Earth Science, 4th Edition
Lesson Plan Overview

Day(s)	Topic	Pages	Support Materials	Bible Integration
Unit 1: Introduction to Earth Science				
Chapter 1: The World of Earth Science				
1	1A Why Study Earth Science?	3–6	*Lab 1A: Feeding the World Through Earth Science	This chapter is critical for shaping your students' worldviews this year. Open your study of the book by focusing on three big topics: using science to obey the Creation Mandate, to glorify God, and to help other people. Have students discuss how Christianity does not just change how a person acts but also how he thinks.
2	1B A Christian Approach to Earth Science	6–12		Lead students to define *worldview*, and have them explain how it is part of doing science. Stimulate a discussion that contrasts secular and Christian worldviews. Guide students through an analysis of model making as the work of science. Expose students to other views of origins that claim to be biblical.
3	Lab 1B: Finding the Standard Carrot Lab 1C: Insufficient Data			
4	1C Earth Science in Action	13–18		Show how historical science is especially affected by worldview. Inspire students to consider whether God could use them to help people, exercise dominion, and glorify God through a life-long vocation in earth science.
5	Chapter 1 Review			
6	Chapter 1 Test			
Chapter 2: Matter, Forces, and Energy				

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Day(s)	Topic	Pages	Support Materials	Bible Integration
7	2A Matter	23–30		Highlight the way worldview affects even how people view things like matter, forces, and energy by discussing the Big Bang experiment and dark matter. Expose students to other views of origins that claim to be biblical.
8	Lab 2A: Measuring Matter			
9	Lab 2B: Cooling Down			
10	2B Forces and Matter	30–33		Discuss with your students how insufficient gravity from visible matter in the universe leads secular scientists to propose the existence of dark matter for the gravitational origin of astronomical structures.
11	2C Energy and Matter	34–38		Help students think through how the law of conservation of energy relates to Creation and to an orderly universe.
12	2D Composition of Matter	39–44		
13	Chapter 2 Review			
14	Chapter 2 Test			
Chapter 3: Maps and Mapping				
15	3A Why Do We Use Maps?	49–58		Begin your discussion of maps by using the chapter opener on the Ghost Map to show how mapping can be used to help people. Expose students to other views of origins that claim to be biblical.
16	Lab 3A: Where Am I?			
17	3B Types of Maps	58–63		
18	Lab 3B: Measuring the Earth			

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Day(s)	Topic	Pages	Support Materials	Bible Integration
19	3C Maps and GIS	64–68	*Lab 3D: What Time Is It?	Stimulate discussion from students that explores how maps are crucial to exercising dominion on God's Earth. Highlight dominion opportunities for students to serve God as a cartographer. Explore with students the Life Connection on how GIS and mapping software can help people through disaster relief using the Haitian earthquake in 2010 as an example.
20	Lab 3C: The Best Vacation			
21	Chapter 3 Review			
22	Chapter 3 Test			
Unit 2: The Restless Earth				
Chapter 4: Geology—The Earth Speaks				
23	4A The Earth, a Special Place	75–81		Inspire students to think about Earth as a special place by highlighting the chapter opener on the *Apollo 8* Christmas Eve broadcast. This entire section focuses on evidences for God's design in our Earth—a place designed for life. Expose students to other views of origins that claim to be biblical.
24	Lab 4A: Catching Some Rays			
25	4B Geology, the Science	81–84		Help students analyze and contrast both secular and creationary geology and the assumptions of each.
26	4C The Earth's Structure	85–87	*Lab 4B: Listening to the Earth	Point out that even something as basic as theories for the source of the earth's magnetic field depend on one's presuppositions.
27	4D The Earth's Natural Resources	88–91		Conduct the discussion of Earth's resources in the context of God's provision for man and his responsibility to wisely manage resources.
28	Chapter 4 Review			

