



SCED 3308: Foundations of Elementary Science I

Sul Ross State University

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Office Location: Online

Office Hours: Online (Blackboard Collaborate)

M 12-1:30 PM, W 12-1:30 PM, or by appointment

Course Hours: Online (Blackboard Collaborate)

Lecture M, Th 6:00-8:00 PM

COURSE PREREQUISITES:

None listed.

CATALOG COURSE DESCRIPTION:

SCED 3308

This is the first in a series of two courses offered to education students, in which students will learn and explore the teaching of required science content in the form of the TEA science competencies related to Life Science and Earth Science, toward their future roles as elementary and middle school science teachers. Topics covered will include the following TEA science competencies: History & Nature of Science; Impact of Science; Structure & Function of Earth Systems; Cycles in Earth Systems; Energy in Weather & Climate; Structure & Function of Living Things; Reproduction & the Mechanisms of Heredity; Relationship between Organisms & the Environment; Energy Transformations & Conservation of Matter; Impact of Science on Personal & Societal Decisions; and Students as Learners & Science Instruction.

Inquiry and investigation are promoted in this class such that preservice teachers may do the same in their future science classrooms. The class emphasizes problem-solving as a pedagogical tool and explores assessment types and lesson plans appropriate to varied science content.

Equivalent courses: SCER 3308

TEXTS: No physical textbook required. Supplemental content and material will be available online from the following **Open resources as listed below...**

Resources for Elementary School Science:

- Online Science Texts:

[CK-12 Earth Science for Middle School | CK-12 Foundation \(ck12.org\)](#)

[CK-12 Life Science for Middle School | CK-12 Foundation \(ck12.org\)](#)

[CK-12 Physical Science for Middle School | CK-12 Foundation \(ck12.org\)](#)

[CK-12 Biology for High School | CK-12 Foundation \(ck12.org\)](#)

[CK-12 Chemistry for High School | CK-12 Foundation \(ck12.org\)](#)

[CK-12 Interactive Physics for High School | CK-12 Foundation \(ck12.org\)](#)

[CK-12 Advanced Biology | CK-12 Foundation \(ck12.org\)](#)

[CK-12 College Human Biology | CK-12 Foundation \(ck12.org\)](#)

- Online Quiz Game Software:

[Blooket](#)

[Gimkit - live learning game show](#)

[Kahoot](#)

- Online Presentation Software:

[Canva: Visual Suite for Everyone](#)

- Short Science and Biology Videos:

[The Amoeba Sisters Channel Trailer \(updated\) \(youtube.com\)](#)

- Annenberg Media:

[Science Archives - Annenberg Learner](#)

- National Science Education Standards:

http://www.nap.edu/openbook.php?record_id=4962

(download can also be found here (if it doesn't load, try to copy and paste the link into

the browser): [Foundations of Elementary Science](#))

- National Science Teachers Association:

<http://www.nsta.org>

- Project 2061:

<http://www.project2061.org/>

- Texas Education Agency:

[Texas Administrative Code, Title 19, Part 2 | Texas Education Agency](#)

- Science Generalist EC-6 Standards State of Texas (Teacher Competencies):

TEXAS EXAMINATIONS OF EDUCATOR STANDARDS (TExES) -COMPETENCIES:

[Oral Language \(texas.gov\)](#)

- AI Student Tutor

www.ck12.org

- Edutopia is likely to be used for submission of lesson plans, and other applications on the job as a teacher:

<http://www.edutopia.org>

- Videos for Educators:

<http://www.teachertube.com>

Texas Essential Knowledge and Skills (TEKS):

[Texas Essential Knowledge and Skills - Wikipedia](#)

downloads of Elementary School Science TEKS and Middle School TEKS for Science will be posted to BlackBoard

STAAR Exams:

[State of Texas Assessments of Academic Readiness - Wikipedia](#)

Old STAAR EXAM Questions:

[STAAR Released Test Questions | Texas Education Agency](#)

PROFESSOR EXPECTATIONS FROM STUDENTS:

Professor will provide weekly communication with the class via Blackboard Announcements, emails, and weekly class sessions.

Professor will respond to emails within 24 – 48 hours.

Clearly outlined assignments and expectations will be provided.

Assignments will be graded within 1 week of the submission date.

PROFESSOR EXPECTATIONS OF STUDENTS:

Students will respond to email requests from professor within 48 hours.

Students will attend class sessions on a weekly basis. Attendance will be taken.

