



Curriculum

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About the Author



Dr. Danny Faulkner graduated from Bob Jones University with a degree in mathematics. He received a master's degree in physics from Clemson University and a master's degree and PhD, both in astronomy, from Indiana University. Dr. Faulkner is Distinguished Professor Emeritus at the University of South Carolina Lancaster, where he taught astronomy and physics for more than a quarter century. Since 2013, Dr. Faulkner has been the staff astronomer at Answers in Genesis. The author of more than a half dozen books, Dr. Faulkner frequently writes and speaks about astronomy and creation. He continues to research and publish on eclipsing binary stars in professional astronomical literature.



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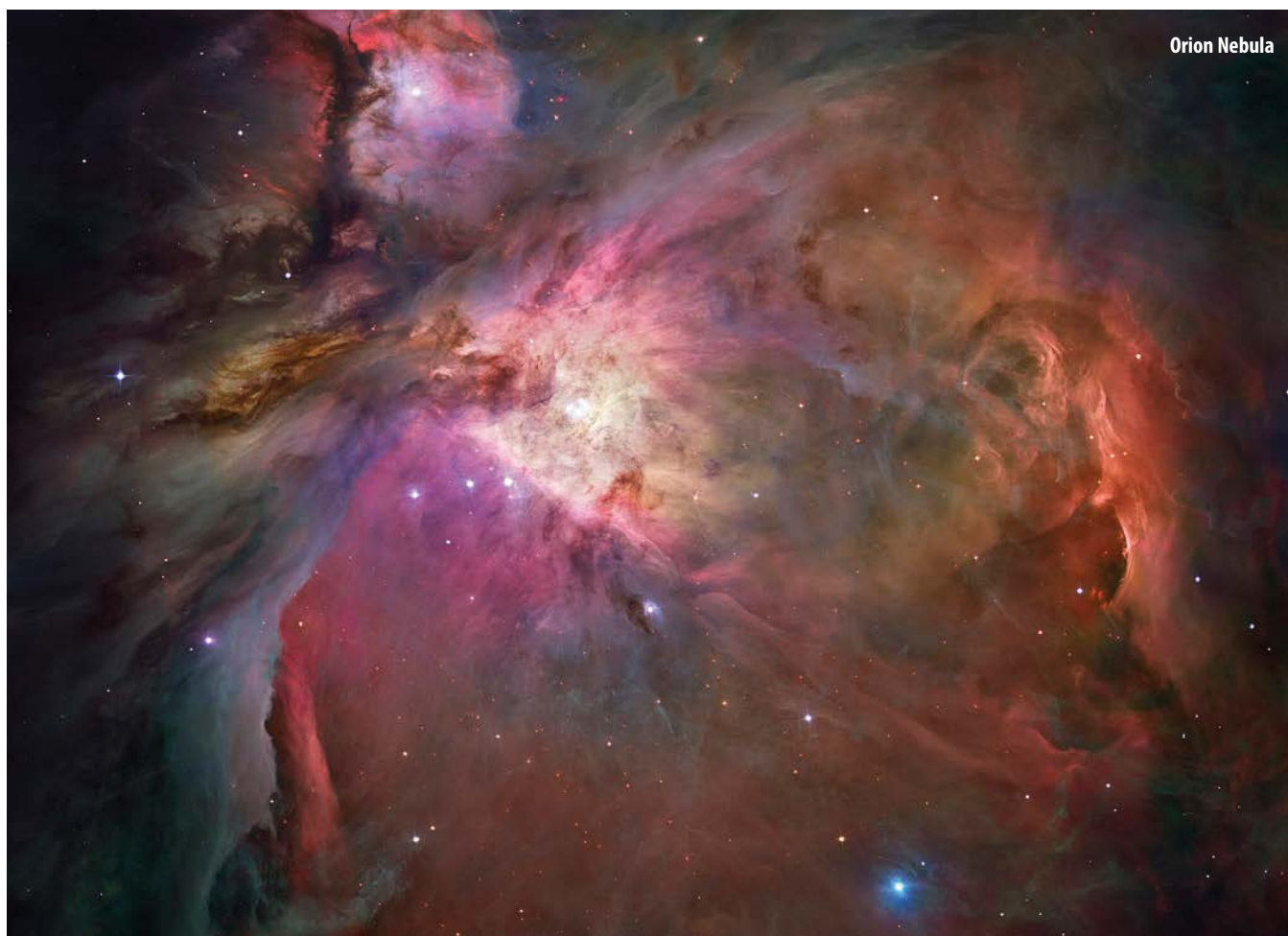
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Carina Nebula

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Course Description: This is an advanced high school-level course covering the concepts of astronomy, astrophysics, and cosmology. This course discusses how the universe began, how it works, and how things like black holes, dark matter, and gravity are used by God to sustain His creation. Many people have lost sight of the true purpose of the stars and have worshipped the “creature more than the Creator” (Romans 1:25). This study brings a focus back to God’s great purpose and design.

