Science

Nature Notebook
Nature Walks & Scouting
Geology Lessons
Geology Labs

Alveary

Alveary

Alt. Science Options

Science: Geology

GRADE(S): 11-12

About the Course

This course includes the following topic(s): Geology Lessons, Geology Labs, Nature Notebook: Grades 9-12, Nature Walks & Scouting: Grades 9-12

About Nature Notebook: Grades 9-12
Outdoor work is established or continued as a lifelong habit. Optional resources are provided in science lessons and on the Alveary bookshelf.

About Nature Walks & Scouting: Grades 9-12
Outdoor work is established or continued as a lifelong habit. Optional resources are provided in science lessons and on the Alveary bookshelf.

About Geology Lessons
An elective in Earth Science, Geology is a wonderful course for Alveary high school students who are interested in the history, theory, and methods of the field.

About Geology Labs
Labs/fieldwork are an essential part of science in which students engage with the Things they are reading about and practice the scientific method.

Placement & Combining Tips

Nature Notebook: Grades 9-12
Learners may be combined and follow their own interests.

Nature Walks & Scouting: Grades 9-12
Learners may follow their own interests or follow the plan of their local scouting troop or natural history club.

Geology Lessons
Due to the complexity of certain topics and the maturity required, this course is recommended for Grades 11-12.

Scheduling

GRADE	SCHEDULE INFO.	BOOKS
9-12	Nature Notebook: Grades 9-12 1+ time/week 20 min+	
9-12	Nature Walks & Scouting: Grades 9-12 1 time/week 30 min+	
11-12	Geology Lessons 5 times/week 45 min	101 American Geo-Sites You've Gotta See Annals of the Former World Roadside Geology/Geology Underfoot Series The Field Guide to Geology The Map That Changed the World The Story of the Earth in 25 Rocks
11-12	Geology Labs 1 time/week 60 min	

Sample Weekly View

Day 1	Day 2	Day 3	Day 4	Day 5

Science: Geology				
Geology Lessons Nature Walks & Scouting: Grades 9-12	Geology Lessons	Geology Lessons	Geology Lessons Nature Notebook: Grades 9-12	Geology Lessons Geology Labs

Planning & Prep

Permission to print for non-commercial use. See Alveary group use policy to use lessons in a group context.

LINKS: Click text or scan the QR code in the top corner of the lesson plan pages to view online resources associated with the lessons.

Responsibility for previewing all links rests with the teacher. All links were checked at the time of publication; however, websites change frequently and may contain objectionable content. Please report broken links by contacting us through our website.

Geology Lessons
☐ Carve out time to continue or establish the regular habit of spending time in nature, including the use of a nature journal, as appropriate.

☐ Obtain materials from the supply lists.

☐ Select a science book from the Alveary bookshelf for personal reading time, as appropriate.

☐ Bookmark or print Quick Links, as needed.

Books & Resources

For book rationales and purchase options, click the Book List link or scan the QR code below.
∞ View Book List Details

Science: Geology

Geology Lessons


101 American Geo-Sites You've Gotta See


Annals of the Former World


Roadside Geology/Geology Underfoot Series


The Field Guide to Geology


The Map That Changed the World


The Story of the Earth in 25 Rocks

Supplies

For supply list details and basic supplies helpful to have on hand, click the links or scan the QR code below.
∞ View Basic Supplies

(No Subject Supplies Assigned)

Quick Links

Click THIS text or scan the QR code for links.

Science: Geology

- Extra Helpings

Geology Lessons

- Nature Journal Connection
- Alveary Bookshelf
- Roadside Geology
- State by State Rockhound
- How to Find Rocks

Science: Geology

How To Approach

Introduce

• If starting a new book or a new topic in the book, then look at the title or a picture and take a moment to consider previous ideas and experiences.

• If continuing a previous reading, recap what was read previously. Often, the title of the book's section can help to draw out the main idea.

Read

• Read or do, as instructed in the lessons, making note of or flagging unfamiliar terms, interesting ideas, important dates, inspiring quotes, etc.

• Use supportive strategies and educational tools to reduce frustration and better engage the mind, as appropriate. These could include, but are not limited to, the use of eBooks, pictures, audio, read-aloud, buddy reading, colored reading strips, etc.

• As they read, learners record ideas in a notebook or binder using outlines, diagrams, graphic organizers, or other methods (or a combination of methods) that suit them. These recordings can be a helpful mechanism for remembering or a mini-narration to support understanding.

• If learners do not understand a word or concept, do not worry. Try reading over the passage again, studying a picture or diagram, connecting the idea to something from real life, or practicing chapter exercises. The lab/field work further supports major concepts from the text.

