

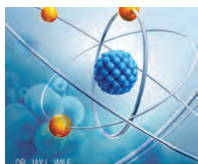
# 2021 catalog



**Berean Builders®**



**NEW**



DISCOVERING DESIGN WITH  
**CHEMISTRY**



## RECOMMENDED SCIENCE COURSE SEQUENCING

Knowing which science courses to offer your secondary-level student and when to offer them can seem difficult. In reality, course sequencing for junior high and high school isn't that hard when you know one important fact: **your student's mathematics level is the key factor for success or failure in the high school sciences.** If you make sure that your child is well prepared mathematically for the science course he or she will take, you will have gone a long way toward assuring your student's academic success. When the student begins Algebra I, that's when Biology begins. Even if your student is not science-oriented, he or she will benefit from exposure to Biology, Chemistry, and Physics. You never know when a lifelong interest may be sparked!

## SUGGESTED SUPPLEMENTS

These optional supplemental readings for science-oriented students do not replace the main course listed. They give your student additional science material to learn if your student is interested.

**Supplement 1:** *Universe by Design* by Danny Faulkner (ISBN 978-0890514153) and *Reasonable Faith: The Scientific Case for Christianity* by Dr. Jay L. Wile (ISBN 978-0965629409)

**Supplement 2:** *Body by Design* by Alan Gillen (ISBN 978-0890512968) and *Science and Human Origins* by Anne Gauger, Douglas Axe, and Casey Luskin (ISBN 978-1936599042)

**Supplement 3:** *The New Creationism* by Paul Garner and Andrew Snelling (ISBN 978-0852346921) and *Signature in the Cell* by Stephen Meyer (ISBN 978-0061472794)

Recommendations by student grade level:	NOT SCIENCE ORIENTED	SCIENCE ORIENTED	MATH PREREQUISITE
K-6	Dr. Wile's elementary series available from us		
7th Grade	Science in the Atomic Age	Science in the Atomic Age	None
8th Grade	Discovering Design with Earth Science	Discovering Design with Earth Science	7th Grade Math
Freshman	Discovering Design with Biology* <i>Coming in 2022</i>	Discovering Design with Biology (Supplement 1)	None
Sophomore	Discovering Design with Chemistry*	Discovering Design with Chemistry (Supplement 2)	Algebra I
Junior	Physics*	Physics (Supplement 3)	Algebra I, Geometry, basic Trigonometry functions
Senior	Supplements  * These courses can be spread over 4 years for the student who is not science-oriented.	Advanced Biology or Advanced Chemistry or Advanced Physics or Marine Biology	None Algebra II Trigonometry None

## QUESTIONS AND ANSWERS ON COURSE SEQUENCING

### 1. Why is the order biology, chemistry, and then physics? Since physics is the most fundamental science, shouldn't it be first?

Ideally, physics would be first. However, this isn't practical because of the math involved. High school physics requires a basic knowledge of trigonometry, which is generally covered in geometry. Chemistry requires a mastery of algebra 1, which is usually taken during the freshman year. Biology requires only basic arithmetic, which high school students should know. Thus, students take biology during their freshman year because they have all the math they need. They take chemistry sophomore year because they completed algebra 1 while completing biology. They take physics junior year because they learned basic trigonometry while taking chemistry.

This brings up an important point. There are some math programs that do not cover basic trigonometry in their geometry course. If your student hasn't covered basic trigonometry yet, have them take advanced biology, advanced chemistry, or marine biology junior year and wait before taking physics.

### 2. What "basic trigonometric functions" are needed for students to take physics?

Students need to know how the trigonometric functions sine, cosine, and tangent are defined on a right triangle. Given just two pieces of information about the right triangle (such as the cosine of an angle and the length of a triangle's leg), they should be able to determine everything else about the triangle.

### 3. Do all students need to take biology, chemistry, and physics?

That would be ideal, but it may not be possible for every student. At minimum, a college-bound student needs to have three high school science courses with at least one course from the life sciences and at least one from the physical sciences. For a student who struggles with science, you can cover physical science (considered a high school science in public schools), biology, and chemistry. If you need to spread those courses over more than three years, that's fine.