Genesis 1:1 tells us that God created the heavens, along with the earth, in the beginning. God made the sun, moon, and stars on the fourth day of creation. The study of the heavens is the science that the Bible most explicitly mentions. Psalm 19:1 reveals that a purpose for the heavens is that they declare God’s glory. Or consider Psalm 147:4, which states that God knows the number of the stars and calls them all by name. It is impossible for man to count the stars, but conservative estimates place their total at more than several hundred billion billion. It is obvious that only an omnipotent and omniscient God could create and then know how many stars there are, but on top of that, He has unique names for each one!

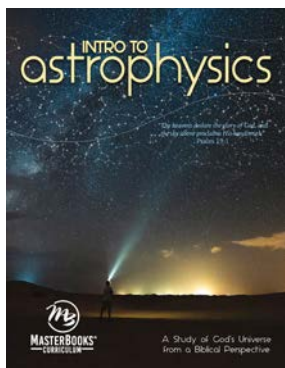
Features

	Target Level	Designed for grades 11–12 1 Science Credit
	Flexible 180-Day Schedule	Approximately 60 minutes per lesson, five days a week
	Open & Go	Daily Schedule, Project Supply List, Answer Keys
	Engaging Application	Exercises, Projects, Worldview in Focus Days
	Assessments	Lesson Quizzes, Cumulative Tests

Objectives

- ▶ Understand the nature of astronomy and astrophysics, focusing on the history of the universe
- ▶ Discover details about our solar system, including the sun, the terrestrial planets, and the Jovian planets
- ▶ Formulate a foundational understanding of the nature of galaxies, black holes, and dark matter
- ▶ Contrast various theories based on evolutionary scientific perspectives with science based on biblical truth
- ▶ Develop a creationist perspective of the heavens, involving properties of stars, stellar structure, and more

Prerequisite: Taking *Elementary Algebra* from Master Books and an introductory course in astronomy prior to this course is highly recommended. *Intro to Astronomy* or *Survey of Astronomy* from Master Books would satisfy the astronomy requirement.



Companion Book

Course Introduction

Many think that facts and theories are opposites. It is important to realize facts and theories are two very different things. We use facts to support or oppose theories. We use theories in all areas of human endeavor. For instance, some schools offer a course in music theory. Music theory is the study of the basics of music, such as meter, timing, pitch, and dynamics. We use all these elements and more to create music. Far from being an untrue statement about music, music theory is a well-established way of studying music. Economists have different theories, or systems of belief, about how the economy works. Different theological systems or different methods of Bible study are theories. The most important aspect of all of these is that they work. A good theory should be useful. The same is true with scientific theories.

Since this course is intended for upper-level high school grades, students may have varying degrees of experience with science. Students should have knowledge of the scientific method. If students have had previous science courses, then you may wish to refresh their memories quickly and then move on. The same is true of scientific notation and significant figures. If students are well versed in these topics, then there is no need to spend much time on it. However, if a student is weak in working with numbers scientifically, then you must take the time to cover these topics adequately. Since subsequent lessons do not include a lot of quantitative information and handling of numbers, these topics were relegated to a feature.

Be aware of what a bias is. Note that biases are not necessarily bad. We should not be ashamed of our biblical bias. Objectivity is not necessarily lost if we have a bias. It is more important that we acknowledge that we have a bias so that we can deal with it accordingly. Those who believe in evolution and naturalism generally deny that they have any bias. This does not allow them to be objective in certain scientific matters.

Evaluations: Note that every lesson from the student book corresponds to three to four worksheets and then a quiz based on the worksheet information. Students should take time to study for the quiz by reading back over each worksheet for that particular lesson. After a period of four to six lessons, a test is given. This test will cover all the information from those lessons.