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Day(s)	Topic	Pages	Support Materials	Bible Integration
29	Chapter 4 Test			
Chapter 5: The Changing Earth				
30	5A Origin of the Earth	95–99		This is the key worldview chapter for Unit 2. Begin with a sweeping survey of both secular and creationary views of the earth's history by introducing the mystery of the wooly mammoths of Siberia. Be sure to point out the worldview cartoon in this section. Expose students to other views of origins that claim to be biblical. Help students analyze and contrast both secular and creationary views of the earth's formation.
31–32	5B A History of Change	100–112	*Lab 5A: Where Do Those Dates Come From?	Help students analyze and contrast both secular and creationary views of how the earth changed after its formation. Emphasize the biblical chronologies of the pre-Flood period and the timeline of the Flood itself. Students may not be familiar with these concepts, and they are essential to inferring a young earth from Scripture.
33	Lab 5B: What's Your Lifespan?			
34	5C Tectonics: An Agent of Change	113–119		Help students analyze and contrast both secular and creationary views of how tectonic forces could have shaped Earth's surface. Inspire students to consider a career in geology by featuring a modern Christian geologist, John Baumgardner.
35	Lab 5C: Going with the Flow			
36	Chapter 5 Review			
37	Chapter 5 Test			

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Day(s)	Topic	Pages	Support Materials	Bible Integration
Chapter 6: Earthquakes				
38	6A Tectonic Forces	123–126		Explore how using seismometers and studying earth waves can help people to issue earthquake warnings. Expose students to other views of origins that claim to be biblical.
39	Lab 6A: Quake Watcher			
40	6B Faults and Joints	126–130		
41	6C Earth Waves and Seismology	130–133	*Lab 6B: Where Did It Start?	Highlight dominion opportunities for students to serve God as a seismologist. In the facet, “The Overthrust Controversy,” students grapple with reversed strata that contradict old-earth geology presuppositions.
42	6D Effects of Earthquakes	135–141	*Lab 6C: All Quiet?	Conduct a discussion about why Christians should be interested in helping underdeveloped countries build enough economic wealth to help reduce the risks of earthquake hazards.
43	Chapter 6 Review			
44	Chapter 6 Test			
Chapter 7: Mountains and Hills				
45	7A: What Is a Mountain?	145–150		
46	Lab 7A: How High?			
47	Lab 7B: Mapping a Modeled Mountain			
48	7B: Tectonic Mountains	150–156		
49	7C: Non-Tectonic Hills and Mountains	156–161	*Lab 7C: Staying on Top of It	Have students compare and contrast the secular view of mountains with the young-earth view. Be sure to point out the worldview cartoon on page 159.
50	Chapter 7 Review			
51	Chapter 7 Test			

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Day(s)	Topic	Pages	Support Materials	Bible Integration
Chapter 8: Volcanoes and Volcanism				
52	8A: Fire Mountains	167–174	*Lab 8A: Hot Spots	Begin the chapter by stimulating students to consider studying volcanoes as a way to exercise dominion and help other people. Encourage students to think of volcanoes, flood basalts, and the pervasiveness of both in the world from the perspective of the Flood and its devastating effects.
53	8B: Classifying Volcanoes	175–180	*Lab 8B: Volcanic Visits	Keep careers in front of students by highlighting the career box on volcanologists and their dominion opportunities.
54	8C: Intrusive Volcanism	180–187		Help students consider the potential and economic risks of geothermal energy as a renewable energy source in the context of exercising dominion.
55	Chapter 8 Review			
56	Chapter 8 Test			
Unit 3: Earth's Rocky Materials				
Chapter 9: Minerals and Ores				
57	9A Describing Minerals	193–195		Present this chapter on minerals as a demonstration of the opportunity to exercise dominion over God's earth by maximizing its usefulness.
58	9B Identifying Minerals	195–202		
59	Lab 9A: Crafting a Crystal			
60	Lab 9B: Unmasking Mysterious Minerals			
61	9C Minerals as Resources	203–211		End this chapter by highlighting positive and negative aspects of using minerals to exercise dominion.
62	Chapter 9 Review			
63	Chapter 9 Test			
Chapter 10: Rocks				
64	10A Classifying Rocks	215–217		Place this chapter into the context of the clash of old- and young-earth views of rocks and their origins.