### 4. What's the point of advanced courses, and which should science-oriented students take?

Advanced courses, when combined with the first-year course, cover everything a student would see in a university-level course on the subject. For example, if students take *Discovering Design with Chemistry* and then *Advanced Chemistry in Creation*, they have covered an entire university-level general chemistry course. If they are confident about what they learned, they can take the AP or CLEP chemistry tests. If they score well enough, they can "test out" of university-level general chemistry. More importantly, taking both courses will show them what is expected of them in a university-level chemistry course. Students should take the advanced course that interests them most. This will help them decide whether to study that subject in detail at the university level.

### 5. What if students are taking algebra 1 earlier or later than their freshman year?

We strongly recommend students take biology while they take algebra 1. If students are delayed in math, they are probably delayed in science as well, so starting biology any earlier is unlikely to work well. If students are ahead in math, they benefit from having more years to take advanced courses later. Anything they might "miss" by skipping 7th or 8th grade science will not be nearly as valuable as what they will get in those advanced courses.

### Got more questions?

Find more information on our website at [bereanbuilders.com](http://bereanbuilders.com) or get support at [berean@bereanbuilders.com](mailto:berean@bereanbuilders.com) and (877)794-3005.



## 4 REASONS TO TEACH SCIENCE THROUGH A HISTORICAL APPROACH

Many elementary science series have been designed specifically for homeschoolers. Most are built around a topical approach to science. Students spend a unit, a series of units, or perhaps a full course studying one area of science (i.e., weather), and then they move on to a different area. This is a reasonable approach, but this series offers a completely different one.

We give a roughly chronological view of science. *Science in the Beginning* is the most topical of the books in the series, because it spends about six weeks on each creation day in the Genesis account. By the end of that course, students cover a little bit of everything that was created, though they don't spend very much time on a single topic.

Once students get to *Science in the Ancient World* and the remaining books, they learn science in the order it was discovered. As a result, the topics change frequently. For example, in the first 15 lessons of *Science in the Ancient World*, students learn about measuring tall things, fire, music, atoms, and medicine. The topics are unified by the people who studied them and the way science was developing at the time.

**There are four very good reasons for teaching science this way, especially during the elementary years.**

**1 Students learn the enormous debt science owes to Christianity.** Many unsuspecting students are taught that Christianity has opposed science throughout history. In fact, if it weren't for Christianity, we wouldn't have the science we have today. When a student sees how science developed, this becomes obvious.

**2 Students get a more realistic view of how science works.** They learn that the vast majority of scientific ideas have been wrong. However, those wrong ideas were still useful. As scientists strove to investigate them, they refined ideas or explored better

ones that were closer to the truth. Students learn that even those "better" ideas are often later demonstrated to be wrong! Science is mostly about making mistakes and then learning from those mistakes. For example, in other curricula, students could be taught a brief synopsis of how the scientific view of the solar system changed over time. In our course, they learn in detail what scientists initially thought and see each major step that produced the modern view of the solar system.

**3 Students avoid many myths.** For example, most students are taught that the ancients believed the earth was flat. That is 100% false. When students learn science in a historical perspective, they see even the most ancient thinkers believed the earth is a sphere. Students learn that more than 2,200 years ago, Eratosthenes actually measured the distance around that sphere to within 1% of today's accepted value.

**4 Students recall the topics they learn better.** In a topical approach, students learn a subject in detail and never (or rarely) revisit it. Over time, students tend to forget what they learned. To combat that, some topical courses employ the "spiral" approach where students are introduced to a topic and a couple of years later, it is repeated in more depth. This helps recall, but it is boring to many students. In a historical approach, students revisit topics but in the context of a new person and how he refined the old idea. This makes it much more interesting, and it still helps students reinforce the science they learn.

## SHOULD I SYNCHRONIZE MY SCIENCE AND HISTORY PROGRAMS?

Berean Builders provides guides if you want to synchronize my elementary science courses with your history program at [berean-builders.com/history](http://berean-builders.com/history), but we think that process is a bit difficult and not all that beneficial. After all, history progressed at a steady pace, but science did not. It started out slowly and then gained a lot of momentum as the Christian worldview developed. It gained even more momentum as technology developed.

*Science in the Ancient World* covers about 2,100 years of history, while the next book in the series covers only 200 years, and the next book covers only 100 years. The final book should also cover only about 100 years. Your history program's pace isn't anything like that. We think the best thing you can do is cover history and science so that my courses are always reviewing what the students have already learned from their history program. That way, science will serve as a reminder of what was already covered in history.