Biblical Answers: Students are sometimes asked to write out certain biblical passages. The answer key provides the version used within the student text, but a student may certainly write the verse in whatever version is preferred by the student or teacher. Grading these should be done according to the version used.

Astrophysics: An Introduction The word “astronomy” comes from two Greek words — one that means “star” and the other that means “to arrange.” Thus, very literally, the word “astronomy” means “to arrange the stars.” Astronomy is a study of the planets, stars, comets, and other objects found throughout the universe. It measures positions, distances, luminosities, and the natures of various objects in space.

This text focuses on what is known as astrophysics. Astrophysics considers what is learned in astronomy, yet goes a little deeper into how the universe began, how it works, and how things like black holes, dark matter, and gravity are used by God to sustain His creation. Astrophysics utilizes the information obtained from physics and chemistry to propose theories behind the origins of objects we know about and discover, as well as their purpose. This study will also include discussions on cosmology, which studies the chronology and nature of the universe as a whole.

The study of the planets and stars has a powerful purpose – its purpose is to bring us closer to God. Psalm 19:1 tells us that the heavens above declare God’s glory. Psalm 8:2-8 goes further in pointing out that even though we are very tiny compared to the universe, we are very special in God’s sight. Romans 1:18-20 builds upon this, arguing that the world around us demonstrates that God exists and is very powerful, so that men are without excuse.

Most people readily agree that there is much beauty to be found in the night sky. In this course, you will learn a bit about how chemistry and physics play a part in astronomical studies. But if one’s understanding ends there, then one has entirely missed the point. God has created a wondrous creation, but sin has tainted that world. The study of the universe ought to bring people to understand these facts and bring them to repentance and salvation through God’s only Son, Jesus Christ.





Image of the Milky Way from *The Heavens: A Different View* by Dr. Faulkner.



General Supplies

- Pen or pencil

Project Supplies

▶ Quarter 1

Day 19 Project

- 1 – 6-inch Styrofoam ball
- 1 – small can of black paint (that will not dissolve the foam)
- 1 – small brush

▶ Quarter 2

Day 68 Project

- 28 – sketching pages
 - 1 – sketching pencil
- or
- 1 – phone or camera to take pictures of the moon's phases
- and
- 1 – telescope

▶ Quarter 2

Day 87 Project

- 1 – Night sky app
- and
- 1 – Wooly Willy

▶ Quarter 3

Day 125 Project

- 1 – poster board
 - 10 – various colored sketching pencils or markers
- or
- 1 – notepad to record observations
 - 1 – pencil or pen



Intro to Astrophysics Daily Schedule



Calendar		Assignment	Due Date	✓	Grade
► First Semester-First Quarter					
Week 1	Day 1	<i>Intro to Astrophysics Student Book</i> • Lesson 1 • Pages 4–9 (to Scriptural Perspective) • (ITA)			
	Day 2	<i>Intro to Astrophysics Teacher Guide</i> • Exercise 1 • Page 21 • (TG)			
	Day 3	Lesson 1 • Pages 9–14 (from Scriptural Perspective) • (ITA)			
	Day 4	Exercise 2 • Pages 23–24 • (TG)			
	Day 5	Lesson 1 • Pages 15–18 • (ITA)			
Week 2	Day 6	Exercise 3 • Pages 25–26 • (TG)			
	Day 7	Lesson 1 • Pages 19–22 • (ITA)			
	Day 8	Exercise 4 • Page 27 • (TG)			
	Day 9	Quiz 1 Lesson 1 • Page 185 • (TG)			
	Day 10	Lesson 2 • Pages 23–26 • (ITA)			
Week 3	Day 11	Exercise 1 • Pages 29–30 • (TG)			
	Day 12	Lesson 2 • Pages 27–31 • (ITA)			
	Day 13	Exercise 2 • Pages 31–32 • (TG)			
	Day 14	Lesson 2 • Pages 32–36 • (ITA)			
	Day 15	Exercise 3 • Pages 33–34 • (TG)			
Week 4	Day 16	Lesson 2 • Pages 37–42 • (ITA)			
	Day 17	Exercise 4 • Page 35 • (TG)			
	Day 18	Quiz 2 Lesson 2 • Page 187 • (TG)			
	Day 19	Project 1 • Page 37 • (TG)			
	Day 20	Lesson 3 • Pages 43–47 • (ITA)			
Week 5	Day 21	Exercise 1 • Page 39 • (TG)			
	Day 22	Lesson 3 • Pages 48–52 • (ITA)			
	Day 23	Exercise 2 • Pages 41–42 • (TG)			
	Day 24	Lesson 3 • Pages 53–58 (to last full paragraph) • (ITA)			
	Day 25	Exercise 3 • Pages 43–44 • (TG)			
Week 6	Day 26	Lesson 3 • Pages 58–64 (from last full paragraph) • (ITA)			
	Day 27	Exercise 4 • Pages 45–46 • (TG)			
	Day 28	Quiz 3 Lesson 3 • Page 189 • (TG)			
	Day 29	Lesson 4 • Pages 65–70 • (ITA)			
	Day 30	Exercise 1 • Pages 47–48 • (TG)			
Week 7	Day 31	Lesson 4 • Pages 71–74 • (ITA)			
	Day 32	Exercise 2 • Page 49 • (TG)			
	Day 33	Lesson 4 • Pages 75–78 • (ITA)			
	Day 34	Exercise 3 • Page 51 • (TG)			
	Day 35	Lesson 4 • Pages 79–82 • (ITA)			