Narrate

• Process the ideas of the lesson by retelling, defining a concept, explaining the links in a chain of thought, etc. Do this orally or silently to yourself.

• Use words, pictures, outlines, etc.

• If a particular idea cannot be narrated, then read or examine the text again.

Discuss

• Consider with the teacher any thoughts, confusion, or concerns about the passage.

• If understanding is still uncertain, try rereading the passage or do some personal research on the topic.

Connect

• Follow any extra links, examine any sidebars in the text, or pursue additional reading, depending on student interest.

Science: Geology

How To Approach Labs

Introduce

• Regardless of how many days are required to complete a particular activity, every Science Lab has the same flow, which follows the scientific method.

• Relevant concept(s) are introduced in the text.

• Your notebook entry begins with the introductory/prelab narration, including relevant information that you have read or previously experienced, what you plan to do in the lab, and any hypothesis or anticipated result.

Lab Procedure

• Perform the procedure according to the instruction, recording in your notebook what you do as it happens. This can be a challenge, but is an extremely important skill.

• Record all data and observations in the lab notebook.

Analysis & Conclusions

• After all data is collected, analyze the results by considering how the data reflects the introduced concepts and whether the hypothesis is supported by the data.

• If the data and observations do not support the hypothesis, reflect on why and what further testing would be interesting or helpful.

Science: Geology

Click THIS text or scan the QR code for links.

Term 1

WEEK 1 ⬚ **45m Geology Lessons - Lesson 1**
How Geology Works

▯ Materials: The Field Guide to Geology

→ NOTE
If you have a rock and/or fossil kit, you may find it useful to keep it nearby throughout this course. As different materials are mentioned in your various books, you can reference these materials in your kit(s).

→ READ, NARRATE, & DISCUSS
Read about 12.5 pages per week. Narrate in a way that is helpful to you. Copy any diagrams or images that are helpful.

WEEK 1 ⬚ **45m Geology Lessons - Lesson 2**
Practical Interpretation

▯ Materials: Roadside Geology & Notebook

→ READ, NARRATE, & DISCUSS
Divide up your state or regional geology book so that you finish it this term. (If you are not able to finish it in one term, that is okay. You might choose to continue it next term or to leave off.) As you read, map your state or region, showing the interesting geological features. Plan field trips, if possible, to some of the sites. Record your observations and findings.

WEEK 1 ⬚ **45m Geology Lessons - Lesson 3**
Identification

→ INTRO
This is your day each week to prepare for your field studies using a mixture of resources provided for help, time for planning, and to spend time with the rocks you have found.

→ RESEARCH
Start at Gator Girl Rocks to begin your journey. The How to Find Rocks website is helpful, as well. You will want to read about the laws that pertain to rockhounding and visit the links under your state. Read about any local resources, and begin making a plan. You might want to visit local nature centers and museums, and ask about local geology guides or guided tours. You might want to track down any local clubs or groups to join. Ask local experts to see their collections. Ask them for help and direction in finding and identifying what is readily available locally. Ask for recommendations for identification guides that are appropriate for your area and that they have found helpful.
∞ Link: Gator Girl Rocks
∞ Link: How to Find Rocks
∞ Link: Rock Clubs by State

→ PREP FOR FIELD DAY
- Decide where you will explore on your field day.
- Check the weather and confirm when you will go.
- Collect any tools or materials that you might want to take with you.

WEEK 1 ⬚ **45m Geology Lessons - Lesson 4**
Geology Literature

▯ Materials: Annals of the Former World

→ INTRO
People say this book is the "Literature of Geology". See what you think by

- **PLAN WEEKLY**
⬚ nature walk - record observations
⬚ science free read

Term 1

the end of the term. McPhee travels across the country with various geologists, writing about the geological wonders along the way. He is writing for people who are not geologists, but that doesn't mean that the text is easy. Take in what you can and enjoy the views out the window.

This is a big book. Read Book 1 (Basin and Range), and then decide if you want to keep reading in order, read about places near you, or read about ones that you have never visited. Go at your own pace. If you read and narrate around 20 pages per week, you will get a good way through the book by the end of Term 2. Then you can decide if you want to finish as a free read or not.

→ READ, NARRATE, & DISCUSS
Be sure to look at the map on p.2-3 and read the Narrative Table of Contents before plunging into Chapter 1. Refer to the maps and charts in the text and at the end of the book while you are reading. You may want to look up unfamiliar terms as you read and make a collection of geological terms. Come up with an interesting way to narrate, perhaps an illustrated map or travel journal?
~ 20 pages

WEEK 1 ⬚ **45m Geology Lessons - Lesson 5**
Flex Day/Current Events

Materials: Selected geology literature, lab/field supplies, or internet access

→ INTRO
Use this flex day to finish the week's reading from any of your geology books (scheduled or by your own selection), continue any lab/field activities, or read some geology current events (linked in the lesson and in your Quick Links). In this way, you may use this day to tailor the course to be more literary by reading an additional text, such as The Map that Changed the World, or more active by pursuing a special study of interest.
∞ Article Link: Geology Current Events

WEEK 1 ⬚ **60m Geology Labs - Lesson 1**
→ OBSERVE
Begin observations in the field: use your field notebook, collect specimens when allowed, and take pictures where helpful. Begin building a rock, mineral, and/or fossil collection.