"This approach helps **students understand how scientific understanding continually expands** as scientists build upon the work and discoveries of those who have gone before them. ... I think **this**

**approach makes science totally fascinating** because it unites science and history, providing more context for understanding both subjects. ... **I'm not aware of any other science curriculum similar to this.** "

Cathy Duffy

*102 Top Picks for Homeschool Curriculum*



## PRAISE FOR OUR ELEMENTARY COURSES

"**Run, don't walk to get yourself copies. They are GOOD!** We won't be using anything else from here on in, if we have a choice."

"**We really like the experiments, and I'm not an experiment kind of gal.** It's the first science that we have gotten done consistently. I'm using it with 6th, 4th and 1st graders."

"I really enjoy the different experiments . . . I really appreciate the way you explain the lessons to us. Thank you because you always remind us that God made the awesome things that we have in this world."

"I just wanted to write and let you know how much my family has been enjoying your *Science in the Ancient World* book. The kids think it is great (I think I like it even more) and the science projects have all worked out beautifully. No hiccups whatsoever. This has to be the best science book I have chosen for the kids and look forward to the others in the future. I just wanted to let you know what a quality product you have produced and to keep up the great work."



## ELEMENTARY SERIES OVERVIEW

Each course in our hands-on, multilevel elementary science series introduces scientific concepts using history as a guide. Because each lesson is built around an activity or experiment, it is engaging for all K-6 students. In addition, there are three levels of review for each lesson, so the parent/teacher can choose the depth at which each student is expected to grasp the material. Each course contains roughly 90 hours of instruction, 35 of which are hands-on activities. The courses are made up of two books: the textbook with the instructional material and the Helps & Hints book with everything else the parent/teacher needs to know.



## SCIENCE IN THE BEGINNING



The beginning of history is given in the Bible's creation account, and this book uses the days of creation as a way of introducing a wide range of scientific concepts including the nature of light, energy conservation, the properties of air and water, introductory botany, our solar system, basic zoology, and some aspects of human anatomy and physiology. As the students learn about these scientific concepts, they are constantly

reminded of the Creator who fashioned the marvels they are studying.

Book: \$39  
Helps & Hints: \$5  
Set: \$44

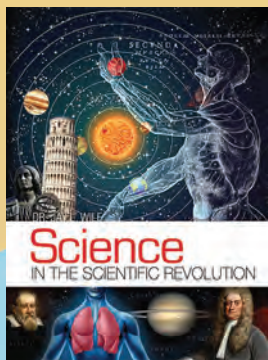
## SCIENCE IN THE ANCIENT WORLD



The second course in our series includes the scientific work of natural philosophers who lived from about 600 BC to the early AD 1500s. It covers a wide range of topics including human anatomy, medicine, optics, heliocentrism, geocentrism, sound, music, magnets, how steam is used to generate power, the motion of objects through a medium, combustion, levers, pulleys, plant growth, plant anatomy, tree ring dating, the atmosphere, astronomy, the basics of graphing, plastics, density, water flow, friction, and erosion.

Book: \$39  
Helps & Hints: \$5  
Set: \$44

## SCIENCE IN THE SCIENTIFIC REVOLUTION



The third book in our series includes the scientific works of natural philosophers from 1543 to the end of the 1600s. It discusses astronomy, human anatomy, medicine, botany, zoology, heliocentrism, geocentrism, gases, pressure, electricity, fossils, microbiology, binary numbers, gravity, conservation laws, and the laws of motion. Students learn that most of the great natural philosophers who lived during this time were devout Christians studying the world to learn more about God.

Book: \$39  
Helps & Hints: \$5  
Set: \$44

## SCIENCE IN THE AGE OF REASON



The fourth book in our series covers the scientific works of natural philosophers from the early 1700s to the early 1800s. It discusses a wide range of topics including astronomy, medicine, botany, zoology, chemistry, geology, human physiology, electricity, conservation laws, and weather. Students learn not only the science that was being discovered at the time, but also the beliefs of the natural philosophers who were discovering it. As a result, students can see how a person's worldview affects his or her scientific conclusions.

Book: \$39  
Helps & Hints: \$5  
Set: \$44

## SCIENCE IN THE INDUSTRIAL AGE



The fifth book in our series explores the scientific discoveries made from the early 1800s to the early 1900s. It covers a diverse set of topics, including fossils, chemical formulas, chemical reactions, colloids, atomic theory, electricity and magnetism, brain anatomy, digestion, respiration, eye anatomy, cells, germ theory, basic genetics, photography, the nature of light, basic thermodynamics, and astronomy. Because this time in history saw the development of Darwin's hypothesis, care is taken to discuss what Darwin got right about creation and what he got wrong. The reactions that other scientists of the day had to Darwin's work are also discussed.