Calendar		Assignment	Due Date	✓	Grade
Week 8	Day 36	Exercise 4 • Pages 53–54 • (TG)			
	Day 37	Quiz 4 Lesson 4 • Page 191 • (TG)			
	Day 38	Worldview in Focus Day • Pages 55–56			
	Day 39	Study for Test 1			
	Day 40	Test 1 Lessons 1–4 • Page 223 • (TG)			
Week 9	Day 41	Lesson 5 • Pages 83–88 • (ITA)			
	Day 42	Exercise 1 • Page 57 • (TG)			
	Day 43	Lesson 5 • Pages 89–94 (to the last full paragraph) • (ITA)			
	Day 44	Exercise 2 • Pages 59–60 • (TG)			
	Day 45	Lesson 5 • Pages 94–100 (from last full paragraph) • (ITA)			

Intro to Astrophysics Daily Schedule



Calendar	Assignment	Due Date	✓	Grade
► First Semester-Second Quarter				
Week 1	Day 46	Exercise 3 • Pages 61–62 • (TG)		
	Day 47	Lesson 5 • Pages 101–106 • (ITA)		
	Day 48	Exercise 4 • Pages 63–64 • (TG)		
	Day 49	Quiz 5 Lesson 5 • Page 193 • (TG)		
	Day 50	Lesson 6 • Pages 107–112 (to end of top paragraph) • (ITA)		
Week 2	Day 51	Exercise 1 • Pages 65–66 • (TG)		
	Day 52	Lesson 6 • Pages 112–116 (from end of top paragraph) • (ITA)		
	Day 53	Exercise 2 • Pages 67–68 • (TG)		
	Day 54	Lesson 6 • Pages 117–121 • (ITA)		
	Day 55	Exercise 3 • Pages 69–70 • (TG)		
Week 3	Day 56	Lesson 6 • Pages 122–126 • (ITA)		
	Day 57	Exercise 4 • Page 71 • (TG)		
	Day 58	Quiz 6 Lesson 6 • Page 195 • (TG)		
	Day 59	Lesson 7 • Pages 127–132 • (ITA)		
	Day 60	Exercise 1 • Page 73 • (TG)		
Week 4	Day 61	Lesson 7 • Pages 133–137 • (ITA)		
	Day 62	Exercise 2 • Page 75 • (TG)		
	Day 63	Lesson 7 • Pages 138–142 • (ITA)		
	Day 64	Exercise 3 • Page 77 • (TG)		
	Day 65	Lesson 7 • Pages 143–148 • (ITA)		
Week 5	Day 66	Exercise 4 • Page 79 • (TG)		
	Day 67	Quiz 7 Lesson 7 • Page 197 • (TG)		
	Day 68	Project 2 • Pages 81–82 • (TG)		
	Day 69	Lesson 8 • Pages 149–153 • (ITA)		
	Day 70	Exercise 1 • Page 83 • (TG)		
Week 6	Day 71	Lesson 8 • Pages 154–159 • (ITA)		
	Day 72	Exercise 2 • Pages 85–86 • (TG)		
	Day 73	Lesson 8 • Pages 160–164 • (ITA)		
	Day 74	Exercise 3 • Pages 87–88 • (TG)		
	Day 75	Lesson 8 • Pages 165–168 • (ITA)		
Week 7	Day 76	Exercise 4 • Page 89 • (TG)		
	Day 77	Quiz 8 Lesson 8 • Page 199 • (TG)		
	Day 78	Lesson 9 • Pages 169–175 • (ITA)		
	Day 79	Exercise 1 • Page 91 • (TG)		
	Day 80	Lesson 9 • Pages 176–181 (to Comets) • (ITA)		