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65	10B Igneous Rocks	217–221		Encourage students to deduce the maximum age of most igneous features in view of a global, catastrophic flood.
66	10C Sedimentary Rocks	221–227		Keep science careers and their opportunities for dominion before students with the career box, “Serving God as a Sedimentologist.”
67	10D Metamorphic Rocks	228–232		Discuss the formation of certain kinds of rocks as a possible result of the Flood in the facet, “Hydrothermal Fluids.”
68	Lab 10A: Rock-Solid Science			
69	10E The “Rock Cycle”	232–234	*Lab 10B: Geological Speed Bumps	Help students contrast old- and young-earth views of the rock cycle, emphasized by the worldview cartoon on page 233.
70	Chapter 10 Review			
71	Chapter 10 Test			
Chapter 11: Fossils				
72	11A Fossilization	239–246	*Lab 11A: How Old Is It?	This key worldview chapter for Unit 3 is a contrast of worldviews. Set the stage by featuring the opener on the La Brea Tar Pits of Los Angeles. Expose students to the reasoning behind dating fossils in rocks and dating rocks in which similar fossils are found.
73	11B Paleontology	246–253	*Lab 11B: Trilobite-ology	Arouse students’ interest by discussing dinosaurs and the old- and young-earth views of where they came from and how they disappeared. Put the pressure on. Confront students with the question on page 251, which forces them to deal with the Bible’s inerrancy in the face of conflicting science.
74	11C Fossil Fuels	254–262		Students likely have never heard of alternative views for the origin of oil and natural gas. Analyze these views. Discuss them with your students.

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Day(s)	Topic	Pages	Support Materials	Bible Integration
75	Chapter 11 Review			
76	Chapter 11 Test			
Chapter 12: Weathering, Erosion, and Soils				
77	12A Weathering	267–270		
78	Lab 12A: All Worn Out			
79	12B Erosion and Deposition	270–281	*Lab 12B: Glacier Trek	• Get students to think of managing erosion in the context of dominion. • Trigger some creative thought by asking the question on page 275, which relates Creation, the Fall, and erosion. • The box at the bottom of page 278 gets students to begin thinking about climate change. We will continue this line of thought in Chapter 21 in the context of a Christian worldview.
80	12C Soil	282–288		• Discuss soil as a God-given resource that needs to be conserved and used wisely. Continue this discussion by featuring the career box on “Serving God as a Pedologist.”
81	Lab 12C: Getting Muddy			
82	Chapter 12 Review			
83	Chapter 12 Test			
Unit 4: The Water World				
Chapter 13: Oceans and Seas				
84	13A Ocean Basins	295–305		• Start the unit on Earth’s water by discussing how our greatest need for water is for drinking. • Begin whetting students’ appetites for a discussion of environmentalism in Chapter 21 by discussing the life connection on coral reefs and man’s responsibility to care for God’s world.
85	13B Seawater	306–312		• Help students tackle the question of where seawater came from, how it has changed, and how animals adapted to these changes within a Christian worldview of Earth’s history.

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Day(s)	Topic	Pages	Support Materials	Bible Integration
86	Lab 13A: Too Salty?			
87	Lab 13B: Low Salt			
88	13C Ocean Environments	312–317		End the chapter by helping students see how the oceans are part of God's design and provision for a life-filled earth.
89	Chapter 13 Review			
90	Chapter 13 Test			
Chapter 14: Ocean Motions				
91	14A Tides	321–327		Set the stage for this chapter on ocean motion by having students suggest ways we can use oceans. Discuss the Great Pacific Garbage Patch as an example of how we have misused the oceans.
92	14B Currents	327–335		
93	Lab 14A: Current Events			
94	14C Waves	335–342		Beach conservation is another aspect of managing God's world. Have your students research how beach erosion can be controlled.
95	Lab 14B: Making Waves			
96	Chapter 14 Review			
97	Chapter 14 Test			
Chapter 15: Ocean Exploration				
98	15A The History of Ocean Exploration	347–351		Get your students excited about studying the oceans. Expose them to the mysteries, hazards, and potential for dominion in ocean exploration. Continue the discussion by featuring the career box on oceanographers on page 347.
99	15B Oceanography in Action	352–359	*Lab 15A: Taking a Bath	
100	15C Entering an Alien World	359–369		Your students may enjoy a spirited discussion of the benefits and hazards of manned ocean exploration, which are covered on page 365.

