



Science, Grade 7 (SCI) 7B Syllabus

Course Name

SCI 7B

Science, Grade 7 – Semester B

Course Information

SCI 7B is the second semester of this two-semester course.

Welcome to Science 7B! In this course, you'll work through four units of your textbook. This course is designed to help you carefully observe the world in a way that helps you understand it. You are encouraged to find answers to your questions and develop a better understanding of processes and patterns in nature.

This course structure corresponds to the textbook. Each Unit in the textbook corresponds to a lesson in the course, and each chapter is a segment of the larger lesson. Each chapter has learning activities, which include reading assignments, new vocabulary words, digital lessons, and virtual or hands-on labs. These activities will be followed by a short quiz, and each Lesson will include a variety of Summative Assessments, such as a unit test or hands-on lab activity.

There are many more Grade Level, Unit Level, and Lesson Level resources online to engage learning. Feel free to explore all the different resources that are available.

Course Delivery Method

Online

Contacting Your Instructor

You may contact your instructor through the Blackboard messaging system. Technical support is available 24/7 at www.k12.ttu.edu.

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Course Objectives

After completing this course, you should be able to:

1. plan and implement comparative and descriptive investigations;
2. collect, record, and analyze data;
3. use critical thinking, scientific reasoning, and problem solving;
4. describe the contributions of relevant scientists;
5. use scientific methods to make discoveries;
6. use appropriate tools;
7. recognize that radiant energy from the Sun is transformed into chemical energy through the process of photosynthesis;
8. understand that matter has physical and chemical properties and can undergo changes;
9. use models to represent aspects of the natural world;
10. diagram the flow of energy through living systems, including food chains, food webs, and energy pyramids;
11. illustrate the transformation of energy within an organism such as the transfer from chemical energy to heat and thermal energy in digestion;
12. demonstrate and illustrate forces that affect motion in everyday life such as emergence of seedlings, turgor pressure, and geotropism;
13. recognize how large molecules are broken down into smaller molecules;
14. understand that natural events and human activity can impact Earth systems;
15. predict and describe how different types of catastrophic events such as floods, hurricanes, or tornadoes impact ecosystems;
16. analyze the effects of weathering, erosion, and deposition on the environment in ecoregions of Texas;
17. model the effects of human activity on groundwater and surface water in a watershed;
18. analyze the characteristics of objects in our solar system that allow life to exist such as the proximity of the Sun, the presence of water, and composition of the atmosphere;
19. identify the accommodations, considering the characteristics of our solar system, that enabled manned space exploration;
20. observe and describe how different environments, including microhabitats in schoolyards and biomes, support different varieties of organisms;
21. describe how biodiversity contributes to the sustainability of an ecosystem;
22. observe, record, and describe the role of ecological succession such as in a microhabitat of a garden with weeds;
23. understand that populations and species demonstrate variation and inherit many of their unique traits through gradual processes over many generations;
24. examine organisms or their structures such as insects or leaves and use dichotomous keys for identification;

25. explain variation within a population or species by comparing external features, behaviors, or physiology of organisms that enhance their survival such as migration, hibernation, or storage of food in a bulb;
26. identify some changes in genetic traits that have occurred over several generations through natural selection and selective breeding such as the Galapagos Medium Ground Finch (*Geospiza fortis*) or domestic animals;
27. understand that living systems at all levels of organization demonstrate the complementary nature of structure and function;
28. investigate and explain how internal structures of organisms have adaptations that allow specific functions such as gills in fish, hollow bones in birds, or xylem in plants;
29. understand that a living organism must be able to maintain balance in stable internal conditions in response to external and internal stimuli;
30. investigate how organisms respond to external stimuli found in the environment such as phototropism and fight or flight; and
31. describe and relate responses in organisms that may result from internal stimuli such as wilting in plants and fever or vomiting in animals that allow them to maintain balance.

SCI 7 addresses the required Texas Essential Knowledge and Skills (TEKS). These can be found at the [Texas Education Agency](#) website.

Textbook and Materials

Textbook(s)

The required digital textbook for this course is:

- Dispezio, Frank, Heithaus, & Ogle. (2015). *Science fusion: Interactive Grade 7*, TX student edition. Houghton Mifflin. ISBN: 978-0-544-06780-6.

This digital textbook can only be purchased through the TTU K-12 partner bookstore. You can find the link to the bookstore on the [TTU K-12 website](#). Once you have purchased the digital textbook, you will receive a username and password via email from MBS Direct after they have set up your account. This may take a few days. **Your teacher does not have access to your login information for ThinkCentral.**

You will log in at [ThinkCentral website](#) to access your textbook, virtual lab materials, and other online resources. You may need to enter the following information before you can login:

State: Texas
District: College
School: Texas Tech University, Lubbock 79409

If you would like a printed book, you can purchase the optional printed text:

- Dispezio, Frank, Heithaus, & Ogle. (2015). *Science Fusion, Grade 7*, TX student edition (print). Houghton Mifflin. ISBN: 978-0-544-02553-0.