STUDENT LEARNING OUTCOMES:

1. Students will demonstrate effective lesson planning.
2. Students will demonstrate written and oral proficiency through a variety of instructional strategies.
3. Students will demonstrate effective evaluative processes for assessing student learning
4. Students will become familiar with TExES Science Competencies covered on the Core Content examination.
5. Students will become familiar with Science TEKS.

COURSE OBJECTIVES:

1. Students will be able to distinguish science from pseudoscience and skeptically evaluate claims based on strength of evidence.
2. Students will describe the organization and functioning of living things, via observing, analyzing and investigating.
3. Students will refine personal teaching philosophy through studying theories and methodologies of elementary instruction and science pedagogy.
4. Students will demonstrate understanding of basic Biological principles such as ecology, evolution, taxonomy, and genetics.

5. Students will demonstrate understanding of basic Geological principles such as minerals, weather and climate, cycles, and processes (weathering and plate tectonics).
6. Students will utilize instructional strategies including planning, organizing, writing and implementing science lesson plans.
7. Students will demonstrate the teaching of science lessons.

MARKETABLE SKILLS:

1. Students have the ability to teach diverse learners in an inclusive learning environment.
2. Students have the ability to assess student learning.
3. Students have the ability to critically think and creatively adapt instructional strategies to an instructional setting.
4. Students have the ability to construct a classroom management plan.
5. Student have the ability to effectively use technology to communicate.

ATTENDANCE POLICY:

Students missing 20% of lectures may be dropped from class per SRSU catalog. Any student dropped for excessive absences will receive an F for the course grade. Please notify your instructor BEFORE missing class for authorized activities, death in the family, or illness. Assignments missed for any reason must be made up within one week of the originally scheduled date.

LECTURE COURTESY:

The general rules of classroom etiquette are below.

1. Please do not talk to others in class while the instructor is lecturing. If you have a question, ask the instructor.
2. Please turn cell phones to silent while in class.
3. While attending class online, please attend class as professionally as one would do in person (ie. Wearing proper clothes, not being disruptive or disrespectful to your peers, etc.)

DISTANT LEARNING STATEMENT:

Students enrolled in distance education courses have equal access to the university's academic support services, such as Smarthinking, library resources, such as online databases, and instructional technology support. For more information about accessing these resources, visit the SRSU website. Students should correspond using Sul Ross email accounts and submit online assignments through Blackboard, which requires secure login information to verify students' identities and to protect students' information. The procedures for filing a student complaint are included in the student handbook. Students enrolled in distance education courses at Sul Ross are expected to adhere to all policies pertaining to academic honesty and appropriate student conduct, as described in the student handbook. Students in web-based courses must maintain appropriate equipment and software, according to the needs and requirements of the course, as outlined on the SRSU website.

ACADEMIC INTEGRITY:

Students in this class are required to demonstrate scholarly behavior and academic honesty in the use of intellectual property. A scholar is expected to be timely, prepared, and focused. Meaningful, respectful, and pertinent online participation is also expected.

Examples of academic dishonesty include but are not limited to: submitting work as original that was used in whole or part for another course and/or professor; turning in another person's work as one's own; copying from professional works or internet sites without citation.

SAFE ASSIGN:

The Safe Assignment Tool is an advanced plagiarism prevention system deeply integrated with the Blackboard Learning Management System. SafeAssignment compares student papers submitted to Blackboard against an enormous wide range of sources and provides instructors with detailed Originality Reports. Because of SafeAssignment's flexibility, this product is an effective plagiarism prevention system that helps instructors to raise student awareness about plagiarism and to educate students about the ways to avoid plagiarism. You can check your similarity report and make corrections if needed. With your similarity report, you will note highlighted areas that have similarity noted between your paper and another source. You will click on the tab within the colored square to see the percentage of the similarity. Percentages above 10% must be corrected. It does not matter if the source that is being noted for similarity is not the same source that you used. The system is telling you what you have written is too similar to another source and you need to make corrections. You may need to change up some of the wording or order of information to make it your information. More than three or four words in a row that are identical to the originating author can be detected. You can submit your paper as many times as you would like. This system is designed to assist students with increasing awareness of plagiarism. Typically, plagiarism is an accidental occurrence and occurs when students do not realize their writing is overly similar to another source.