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Day(s)	Topic	Pages	Support Materials	Bible Integration
101	Lab 15B: Dive, Dive!			
102	Chapter 15 Review			
103	Chapter 15 Test			
Chapter 16: Surface Waters				
104	16A Streams	373–380		Begin this chapter on surface waters by telling the story of the Three Gorges Dam. Use this to open up the study of surface waters in the context of exercising wise dominion.
105	16B Lakes and Ponds	381–390	*Lab 16A: Surface Impressions	Discuss the origin and age of lakes within a Flood-geology framework.
106	Lab 16B: Being *Too* Green?			
107	Chapter 16 Review			
108	Chapter 16 Test			
Chapter 17: Groundwater				
109	17A Underground Reservoirs	395–401		This is the key worldview chapter for Unit 4. Put this chapter in perspective by helping students see how precious groundwater is and how important it is to use it carefully. Help them see God's provision for life on Earth.
110	Lab 17A: Perking *Down*			
111	17B Groundwater Chemistry	402–404		Expose students to the properties of water that make it unique, God's special design.
112	Lab 17B: Taking the Waters			
113	17C Water as a Resource	404–408		Lead a student discussion from a Christian worldview on how water can be used and why it should be conserved.
114	17D Groundwater Landforms	408–418		Get students to see solution caves as likely consequences of the biblical Flood. When they visit large caves, they should think, "Flood!" Keep opportunities before students to obey the Creation Mandate with earth science by featuring the career box on speleologists.

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Day(s)	Topic	Pages	Support Materials	Bible Integration
115	Chapter 17 Review			
116	Chapter 17 Test			
Unit 5: The Atmosphere				
Chapter 18: Earth's Atmosphere				
117	18A What Is the Atmosphere?	425–434		• Get students to care about pollution and the atmosphere by featuring the chapter opener on air pollution. • Guide students in contrasting the old- and young-earth stories of the origin of the atmosphere. You may want to discuss the assumptions of the Urey-Miller experiment. • You may choose to discuss the Canopy theory with your students in this chapter or in Chapter 21. • Continue to expose students to opportunities to serve God in earth science with the biographical box on Larry Vardiman, a modern-day Christian atmosphere scientist.
118	Lab 18A: Weighty Matters			
119	18B Special Zones in the Atmosphere	435–439		• Approach this section with a mind focused on God's design of the atmosphere and provision for a life-filled earth. • Develop some critical thinking in your students by exposing them to what scientists are saying today about the ozone hole. Help them reflect on the nature of valid science and the promises of God's Word.
120	18C Energy in the Atmosphere	439–442		
121	Lab 18B: Warming Up			
122	Chapter 18 Review			
123	Chapter 18 Test			

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Day(s)	Topic	Pages	Support Materials	Bible Integration
Chapter 19: Weather				
124	19A What Is Weather?	447–452		Studying weather is all about dominion, whether it involves putting up wind turbines or predicting the weather. Help your students to see the chapter from this perspective.
125	19B Winds	453–459		
126	Lab 19A: On the Wings of the Wind			
127	19C: Clouds and Precipitation	460–468		Remind students that classification, one of the important functions of science, is an essential part of exercising biblical dominion.
128	Lab 19B: Psyched Out			
129	Chapter 19 Review			
130	Chapter 19 Test			
Chapter 20: Storms and Weather Prediction				
131	20A Air Masses and Fronts	473–478		
132–3	20B Severe Weather	479–492	*Lab 20A: Tornado Chasing	Approach this section from the perspective of understanding severe weather to prevent loss of life and property and to love my neighbor.
134	Lab 20B: Hurricane Hunting			
135	20C Weather Forecasts	492–496		Feature the career box on “Serving God as a Research Meteorologist.”
136	Chapter 20 Review			
137	Chapter 20 Test			
Chapter 21: Climate and Climate Change				
138	21A What Is Climate?	501–506		This is the key worldview chapter for Unit 5. Begin by discussing environmentalism in relation to biblical dominion. Your students may be quite familiar with the Canopy theory. Take some time to analyze it from a scientific and biblical viewpoint.