Calendar		Assignment	Due Date	✓	Grade
Week 8	Day 81	Exercise 2 • Page 93 • (TG)			
	Day 82	Lesson 9 • Pages 181–187 (from Comets) • (ITA)			
	Day 83	Exercise 3 • Pages 95–96 • (TG)			
	Day 84	Lesson 9 • Pages 188–194 • (ITA)			
	Day 85	Exercise 4 • Pages 97–98 • (TG)			
Week 9	Day 86	Quiz 9 Lesson 9 • Pages 201–202 • (TG)			
	Day 87	Project 3 • Page 99 • (TG)			
	Day 88	Lesson 10 • Pages 195–199 (to top paragraph) • (ITA)			
	Day 89	Exercise 1 • Pages 101–102 • (TG)			
	Day 90	Lesson 10 • Pages 199–202 (from top paragraph) • (ITA)			
		Mid-Term Grade			

Intro to Astrophysics Daily Schedule



Date	Day	Assignment	Due Date	✓	Grade
▶ Second Semester-Third Quarter					
Week 1	Day 91	Exercise 2 • Page 103 • (TG)			
	Day 92	Lesson 10 • Pages 203–206 • (ITA)			
	Day 93	Exercise 3 • Page 105 • (TG)			
	Day 94	Lesson 10 • Pages 207–210 • (ITA)			
	Day 95	Exercise 4 • Pages 107–108 • (TG)			
Week 2	Day 96	Quiz 10 Lesson 10 • Page 203 • (TG)			
	Day 97	Worldview in Focus Day • Pages 109–110 • (TG)			
	Day 98	Study for Test 2			
	Day 99	Test 2 Lessons 5–10 • Page 225 • (TG)			
	Day 100	Lesson 11 • Pages 211–214 • (ITA)			
Week 3	Day 101	Exercise 1 • Pages 111–112 • (TG)			
	Day 102	Lesson 11 • Pages 215–218 • (ITA)			
	Day 103	Exercise 2 • Pages 113–114 • (TG)			
	Day 104	Lesson 11 • Pages 219–222 • (ITA)			
	Day 105	Exercise 3 • Page 115 • (TG)			
Week 4	Day 106	Quiz 11 Lesson 11 • Page 205 • (TG)			
	Day 107	Lesson 12 • Pages 223–226 • (ITA)			
	Day 108	Exercise 1 • Page 117 • (TG)			
	Day 109	Lesson 12 • Pages 227–230 • (ITA)			
	Day 110	Exercise 2 • Page 119 • (TG)			
Week 5	Day 111	Lesson 12 • Pages 231–235 • (ITA)			
	Day 112	Exercise 3 • Pages 121–122 • (TG)			
	Day 113	Lesson 12 • Pages 235–238 • (ITA)			
	Day 114	Exercise 4 • Pages 123–124 • (TG)			
	Day 115	Quiz 12 Lesson 12 • Page 207 • (TG)			
Week 6	Day 116	Lesson 13 • Pages 239–243 • (ITA)			
	Day 117	Exercise 1 • Page 125 • (TG)			
	Day 118	Lesson 13 • Pages 243–246 • (ITA)			
	Day 119	Exercise 2 • Pages 127–128 • (TG)			
	Day 120	Lesson 13 • Pages 247–250 • (ITA)			
Week 7	Day 121	Exercise 3 • Pages 129–130 • (TG)			
	Day 122	Lesson 13 • Pages 251–254 • (ITA)			
	Day 123	Exercise 4 • Pages 131–132 • (TG)			
	Day 124	Quiz 13 Lesson 13 • Page 209 • (TG)			
	Day 125	Project 4 • Page 133 • (TG)			