SRSU DISABILITY SERVICES:

Sul Ross State University (SRSU) is committed to equal access in compliance with the Americans with Disabilities Act of 1990 (ADA) and Section 504 of the Rehabilitation Act of 1973. It is SRSU policy to provide reasonable accommodations to students with documented disabilities. The Disability Services Coordinator in Counseling and Student Support Services has the responsibility to ensure students with disabilities the opportunity for full participation in programs, services, and activities. It is the student's responsibility to initiate a request each semester for each class. Students seeking accessibility/accommodations services must contact SRSU's Accessibility Services Coordinator, Mary Swartz Grisham, at 432-837-8203, or email counseling@sulross.edu. Our office is located on the first floor of Ferguson Hall (Suite 112), and our mailing address is P.O. Box C-122, Sul Ross State University, Alpine, Texas, 79832.

COURSE REQUIREMENTS:

TECHNOLOGY REQUIREMENTS:

Students are required to have their own computers and internet that can handle the required technology, including audio, a camera, Chrome, Blackboard, Zoom, YouTube, and other applications. Not having the technology at your disposal at any time is not an excuse for failure to submit an assignment, join a Teams or Blackboard session, or take an exam.

LIBRARY:

The Bryan Wildenthal Memorial Library in Alpine. Offers FREE resources and services to the entire SRSU community. Access and borrow books, articles, and more by visiting the library's website, library.sulross.edu. Off-campus access requires logging in with your LoboID and password. Librarians are a tremendous resource for your coursework and can be reached in person, by email (srsulibrary@sulross.edu), or phone (432-837-8123).

ACADEMIC INTEGRITY:

Students in this class are expected to demonstrate scholarly behavior and academic honesty in the use of intellectual property. A scholar is expected to be punctual, prepared, and focused; meaningful and pertinent participation is appreciated. Examples of academic dishonesty include but are not limited to: Turning in work as original that was used in whole or part for another course and/or professor; turning in another person's work as one's own; copying from professional works or internet sites without citation; collaborating on a course assignment, examination, or quiz when collaboration is forbidden.

CLASSROOM CLIMATE OF RESPECT:

Importantly, this class will foster free expression, critical investigation, and open discussion of ideas. This means that all of us must help create and sustain an atmosphere of tolerance, civility, and respect for the viewpoints of others. Similarly, we must all learn how to probe, oppose and disagree without resorting to tactics of intimidation, harassment, or personal attack. No one is entitled to harass, belittle, or discriminate against another on the basis of race, religion, ethnicity, age, gender, national origin, or sexual preference. Still, we will not be silenced by the difficulty of fruitfully discussing politically sensitive issues

EVALUATION:

The learner will be evaluated utilizing the following methods in order to ensure that the learning outcomes are being addressed: The learner will post a lesson plan over a Science lesson on Blackboard and will then present the lesson. Classmates will follow along with the lesson being taught. Discussion, feedback and reflection will take place after each lesson that is taught. Rubrics over the lesson plan and lesson presentation will be completed by the instructor.

GRADING POLICY:

Your grade for this course will be determined by evidence of the quality of your learning as demonstrated by your performance on the following:

COURSE REQUIREMENTS AND GRADING:

- ✓ Mid-Term Exam – 15%
- ✓ Final Exam – 20%
- ✓ Presentations – 30%
- ✓ Lesson Plans – 20%
- ✓ Class Participation/Attendance – 15%

A = 90-100%

B = 80-89%

C = 70-79%

D = 60-69%

F = 59 and below

EXAMPLE OF TEKS:**§112.5. Science, Grade 3, Adopted 2021**

(b) Knowledge and skills. (5) Recurring themes and concepts. The student understands that recurring themes and concepts provide a framework for making connections across disciplines. The student is expected to: (C) use scale, proportion, and quantity to describe, compare, or model different systems; (D) examine and model the parts of a system and their interdependence in the function of the system.

ASSIGNMENTS AND REQUIREMENTS**Exams: 35%**

There will be a Mid-term Exam worth 15% of your total grade, and a partially cumulative Final Exam worth 20% of your total grade. Each exam will consist of short answers and/or essay questions. You will have 2 hours to complete each exam.

Lesson Presentations: 30%

Students will independently work on presentations related to science and will present on the due date assigned. Lesson presentations will be graded utilizing a rubric. You will be required to post Lesson Plans, PowerPoint presentations, as well as handouts and materials needed to Discussion Board. Classmates not presenting will need to have necessary materials that are required to enact the lesson as well as complete the activity that is included in the lesson.