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Day(s)	Topic	Pages	Support Materials	Bible Integration
139	21B Climate Zones	507–511		Feature the career box on “Serving God as a Climatologist.” Students need to hear about science careers and how to prepare for them.
140	21C Climate Change	511–522		This section has the potential to develop important critical thinking skills in students. Expose them to a discussion of climate change from a biblical worldview.
141	Lab 21A: Too Complex			
142-3	Lab 21B: Models that Mislead			
144	Chapter 21 Review			
145	Chapter 21 Test			
Unit 6: The Heavens				
Chapter 22: The Sun, Moon, and Earth System				
146	22A The Sun	529–536		Start the unit on the heavens by discussing how we exercise dominion by using them.
147	Lab 22A: Time Exposure (see lab instructions for scheduling suggestion)			
148	Lab 22B: The Giant Clock			
149	22B The Moon	537–543		Help your students analyze the secular theories for the origin of the moon. Remind them that the moon began fulfilling its purposes as soon as it was created.
150	22C The Sun, Moon, and Earth as a System	543–553		Remind your students that without the continual interaction of the sun, moon, and earth as God intended, our lives would be very different.
151	Lab 22C: Mastering the Moon			
152	Chapter 22 Review			
153	Chapter 22 Test			

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Day(s)	Topic	Pages	Support Materials	Bible Integration
Chapter 23: Our Solar System				
154	23A Modeling the Solar System	557–563		This section helps students grasp how modeling is used in science and how that makes science different from the Bible. Science is about workability, but the Bible establishes what is true.
155	Lab 23A: Being a Galileo (see lab instructions for scheduling suggestion)			
156	Lab 23B: Elliptical Excursions			
157	Lab 23C: Running Backward			
158	23B The Planets	563–574		Be sure to feature the career box on "Serving God as an Astrogeologist."
159	23C Nonplanetary Objects	574–580		
160	Chapter 23 Review			
161	Chapter 23 Test			
Chapter 24: Stars, Galaxies, and the Universe				
162–3	24A Stars	585–597		This is the key worldview chapter for Unit 6. Help students get the perspective of their place in the universe by discussing the opener on the Hubble Space Telescope. We human beings may be seemingly insignificant, but we are important to God.
164	Lab 24A: Sky Map			
165	Lab 24B: Going the Distance			
166	24B Gas to Galaxies	597–603		Draw students' attention to the facet on Danny Faulkner, a rare breed as a Christian astronomer.
167	24C The Universe	603–613		Help students tackle secular cosmology and the questions about the universe that still need answers. Bolster their faith in God's Word in a field that is largely philosophical. The most important part of this section is in the last few paragraphs. Be sure your students are clear about which questions in cosmology can have no definite answers.

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Day(s)	Topic	Pages	Support Materials	Bible Integration
168	Chapter 24 Review			
169	Chapter 24 Test			
Chapter 25: Space Exploration				
170	25A Telescopes	617–622		“Blast off” this chapter by covering the chapter opener. This helps students get excited about how space exploration helps us to exercise dominion and to love people through technology we use every day.
171	Lab 25A: Scoping the Skies			
172	25B Rockets, Satellites, and Probes	623–632		Be sure to feature the career box on “Serving God as an Aerospace Engineer.”
173	Lab 25B: Reaction Time			
174	Lab 25C: Liftoff!			
175	25C Manned Space Exploration	632–641		Conclude this book by conducting a student discussion that deals with the benefits and risks of space exploration, and how the right balance of these helps us exercise dominion and love our neighbor.
176	Chapter 25 Review			
177	Chapter 25 Test			

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