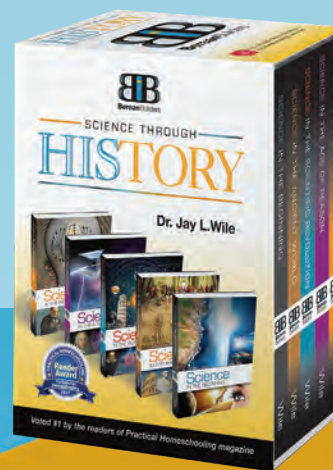
Book: \$39  
Helps & Hints: \$5  
Set: \$44

## SCIENCE THROUGH HISTORY

Creation to Marie Curie

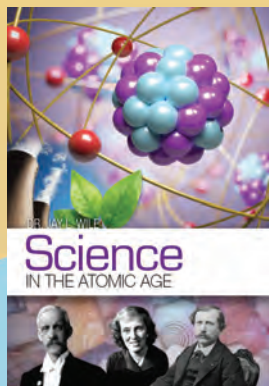
Follow science as it unfolds. This set includes all five textbooks with their helps & hints at a \$25 discount.

**Price \$195**





## SCIENCE IN THE ATOMIC AGE



This laboratory-based, middle school science course covers a wide range of topics of interest to modern scientists. It starts by describing our current understanding of atoms, molecules, the chemicals necessary for life, DNA, and cells. Topics are all discussed in the context of history, explaining how specific scientific advances led to the scientific explanations being taught. Students thus learn not only the current scientific understanding of these topics, but also how scientists reached that understanding.

The course then uses what the student has learned to describe the living world at all levels of organization. Students learn how cells work together to make tissues, how tissues come together to make organs, how organs form organ systems, how organ systems produce organisms, and how organisms relate to one another in populations and communities. The student then learns how communities interact with the physical environment to form ecosystems, which then form biomes. Along the way, students learn fascinating new discoveries such as the function of the human appendix, the human microbiome, and soft tissue found in dinosaur fossils. Throughout the course, God's design in nature is highlighted, and topics in the creation/evolution debate are discussed.

This course is focused on learning through experiments and other hands-on activities. While students do not do them every day they do science, they will have more days with an experiment or activity than days without one. Experiments and activities use household items or things sold in supermarkets, drug stores, or hardware stores. The course lays out what the student covers each day. Most students will need to work an average of about 30-45 minutes every weekday to cover the course in a year.

**Recorded class  
available (p. 16)**

Book: \$59  
Solutions & Tests: \$10  
Both books: \$69

## DISCOVERING DESIGN WITH EARTH SCIENCE



Most homeschooled students should be ready for this laboratory-based earth science course in 8th grade. Privately- and publicly-schooled students will be more comfortable with it in 9th grade. It covers the general properties of the earth's geosphere, hydrosphere, and atmosphere. Students begin by learning about all the sections of the geosphere (such as core, mantle, crust, etc.) in detail. When studying the earth's crust, they learn about minerals, rocks, and the rock cycle. Plate tectonics is then covered, leading to a discussion of seismic waves, earthquakes, and volcanoes. Students then learn about fossils, the sedimentary rocks in which they are found, and how uniformitarianism and catastrophism interpret them.

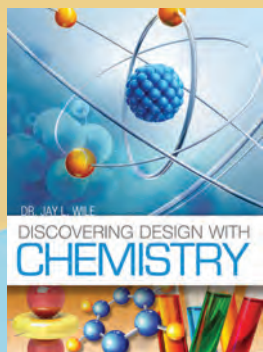
Students then learn about the hydrosphere, including the properties of water such as polarity, hydrogen bonds, and heat capacity. That leads to a discussion of the hydrologic cycle and residence time. Students then learn about the waves, currents, and tides in the ocean. They then study the ice and freshwater reservoirs on the earth. The last part of the hydrosphere covered is water in the air. After that comes a discussion of the atmosphere, including the composition of air, sections of the atmosphere, temperature gradients, and pollutants, and later weather. The course ends with two chapters on space, one about the solar system and one about the universe as a whole.