Lesson Plans: 20%

Students will be expected to type up lesson plans and turn in prior to presenting their lesson presentation. Lesson Plans will be posted to Blackboard and will be graded utilizing a rubric that will be shared with you.

Class Participation/Attendance: 15%

Students are expected to participate in class discussions and class activities. The format of the class will be lecture, discussion, group activities, and presentations. Failure to participate will result in a loss of points.

Why Lesson Plans are due on the day before the PowerPoint Presentation is due – I will be grading each assignment independently. So, I will utilize the rubric to grade the lesson plans before I ever see the Presentations. Then I will use the presentation rubric to grade the Presentation. Both rubrics are very similar, however Lesson Plans and Presentations are graded independently of each other.

TENTATIVE LECTURE OUTLINE			
DATE	LECTURE TOPIC	READINGS	COMPETENCIES
May 30	Introduction, Bloom's taxonomy for critical thinking		5f,1f
June 3	Scientific Method	Earth 1.1-1.5 Life 1.1, 1.3-1.5	1f, 2b,2d,2e, 4a, 4b,4h
June 3	Earth's Seasons + Weather vs Climate	Earth 3.2, 3.4, 3.5, 3.7, 3.8, 3.11, 12.1-12.5, 10.13, 10.15-10.17; 10.1-10.6; 11.1, 11.5-11.8, 11.14-11.6	18b, 6c,17a-c,e;15c,16b
June 6	Inorganic (long-term) Carbon Cycle	Earth 12.14, 20.1, 20.4, 20.5	16c,8f,10a,15d
June 6	The role Earth science plays in global challenges	Earth 10.14, 12.15-12.18, 20.2-20.4	16d,15d,3f,2j
June 6	Earth's Water Cycle + Surface and Ground Water	Earth 8.1-8.5, 8.8-8.14, 10.9-10.12, 20.3	15a, 15b, 16b, 17d
June 10	Plate Tectonics and Earthquakes (+ Volcanoes?)	Earth 5.7-5.15, 5.17; 6.4, 6.6, 13.1-13.4	15a,4b
June 10	Models in Earth Science + Earth's Interior	Earth 1.9, 5.1-5.6	4h, 15a
June 13	How Rocks, Minerals and Soils Form (3 Types of Rocks) + Rock Cycle	Earth 4.5-4.7, 4.10, 4.13	16a
June 13	Properties and Uses of Earth Materials	Earth 20.5-20.8, 20.10-20.15, 21.1-21.5; 20.2, 20.4, 8.15-8.17, 21.6-21.10; 8.18-8.19; 13.9-13.10	16e,3e,3d
June 17	Earth's Place in the Solar System (Planets?)	Earth 22.1, 22.11; 22.5-22.16	18a,18c

June 17-21	Mid-Term Exam		
June 20	The Hierarchical Organization of Life	Scale	
June 20	Chemistry and Organic Molecules	Life 2.1-2.3	8d
June 24	Cell Structures and Membranes (Diffusion and Osmosis?)	Life 2.4-2.12	11a, 11d
June 24	Energy via Photosynthesis & Cellular Respiration	Life 2.13-2.18	8f, 10b, 10c
June 27	Genetics	Life 3.1, 3.2, 3.3, 3.5, 3.10	12a-12e
June 27	Evolution via Natural Selection (and other mechanisms)	Life 4.1, 4.3-4.12	5d, 13a, 13b, 13c
June 27	Speciation and Taxonomy	Life 5.1, 5.2, 5.6, 6.1, 6.7, 7.1, 7.4, 9.1, 10.1, 10.2 Tree of Life	11b, 11f
July 1	Ecology + Population Ecology	Life 12.1-12.6	3c, 3d, 3f, 14e, 14f, 14g
July 1	Species Interactions + Community Ecology and Trophic Levels	Life 12.7-12.11, 12.16-12.19	11c, 14b, 14c, 14d
July 1	Succession and Change + Biomes	Life 12.12-12.15, 12.20, 12.27, 12.29, 12.31, 12.32	4d, 4f, 14a, 14b, 14g
July 1 - July 3	FINAL		

[LESSON SIGN UP SHEET](#)

TEXAS EXAMINATIONS OF EDUCATOR STANDARDS (TE_xES) -COMPETENCIES:**TE_xES SCIENCE STANDARDS:**

This course will build mastery of the following Standards:

Science Standard I – The science teacher manages classroom, field, and laboratory activities to ensure the safety of all students and the ethical care and treatment of organisms and specimens.