Date	Day	Assignment	Due Date	✓	Grade
Week 8	Day 126	Lesson 14 • Pages 255–258 • (ITA)			
	Day 127	Exercise 1 • Page 135 • (TG)			
	Day 128	Lesson 14 • Pages 259–262 • (ITA)			
	Day 129	Exercise 2 • Page 137 • (TG)			
	Day 130	Lesson 14 • Pages 263–266 • (ITA)			
Week 9	Day 131	Exercise 3 • Page 139 • (TG)			
	Day 132	Quiz 14 Lesson 14 • Page 211 • (TG)			
	Day 133	Lesson 15 • Pages 267–272 • (ITA)			
	Day 134	Exercise 1 • Page 141 • (TG)			
	Day 135	Lesson 15 • Pages 273–277 • (ITA)			

Intro to Astrophysics Daily Schedule



Date	Day	Assignment	Due Date	✓	Grade
▶ Second Semester-Fourth Quarter					
Week 1	Day 136	Exercise 2 • Page 143 • (TG)			
	Day 137	Lesson 15 • Pages 278–282 • (ITA)			
	Day 138	Exercise 3 • Page 145 • (TG)			
	Day 139	Quiz 15 Lesson 15 • Page 213 • (TG)			
	Day 140	Worldview in Focus Day • Pages 147–148 • (TG)			
Week 2	Day 141	Study for Test 3			
	Day 142	Test 3 Lessons 11–15 • Page 227 • (TG)			
	Day 143	Lesson 16 • Pages 283–288 • (ITA)			
	Day 144	Exercise 1 • Page 149 • (TG)			
	Day 145	Lesson 16 • Pages 289–292 • (ITA)			
Week 3	Day 146	Exercise 2 • Pages 151–152 • (TG)			
	Day 147	Lesson 16 • Pages 293–296 • (ITA)			
	Day 148	Exercise 3 • Page 153 • (TG)			
	Day 149	Quiz 16 Lesson 16 • Page 215 • (TG)			
	Day 150	Lesson 17 • Pages 297–302 • (ITA)			
Week 4	Day 151	Exercise 1 • Page 155 • (TG)			
	Day 152	Lesson 17 • Pages 303–308 • (ITA)			
	Day 153	Exercise 2 • Pages 157–158 • (TG)			
	Day 154	Lesson 17 • Pages 309–314 • (ITA)			
	Day 155	Exercise 3 • Page 159 • (TG)			
Week 5	Day 156	Lesson 17 • Pages 315–320 • (ITA)			
	Day 157	Exercise 4 • Pages 161–162 • (TG)			
	Day 158	Quiz 17 Lesson 17 • Page 217 • (TG)			
	Day 159	Project 5 • Page 163 • (TG)			
	Day 160	Lesson 18 • Pages 321–326 • (ITA)			
Week 6	Day 161	Exercise 1 • Page 165 • (TG)			
	Day 162	Lesson 18 • Pages 327–332 • (ITA)			
	Day 163	Exercise 2 • Pages 167–168 • (TG)			
	Day 164	Lesson 18 • Pages 333–337 • (ITA)			
	Day 165	Exercise 3 • Page 169 • (TG)			
Week 7	Day 166	Lesson 18 • Pages 338–342 • (ITA)			
	Day 167	Exercise 4 • Pages 171–172 • (TG)			
	Day 168	Quiz 18 Lesson 18 • Page 219 • (TG)			
	Day 169	Lesson 19 • Pages 343–348 • (ITA)			
	Day 170	Exercise 1 • Page 173 • (TG)			

Date	Day	Assignment	Due Date	✓	Grade
Week 8	Day 171	Lesson 19 • Pages 349–353 • (ITA)			
	Day 172	Exercise 2 • Pages 175–176 • (TG)			
	Day 173	Lesson 19 • Pages 354–358 (to top paragraph) • (ITA)			
	Day 174	Exercise 3 • Pages 177–178 • (TG)			
	Day 175	Lesson 19 • Pages 358–362 (from top paragraph) • (ITA)			
Week 9	Day 176	Exercise 4 • Page 179 • (TG)			
	Day 177	Quiz 19 Lesson 19 • Page 221 • (TG)			
	Day 178	Worldview in Focus Day • Pages 181–182 • (TG)			
	Day 179	Study for Test 4			
	Day 180	Test 4 Lessons 16–19 • Page 229 • (TG)			