. While Mr. Krieger, the team's curriculum developer, has taught this curriculum at the VanDamme Academy in southern California, there will be new challenges in adapting it to the on-line forum that the team will address throughout the school year. Students and parents who will be joining us in this exciting exploration can expect departures from the syllabus as the year progresses and we learn together. Mrs. Miner, the program's teacher, and the rest of the ScienceAtOurHouse team will be regularly re-assessing the nature and precision of the information presented. Our goal will be to provide students with a solid foundation in Life Sciences from which they can build further knowledge.

This is the first year of a three year cycle; the expected courses to come are *Physical Science* next year, and *Earth Science* the following year. For Junior High students who may be graduating, the ScienceAtOurHouse team also anticipates providing opportunities for science instruction at the high school level. At this time, students can look forward to a high school physics program, with other offerings sure to follow.

The ScienceAtOurHouse team is very excited about the year to come, and we look forward to working with you to make this academic year a terrific success.

Best regards,

Mr. Krieger

Mrs. Miner

Mr. Powell



## Course Outline

### PART I: THE HUMAN BODY

#### **The Musculoskeletal System**

- Bones, muscles, and tendons in the upper limbs
- Bones, muscles, and tendons in the lower limbs
- Bones and muscles of the head and torso
- Classes of bones, muscles, and joints
- Animals with skeletons (vertebrates)
- Quiz

#### **The Sense Organs and the Nervous System**

- The eye and vision
- The ear and hearing
- The nasal and oral cavities
- The brain and the nervous system
- Quiz

#### **The Digestive and Circulatory Systems**

- The alimentary canal and the other digestive organs
- Lung anatomy and respiration
- Heart anatomy and the motion of blood
- William Harvey and the discovery of circulation
- EXAM 1: Test covering the Human body

### PART II: NATURE

#### **Animals**

- Review of the major classes of vertebrate
- A family tree of mammals (ungulates, carnivores, rodents, etc.)
- A family tree of birds (raptors, fowl, songbirds, etc.)
- A family tree of reptiles (snakes, lizards, crocodilians, testudines)
- Tailed vs. tailless amphibians, bony vs. cartilaginous fish
- Invertebrate Phyla (arthropods, molluscs, echinoderms, etc.)
- The Linnaean classification system
- Quiz

#### **Plants**

- Permanent plant parts (leaves, stems, branches)
- Vascularity, and the nourishment of plants
- Photosynthesis
- Special plant parts (flowers, seeds, fruit)
- Parts of flowers, and what they are for
- Parts of fruits and other seed packages
- Families of normal plants (conifers, monocots, dicots)
- Families of unusual plants, or pseudo-plants (ferns, moss, fungi, coral)

## Recommended Resources

There is no required text book at the Junior High Level. There will also be no "kits" for the parents to buy. Mr. Krieger's experiments are designed to employ common household items as much as possible. On occasion, specialty items, like dissection specimens, will be recommend. The use of such kits will be optional, and we will provide the purchasing information during the year at the appropriate times.

One of the difficulties with teaching science through an online format is that it will be difficult for students to learn about the world without actually doing things with the world. Students will get much more out of their education if they can observe and experience things first-hand. So although there will be no required textbooks for the upcoming Life Science courses, there will be a few recommended books and supplies.

In the subject of anatomy, which will occupy the first half of the year, there will be a few dissections of animals and animal parts for the students to perform, along with perusal of a detailed atlas of human anatomy. Performance of dissections will not be required, but will be highly recommended. Some of them will be demonstrated by Mrs. Miner during normal class time, but others will simply be suggested. Instructions and a list of required supplies for each dissection will be given at the appropriate times. (Some of them will require specimens to be mail-ordered specially from a biological supply company, but others will require nothing more than a trip to the supermarket.)

For graphics of human anatomy, a few copies from an anatomy atlas will be provided, but students will benefit from having an atlas of their own to look through. Mr. Krieger recommends the [\*Atlas of Human Anatomy\*](#), by Dr. Frank Netter, because it is highly detailed, full-color, and gives students a realistic idea of what the human body looks like on the inside, without being gory. It is also fully labeled, for those students interested in the technical names of things. *The value of this book is such that we were thinking about making it a required book for the Junior High at one point*, but it is somewhat expensive, and it includes images that some parents may or may not want their children to see. We recommend trying to locate one in your local bookstore or library (public libraries often have a copy), flipping through it, and deciding for yourself if you wish to purchase it or borrow it.

It isn't vital, but if you can afford it, we also believe that students will benefit by having a skeleton of their own to play with. **Learning Resources** has a cheap one, and the **Anatomical Chart Company** has medium and expensive ones. The Mr. Thrifty Skeleton from the ACC, which stands about 2 1/2' tall and costs a little over \$50, makes a decent skeleton. Here are links to those companies:

<http://www.learningresources.com>

<http://www.anatomical.com>