Science Standard II – The science teacher understands the correct use of tools, materials, equipment and technologies.

Science Standard III – The science teacher understands the process of scientific inquiry and its role in science instruction.

Science Standard IV – The science teacher has theoretical and practical knowledge about teaching science and about how students learn science.

Science Standard V – The science teacher knows the varied and appropriate assessments and assessment practices to monitor science learning.

Science Standard IX – The science teacher knows and understands the science content appropriate to teach the statewide curriculum (Texas Essential Knowledge and Skills (TEKS) in life science.

Science Standard X – The science teacher knows and understands the science content appropriate to teach the statewide curriculum (Texas Essential Knowledge and Skills (TEKS) in Earth and Space science.

TE_xES COMPETENCIES FOR THIS COURSE:

001 Lab Processes, equipment, safety

F. Understand how to gather, organize, display and communicate data in a variety of ways (e.g., charts, tables, graphs, diagrams, written reports, oral presentations).

002 History and nature of science, role of inquiry

B. Focus inquiry-based instruction on questions and issues relevant to students and use strategies to assist students with generating, refining and focusing scientific questions and hypotheses.

D. Know how to guide students in making systematic observations and measurements and posing questions to guide investigations.

E. Know how to promote the use of critical-thinking skills, logical reasoning and scientific problem solving to reach conclusions based on evidence.

J. Understand the roles that logical reasoning, verifiable evidence, prediction and peer review play in the process of generating and evaluating scientific knowledge.

003 Impact of Science on personal and social decisions

- C. Apply scientific principles and processes to analyze factors that influence personal choices concerning fitness and health, including physiological and psychological effects and risks associated with the use of substances and substance abuse.
- D. Understand concepts, characteristics and issues related to changes in populations and human population growth.
- E. Identify and understand the types and uses of natural resources and the effects of human consumption on the renewal and depletion of resources.
- F. Understand the role science and scientists can play in helping resolve personal, societal and global challenges.

004 Unifying Concepts and Processes

- A. Understand how a unifying, explanatory framework across the science disciplines is provided by the concepts and processes of systems, order and organization; evidence, models and explanation; change, constancy and measurements; and form and function.
- B. Demonstrate an understanding of how patterns in observations and data can be used to make explanations and predictions.
- D. Apply unifying concepts to explore similarities in a variety of natural phenomena.
- F. Understand how change and constancy occur in systems.
- H. Understand how models are used to represent the natural world and how to evaluate the strengths and limitations of a variety of scientific models (e.g., physical, conceptual, mathematical).

005 Students as Learners and Science Instruction

- A. Understand how developmental characteristics, prior knowledge and experience and students' attitudes influence science learning.
- B. Select and adapt science curricula, content, instructional materials, collaborations, vocabulary and activities to meet the levels of interest, knowledge and understanding as well as the abilities, experiences and needs of all students, including English-language learners.
- C. Understand how to use situations from students' daily lives to develop instructional materials that investigate how science can be used to make informed decisions.
- D. Understand common misconceptions in science and have effective ways to address those misconceptions.
- E. Understand developmentally appropriate design and implementation of hands-on learning experiences in science and select effective, appropriate instructional practices, activities, technologies and materials to promote students' scientific knowledge, skills and inquiry processes.
- F. Understand questioning strategies designed to elicit higher-level thinking and how to use them to move students from concrete to more abstract understanding.
- G. Understand the importance of planning activities that are inclusive and that accommodate the needs of all students.
- H. Understand how to sequence learning activities in a way that enables students to build on their prior knowledge and that challenges them to expand their understanding of science.

006 Science Assessment

- A. Understand the relationships between a science curriculum, assessment and instruction and base instruction on information gathered through assessment of students' strengths and needs.
- B. Understand the importance of monitoring and assessing students' understanding of science concepts and skills on an ongoing basis, including how to use formal and informal assessments of student performance and how to use products (e.g., projects, lab journals, rubrics, portfolios, student profiles, checklists) to evaluate students' understanding of and participation in the inquiry process.
- C. Select — or design — and administer a variety of appropriate assessments (e.g., performance assessment, self-assessment, formal/informal assessment, formative/summative assessment) to monitor students' understanding and progress and to plan for instruction.
- D. Understand the importance of communicating evaluation criteria and assessment results to students.