WEEK 2 ⬚ **45m Geology Lessons - Lesson 6**
How Geology Works

Materials: The Field Guide to Geology

→ READ, NARRATE, & DISCUSS
Read about 12.5 pages per week. Narrate in a way that is helpful to you. Copy any diagrams or images that are helpful.

• PLAN WEEKLY
⬚ nature walk - record observations
⬚ science free read

WEEK 2 ⬚ **45m Geology Lessons - Lesson 7**
Practical Interpretation

Materials: Roadside Geology & Notebook

→ READ, NARRATE, & DISCUSS
Continue reading. As you read, map your state or region, showing the interesting geological features. Plan field trips, if possible, to some of the sites. Record your observations and findings.

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Click THIS text or scan the QR code for links.

Term 1

WEEK 2 ⬚ **45m Geology Lessons - Lesson 8**
Identification

→ RESEARCH
Google your state's Geological Survey to see if they have any online resources that would be helpful to you, or check out the USGS maps online. If an office is nearby, they may have some maps or other resources you could pick up. Also, see if they will answer any of your questions about your local geology. If not, see if they know someone you could talk to.

∞ Website Link: USGS Online Resources

→ PREP FOR FIELD DAY
- Decide where you will explore on your field day.
- Check the weather and confirm when you will go.
- Collect any tools or materials that you might want to take with you.

WEEK 2 ⬚ **45m Geology Lessons - Lesson 9**
Geology Literature

Materials: Annals of the Former World

→ READ, NARRATE, & DISCUSS
~ 20 pages

WEEK 2 ⬚ **45m Geology Lessons - Lesson 10**
Flex Day/Current Events

Materials: Selected geology literature, lab/field supplies, or internet access

→ NOTE
Use this flex day to finish the week's reading from any of your geology books (scheduled or by your own selection), continue any lab/field activities, or read some geology current events (in your Quick Links). In this way, you may use this day to tailor the course to be more literary by reading an additional text, such as The Map that Changed the World, or more active by pursuing a special study of interest.

WEEK 2 ⬚ **60m Geology Labs - Lesson 2**
→ OBSERVE
Continue observations in the field. Sketch, describe, and document your local geology.

WEEK 3 ⬚ **45m Geology Lessons - Lesson 11**
How Geology Works

Materials: The Field Guide to Geology

→ READ, NARRATE, & DISCUSS
Read about 12.5 pages per week. Narrate in a way that is helpful to you. Copy any diagrams or images that are helpful.

- **PLAN WEEKLY**
⬚ nature walk - record observations
⬚ science free read

WEEK 3 ⬚ **45m Geology Lessons - Lesson 12**
Practical Interpretation

Materials: Roadside Geology & Notebook

→ READ, NARRATE, & DISCUSS
Continue reading. As you read, map your state or region, showing the interesting geological features. Plan field trips, if possible, to some of the

Science: Geology

Click THIS text or scan the QR code for links.

Term 1

sites. Record your observations and findings.

WEEK 3 ⬚ **45m Geology Lessons - Lesson 13**
Identification

→ RESEARCH
Spend some more time considering the various geological maps. They can take some getting used to, so be patient!

∞ Website Link: USGS Online Resources

→ PREP FOR FIELD DAY
- Decide where you will explore on your field day.
- Check the weather and confirm when you will go.
- Collect any tools or materials that you might want to take with you.

WEEK 3 ⬚ **45m Geology Lessons - Lesson 14**
Geology Literature

Materials: Annals of the Former World

→ READ, NARRATE, & DISCUSS
~ 20 pages

WEEK 3 ⬚ **45m Geology Lessons - Lesson 15**
Flex Day/Current Events

Materials: Selected geology literature, lab/field supplies, or internet access

→ NOTE
Use this flex day to finish the week's reading from any of your geology books (scheduled or by your own selection), continue any lab/field activities, or read some geology current events (in your Quick Links). In this way, you may use this day to tailor the course to be more literary by reading an additional text, such as The Map that Changed the World, or more active by pursuing a special study of interest.

WEEK 3 ⬚ **60m Geology Labs - Lesson 3**
→ OBSERVE
Continue observations in the field. Sketch, describe, and document your local geology.