Students may purchase the paperback workbook, but will also need to have the digital textbook.

Hands-On Lab Materials

For the Hands-On labs, you need the following materials, organized by lesson. They are typical items that can be found in most households. You can also access the *Complete Hands-On Lab Materials List* in the **Resources** section of the course.

Lesson One

(This list includes materials for all Hands-On Labs in Lesson One.)

- field guide to local plants
- graduated cylinder (100 mL)
- marker
- paper
- paper towel
- pencil, graphite
- pencils, colored
- potato pieces (4 x 2 x 1 cm) (3)
- rubber band, to secure wrap over jars
- water (distilled water)
- water, 10% saltwater solution
- balance or digital scale
- measuring cup
- timer or stopwatch
- gloves
- lab apron
- safety goggles
- jars (3)
- water (tap water)

Lesson Two

- cloth, white, approximately 20 cm × 20 cm
- marshmallows, colored (all same color), miniature (25)
- marshmallows, white, miniature (25)

Lesson Three

(This list includes materials for all Hands-On Labs in Lesson Three.)

- paper towel
- marker
- paper
- gloves
- lab apron
- safety goggles
- beakers (2) or jars from Lesson One

- clay, stick (about 1/4 of a lb. or more)
- cup, paper (you can also reuse an empty paper container that once held juice or milk)
- cups, clear plastic (7)
- dirt or potting soil (about 3 tablespoons)
- full-strength vinegar (5% solution)
- gravel
- hot water
- masking tape
- paper clips or clothespins (2)
- plastic containers, small with lids (4)
- plate, small (paper or foam is fine)
- pure chalk (high in calcium carbonate – avoid any with additives used to reduce dust)
- rolling pin or dowel
- sand (any grain size)
- sodium carbonate, 120 g (or Epsom salts, if sodium carbonate isn't available or student is sensitive to it)
- spoon
- stirring rod (glass or plastic)
- water (tap water)
- yarn, 45 cm
- balance or digital scale
- temperature probe
- food coloring, blue (3–4 drops)
- food coloring, red (3–4 drops)
- sand, **coarse**, wet (1/3 volume of washtub)
- spray bottle
- washtub, plastic (or other large container that can hold sand and water to model a beach)

Lesson Four

(This list includes materials for all Hands-On Labs in Lesson Four.)

- pencils, colored
- ruler or other guide for helping to draw spacecraft flight paths
- lab apron
- safety goggles
- calculator
- marble

- ramps, thick corrugated cardboard or foam board, 30 cm long (1) and 60 cm long (1) (Make sure you can press thumb tacks into the ramp material.)
- rubber band, thick for marble launcher
- thumb tacks (2–4)
- meter stick or tape measure

Technical Requirements

- Internet access – preferably high speed (for accessing Blackboard)
- Email
- Word processing software such as Microsoft Word
- Adobe Reader (download from Adobe.com)
- Audio and video capabilities (for watching/listening to course content)
- Digital camera or scanner
- PDF app (free options available)

Technical Skill Requirements

Be comfortable with the following:

- using a word processor
- Internet search engines and browsers
- creating PDFs (see **Requirements for Creating PDFs** in the Syllabus section of your course)

Course Organization

This course consists of four lessons and a final examination. Each lesson contains the following:

- Introduction and Instructions
- Learning Objectives and Curriculum Standards
- Learning Activities
- Assignments

Each lesson includes several activities that present content knowledge. Each lesson also includes multiple graded assignments to ensure that you learn the content that has been presented in the activities. Some of the assignments are automatically-graded quizzes, and some are written assignments or activities that your instructor will grade. Be sure you read all instructions carefully and ask your instructor for help if something is not clear.

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About the Labs

Lab Overview

There are two types of labs in this course: Virtual Labs and Hands-On Labs. You will need supervision and assistance for both types.

- Both Hands-On and Virtual Labs require the manipulation of tools, whether they are on screen or physical tools like scales. You may need a parent or guardian to help you use them.
- Hands-On labs require the supervision of a parent for both safety and clean up. Make sure your parent or guardian knows what you are doing and can help you select an appropriate place to conduct your investigations.
- Some Hands-On labs require a partner who can start the action of the lab while you take measurements. For example, one lab has you measure how fast a toy car runs down a ramp. One person must release the car while another one starts the stopwatch.

You can preview the lab worksheets in the **Resources** section of the course to help you plan. **Do not try to complete the labs all at once.** Please follow the sequence of course materials that you find in the lesson folders.

Watch the **Video: About the Labs** in the **Syllabus** section of the course; it will give you an idea of what each type of lab looks like and what parts are important for your assignments.