008 Physical and Chemical properties in matter, changes in matter

- D. Apply knowledge of physical and chemical properties (including atomic structure) of and changes in matter to processes and situations that occur in life and in earth and space science.
- F. Describe and explain the occurrence and importance of a variety of chemical reactions that occur in daily life (e.g., rusting, burning of fossil fuels, photo-synthesis, cell respiration, chemical batteries, digestion of food).

010 Energy Transformations and Conservation of energy and matter

- A. Describe sources of electrical energy and processes of energy transformation for human uses (e.g., fossil fuels, solar panels, hydroelectric plants).
- B. Apply knowledge of transfer of energy in a variety of situations (e.g., the production of heat, light, sound and magnetic effects by electrical energy; the process of photo-synthesis; weather processes; food webs; food and energy pyramids).
- C. Understand applications of energy transformations and the conservation of matter and energy in life and in earth and space science.

011 Structure and Function of Living Things

- A. Understand that living systems have different structures that perform different functions.
- B. Understand and describe stages in the life cycles of common plants and animals (including animals that experience complete and incomplete metamorphosis).
- C. Understand that organisms have basic needs.
- D. Analyze how structure complements function in cells, tissues, organs, organ systems and organisms.
- F. Understand the relationship between characteristics, structures, and functions and corresponding taxonomic classifications.

012 Reproduction and the Mechanics of Heredity

- A. Describe the processes by which plants and animals reproduce and explain how hereditary information is passed from one generation to the next.

- B. Compare and contrast inherited traits and learned characteristics.
- C. Understand the organization of hereditary material and how an inherited trait can be determined by one or many genes and how more than one trait can be influenced by a single gene.
- D. Distinguish between dominant and recessive traits and predict the probable outcomes of genetic combinations.
- E. Evaluate the influence of environmental and genetic factors on the traits of an organism.

013 Adaptations and Evolution

- A. Demonstrate knowledge of adaptive characteristics and explain how adaptations influence the survival of populations or species.
- B. Describe how populations and species change through time.
- C. Describe processes that enable traits to change through time, including selective breeding, mutation and other natural occurrences.

014 Relationships between Organisms and the Environment

- A. Understand that organisms respond to internal or external stimuli and analyze the role of internal and external stimuli in the behavior of organisms.
- B. Understand relationships between organisms and the environment and describe ways that living organisms depend on each other and on the environment to meet their basic needs.
- C. Identify organisms, populations or species with similar needs and analyze how they compete with one another for resources.
- D. Analyze the interrelationships and interdependence among producers, consumers and decomposers in an ecosystem (e.g., food webs, food chains, competition, predation).
- E. Identify factors that influence the size and growth of populations in an ecosystem.
- F. Analyze adaptive characteristics that result in a population's or species' unique niche in an ecosystem.
- G. Know how populations and species modify and affect ecosystems.

015 Structure and Function of Earth Systems

- A. Understand the structure of Earth and analyze constructive and destructive processes (including plate tectonics, weathering and erosion) that produce geologic change, including how these processes have affected Earth history.
- B. Understand the form and function of surface water and groundwater.
- C. Apply knowledge of the composition and structure of the atmosphere and its properties.
- D. Apply knowledge of how human activity and natural processes, both gradual and catastrophic, can alter Earth systems.

016 Cycles in Earth Systems

- A. Understand the rock cycle and how rocks, minerals and soils are formed, and their respective properties.
- B. Understand the water cycle and its relationship to weather processes.
- C. Understand the nutrient (e.g., carbon, nitrogen) cycle and its relationship to Earth systems.
- D. Apply knowledge of how human and natural processes affect Earth systems.
- E. Understand and describe the properties and uses of Earth materials (e.g., rocks, soils, water, atmospheric gases).

017 Energy in Weather and Climate

- A. Understand the elements of weather (e.g., humidity, wind speed and direction, air pressure, temperature) and the tools used for measurement.
- B. Compare and contrast weather and climate.
- C. Analyze weather charts and data to make weather predictions.
- D. Apply knowledge of how transfers of energy between Earth systems affect weather and climate.
- E. Analyze how Earth's position, orientation, and surface features affect weather and climate.

018 Solar System and the Universe

- A. Understand the properties and characteristics of objects in the sky.
- B. Apply knowledge of the Earth–Moon–Sun system and the interactions among them (e.g., day and night, seasons, lunar phases, eclipses).
- C. Identify properties of the components of the solar system.