The course has roughly 55 hours of laboratory instruction. A kit is available with specific minerals, rocks, and fossils for students to do detailed experiments on the geosphere. These include mineral tests, rock analyses, fossil studies, density investigations, and magnetic property explorations. Students also get hands-on experience with waves, gases, wind, water purification, cloud formation, the Coriolis effect, precipitation, and acid/base interactions.

Book: \$59  
Solutions & Tests: \$10  
Both books: \$69



## DISCOVERING DESIGN WITH CHEMISTRY



A college-prep high school course that covers fundamental aspects of chemistry such as the classification of matter, atomic structure, spectroscopy, chemical bonding, molecular geometry, physical change, chemical change, stoichiometry, solutions, ideal gases, acid/base chemistry, reduction/oxidation reactions, thermochemistry, thermodynamics, kinetics, and chemical equilibrium. The course contains 46 experiments, and a lab kit is available. Class recordings of Dr. Wile teaching now available



Book: \$59  
Answer Key & Tests: \$10  
Both books: \$69  
Lab Kit: \$70

**"I am confident that this course will prepare my son above and beyond the expectation of a chemistry course in regular school."**

"I just wanted to let you know how much I have enjoyed *Discovering Design With Chemistry*. I am a 10th-grade home-schooled student, and I really learned so much through this book. **After taking this course**, I know I will definitely take Advanced Chemistry in my senior year, and **I will seriously consider studying chemistry in college as well. I found chemistry to be enjoyable and exciting through your work!** Thank you!



## STREAM RECORDED CLASSES

Get access to a full year of streaming recorded classes for

- *Science in the Atomic Age*
- *Discovering Design through Chemistry*
- *Apologia's Exploring Creation with Physics*

Courses are taught by Dr. Wile or Mrs. McKeeman. For full details, go to: **[bereanbuilders.com/ecom/vod](http://bereanbuilders.com/ecom/vod)**

One Year of Access: \$99

## FREE COURSE CONTENT ONLINE

Find student worksheets and instructional videos for *Discovering Design with Chemistry* on our website: **[bereanbuilders.com](http://bereanbuilders.com)**

## **EXPLORING CREATION WITH CHEMISTRY, 2ND EDITION OR DISCOVERING DESIGN WITH CHEMISTRY?**

by Dr. Jay L. Wile

I wrote *Exploring Creation with Chemistry, 2nd Edition* over 15 years ago. At the time, I honestly think it was the best chemistry course available to home educators. Today, I still consider it an excellent course, but changing times call for changing science courses. While none of the chemistry has changed over that time period, the availability of certain resources has. Also, after years of answering student questions, I was able to improve on the course.

The most important difference (in my opinion) between the two is in the laboratory component. The new course has significantly superior experiments because of a new generation of relatively inexpensive mass scales. The scale that comes with the new course is 20 times more precise than the one that came with the old course. This allows students to perform experiments very similar to those done at academically-rigorous high schools.

Similarly, certain things that were “household items” 15 years ago are hard to find today. For example, lye was important in several experiments in the old course, but it is now difficult to find. The “household items” you need for *Discovering Design* are easy to find now. Anything that isn’t easy to find is in the experiment supplies kit made for the course.

Another major difference is the order of topics. Over the years, I saw some students get frustrated in the second module of *Exploring Creation with Chemistry, 2nd Edition*, because it uses some detailed algebra. The skills are from algebra 1, but the idea of applying algebra to science is foreign to many students. In the new course, mathematics is applied in a more gradual fashion. The material found in Module 2 of the old course is in Chapter 13 of *Discovering Design*

*with Chemistry*. Students get used to the idea of using mathematics in chemistry before they reach detailed algebra applications.

There are some other differences between the two courses. Because I have been writing a historically-based elementary science course, I have learned more about the history of chemistry. I discuss the famous chemists who developed what the students are studying. Where appropriate, I highlight the Christian faith of those chemists. However, I never introduce scientists just because they are Christians. I discuss them because they relate directly to what the students are studying.

Finally, there is a bit more “whimsy” in this book. Over the years, students have commented about how they enjoyed the humor that I put in some of my courses. As a result, I decided to add a bit more humor without detracting from the chemistry being taught.

While *Exploring Creation with Chemistry, 2nd Edition* is still an excellent course for home educators, *Discovering Design with Chemistry* is clearly superior.

# build critical thinkers



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