To recap, you'll turn in the following for each type of lab:

- The lesson tracker or lab report in the virtual labs. You can access the report within the virtual lab within the left menu that pops up, or on the last screen of the lab when you're done.

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Choose the lesson tracker icon.

– OR –

Click here first.

Now that you've finished the lesson, click the Lab Report button to save or print it.

- The reflection quiz for each virtual lab, found in your course lessons.
- The lab worksheet for hands-on labs, available in your course lessons or in the course Resources. Print these worksheets to use them as you conduct your experiments. **Also note that you'll need to take pictures of your hands-on lab work.**

Virtual Lab Navigation

For Virtual Labs, you will need to have the digital textbook (see **Textbooks and Materials** in this Syllabus for purchasing information). When you open the virtual labs, you'll see a slideshow with various interactive tools and menus. In the top, right-hand corner is a question mark for the Help Menu, which shows you the features of the virtual labs, as shown in the following screenshot.

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English

The screenshot shows the sciencefusion interface for the lesson "Can Plants Survive in Different Environments?". The interface includes a blue header with the program name and lesson title, a main content area with a desert background and a central text box, and a bottom navigation bar with various icons and controls. Labels point to specific features:

- Program Title and Logo:** sciencefusion
- Lesson Title:** Can Plants Survive in Different Environments? (Visible on ALL screens)
- ? Help Information:** Located in the top right corner.
- Main Screen:** Where the lesson content is presented using many different screen types.
- Tools:** A vertical toolbar on the left contains icons for:
 - T + G Glossary**
 - T + O Notepad**
 - T + M Lesson Script**
 - T + L Log Book/Lab Report**
 - T + U Calculator**
- Navigation and Control Labels:**
 - T Tools:** Open/Close
 - Q Teacher Resources:** Only active for teachers
 - Volume V + arrows:** Not active on Tablets devices. Use tablets own volume control
 - Mute S:**
 - C Closed Captioning:** Turn it on/off
 - Screen Slider X + Arrows:** Quickly jump between screens
 - P Audio:** Play/Pause
 - R Replay:** Start the screen again
 - Next N Screen:**
 - Back B screen:**

Course Outline

Please note that some assignments will be hidden from you when you start the course. As you move through the lessons and complete assignments, more will unlock for you.

Lesson	Topic	Approximate Time for Completion
Lesson 1	Living Systems	Four weeks
Lesson 2	The Diversity of Living Things	Four weeks
Lesson 3	Earth's Changing Surface	Four weeks
Lesson 4	Living in Space	Four weeks
Final Exam		

Assignment Schedule

Each of the following must be completed to complete the course. Items with an asterisk (*) indicate that these are summative assessments for the course.

Lesson	Weeks	Assignments
1	1-4	Checkpoint 1 (Non-graded) Lesson 1.1 Virtual Lab: Forces and Plants Lesson 1.1 Virtual Lab Reflection Quiz Lesson 1.1 Hands-on Lab: Turgor Pressure in Plant Cells Lesson 1.1 Quiz Lesson 1.2 Quiz Lesson 1.3 Hands-on Lab: Condensation and Evaporation Lesson 1.3 Quiz Lesson 1.4 Hands-on Lab: Identify Your Land Biome Lesson 1.4 Quiz Lesson 1.5 Virtual Lab: Changes in Ecosystems Lesson 1.5 Virtual Lab Reflection Quiz Lesson 1.5 Hands-on Lab: Predicting How Succession Follows a Human Disturbance Lesson 1.5 Quiz *Lesson One Test
2	5-8	Lesson 2.1 Virtual Lab: Animal Migration Lesson 2.1 Virtual Lab Reflection Quiz Lesson 2.1 Quiz Lesson 2.2 Virtual Lab: Natural Selection Lesson 2.2 Virtual Lab Reflection Quiz Lesson 2.2 Hands-on Lab: Modeling Natural Selection Lesson 2.2 Quiz Lesson 2.3 Quiz *Lesson Two Test
3	9-12	Lesson 3.1 Quiz Lesson 3.2 Hands-on Lab: Turbidity and Water Temperature Lesson 3.2 Quiz Lesson 3.3 Hands-on Lab: Weathering Chalk Lesson 3.3 Quiz Lesson 3.4 Virtual Lab: Erosions and Deposition by Rivers Lesson 3.4 Virtual Lab Reflection Quiz Lesson 3.4 Hands-on Lab: Modeling Stalactites and Stalagmites Lesson 3.4 Quiz Lesson 3.5 Virtual Lab: Erosion and Deposition by Sand Dunes

Lesson	Weeks	Assignments
		Lesson 3.5 Virtual Lab Reflection Quiz Lesson 3.5 Hands-on Lab: Modeling a Glacier Lesson 3.5 Quiz Lesson 3.6 Quiz *Lesson Three Lab: Ocean Pollution from Land *Lesson Three Test Checkpoint 2 (Non-graded)
4	13-16	Lesson 4.1 Quiz Lesson 4.2 Virtual Lab: Exploring with Spacecraft Lesson 4.2 Virtual Lab Reflection Quiz Lesson 4.2 Hands-On Lab: Traveling Through the Solar System Lesson 4.2 Quiz *Lesson Four Lab: Modeling Escape Velocity *Lesson Four Test Checkpoint 3 (Non-graded)
		Final Exam

Course Credit

The course grade will be calculated as follows:

- 50% coursework average;
- 50% summative assessment average, including the final exam;
- A passing course grade is 70 or higher.

Students must attempt all assignments in the course. The final exam will not be available until all assignments have been accepted and graded by the teacher.

Students who score below 70% on the final exam will be eligible for one re-exam opportunity.

Coursework

The graded assignments within each lesson are formative in nature. This means that they are designed to assist you in applying and demonstrating the lesson concepts, as well as identifying areas in which you need additional review. You may use all the lesson's learning activities to assist you as you complete the graded assignments.

Summative Assessments

Summative assessments are those that allow you to demonstrate mastery of the course objectives. For summative assessments, you will NOT be allowed to use the learning

materials. These are opportunities for you to show what you have learned by that point in the course. Summative assessments may be proctored using the online proctoring system Proctorio. Information about Proctorio is provided in **Remote Proctoring** in the Syllabus section of your course. The summative assessments for this course are as follows:

- **Summative Assessments (20% of Course Grade)**
 - Lesson One Test (42 points)
 - Lesson Two Test (32 points)
 - Lesson Three Lab: Ocean Pollution from Land (35 points)
 - Lesson Three Test (38 points)
 - Lesson Four Lab: Modeling Escape Velocity (35 points)
 - Lesson Four Test (16 points)
- **Summative Final Exam (30% of Course Grade)**

Course Completion

- Students may not complete the course in less than 30 days.
- All courses expire six months after the enrollment date.

Academic Integrity

It is the aim of the faculty of Texas Tech University to foster a spirit of complete honesty and high standard of integrity. The attempt of students to present as their own any work not honestly performed is regarded by the faculty and administration as a most serious offense and renders the offenders liable to serious consequences, possibly suspension.

“Scholastic dishonesty” includes, but is not limited to, cheating, plagiarism, collusion, falsifying academic records, misrepresenting facts, and any act designed to give unfair academic advantage to the student (such as, but not limited to, submission of essentially the same written assignment for two courses without the prior permission of the instructor) or the attempt to commit such an act.

Student Expectations

You will be expected to log into the Blackboard course regularly to be aware of possible announcements/reminders and to pace your progress in the course.

Students are expected to maintain an online environment conducive to learning, which includes “netiquette” (Internet etiquette). Please review the basic rules for [Online Discussion Netiquette](#). Ensure that your email messages, discussion board postings, and other electronic communications are thoughtful and respectful. Diverse opinions are welcome in this course, and you are expected to demonstrate an open mind and courtesy when responding to the thoughts and ideas of others.

The following are prohibited:

- making offensive remarks in email or the discussion board;
- using inappropriate language or discussing inappropriate topics online;
- spamming;
- hacking;
- using TTU or Blackboard email or discussion boards for commercial purposes;
- using all caps (considered shouting in online communications); and
- cyber-bullying or online harassment of any type.

Inappropriate behavior shall result in consequences ranging from a request to correct the problem, to removal from the course or even the university, depending on the severity of the behavior. Disciplinary actions will be taken according to the TTU K-12 Student Handbook.

Communication

- You can expect a reply from your instructor within 2 business days.
- Use the Blackboard Course Messages tool for sending messages to your instructor.

Submitting Assignments

You will submit all assignments through the Blackboard Assignment Tool, rather than by mail or email.

Technical Difficulties

Getting Help

For student assistance with Blackboard, visit [TTU K-12 Support](#).

Computer Problems

A working computer is necessary for online coursework. Computer problems will not be accepted as a valid reason for failure to complete course activities within the allotted time frame. Identify a second computer, before the course begins, that you can use if you experience computer problems.

Server Problems

When the Blackboard server needs to be taken down for maintenance, the Blackboard administrator will post an announcement in your course informing you of the time and date. If the server experiences unforeseen problems, your course instructor will notify you.

Lost or Corrupted Files

You must keep/save a copy of every project/assignment on an external disk or personal computer. In the event of any kind of technology failure (e.g., Blackboard server crash or virus infection, students' own computer problems, loss of files in cyberspace, etc.) or any disputes, the instructor may request or require you to resubmit the files. In some instances, the instructor may need to open another attempt within Blackboard, so communication with your instructor is critical in these circumstances.