A Correlation and Narrative Summary of

Earth Science

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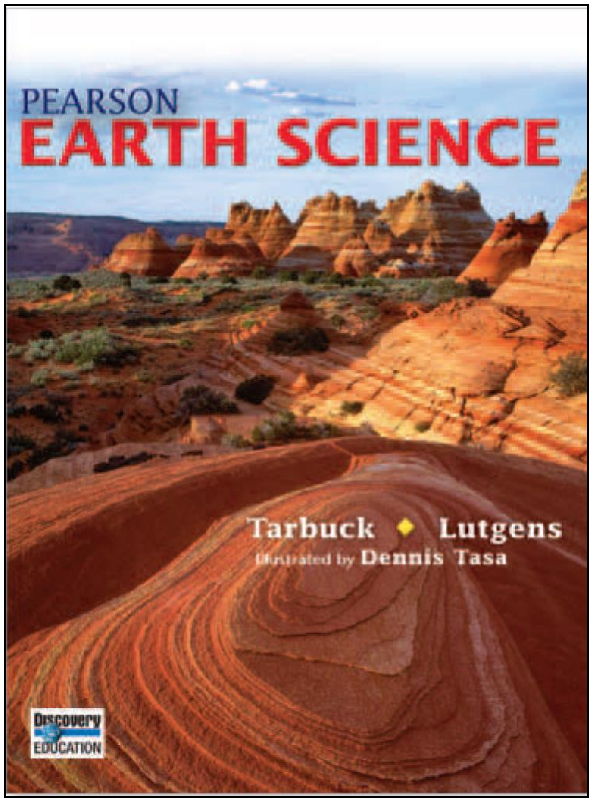
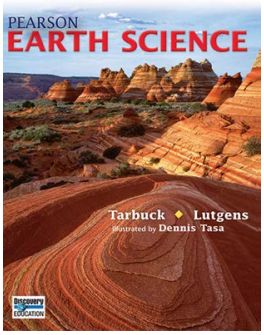


To

Tennessee
Academic Standards for Science
Earth and Space Science

SAVVAS

High School Earth Science



Pearson Earth Science

with **Pearson Realize**
Tarbuck and Lutgens ©2017

The Pearson Advantages:

In the **Pearson Earth Science** program renowned authors Edward Tarbuck and Frederick Lutgens invite students on a journey of observation, explanation, and participation in the study of Earth's processes.

- ✓ The lessons in every chapter include **summative assessments** that are directly tied to both state and national standards and measure students' progress toward mastering the Tennessee Academic Standards for Science.
- ✓ **NEW!** The 2017 edition supports your high school curriculum with NGSS standards and correlation as well as new STEM activities with teacher support.
- ✓ Concepts are presented in the context of Earth as a system, consisting of many separate but interconnected parts in a way that introductory, non-science students can consume and manage
- ✓ An accessible writing style and original artwork by Dennis Tasa, clarify complex topics for a diverse classroom including those students who think and learn visually.
- ✓ The **ExamView® Test Bank Generator CD** enables teachers to create and print customizable tests from a bank of thousands of questions.
- ✓ Earth Science contains point-of-use issue intervention. Student misconceptions are anticipated and addressed at point-of-use in the Teacher's Edition.
- ✓ In addition to electronic animations and interactivities, the Interactive Textbook provides a wealth of assessment tools. Students can monitor their progress at point of use with ongoing assessment, help tutorials, and instant feedback
- ✓ Pearson Earth Science resides on **Pearson Realize™**, Pearson's newest learning management system (LMS),

Realize Your Potential

Pearson Realize™ provides premium content to help teachers enhance their instructional materials and customize lessons to fit learners' needs. Teachers can reorder the table of contents, upload files and media, add links, and create custom lessons and assessments. Flexible class management tools enable teachers to create classes, organize students by groups, and create assignments targeted to those groups, individual students, or the entire class. Powerful search tools allow teachers to search by keyword, skill, topic, or standard to quickly find lessons, lesson plans, and instructional resources.

Reports and student usage data give teachers the power to target teaching to improve student outcomes. Digestible student progress reports give teachers instant access to student and class data that show standards mastery on assessments, online activity, overall progress, and the length of time students take on assessments.

To learn more about this program please visit
www.PearsonSchool.com

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Tennessee Academic Standards for Science – Earth and Space Science

Tennessee Academic Standards for Science Earth and Space Science	Earth Science Tarbuck, ©2017
EARTH AND SPACE SCIENCE: ACADEMIC STANDARDS	
ESS.ESS1: Earth's Place in the Universe	
1) Construct an explanation regarding the rapid expansion of the universe based on astronomical evidence of light spectra, motion of distant galaxies, and composition of matter in the universe.	**SE/TE:** 481-482, 674-677, 715-721
2) Construct a model using astronomical distances to explain the spatial relationships and physical interactions among planetary systems, stars, multiple-star systems, star clusters, galaxies, and galactic groups in the universe.	**SE/TE:** 615-616, 700-706, 715-721
3) Analyze and interpret data about the mass of a star to predict its composition, luminosity, and temperature across its life cycle, including an explanation for how and why it undergoes changes at each stage.	**SE/TE:** 704-706, 707-714
4) Communicate scientific ideas to explain the nuclear fusion process and how elements with an atomic number greater than helium have been formed in stars, supernova explosions, or exposure to cosmic rays.	**SE/TE:** 4-5, 689, 711-714
5) Analyze and compare image data from instruments used to study deep space (e.g., visible, infrared, radio, refracting and reflecting telescopes, and spectrophotometer). Evaluate the strengths and weaknesses of the instrumentation.	**SE/TE:** 678-683
6) Recognize how advances in deep space research instrumentation over the last 30 years have led to new understandings of Earth's place in the universe and how these advances have benefitted society.	**SE/TE:** 678-683

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7) Analyze and interpret data to compare, contrast, and explain the characteristics of objects in the solar system including the sun, planets and their satellites, planetoids, asteroids, and comets. Characteristics include: mass, gravitational attraction, diameter, and composition.	**SE/TE:** 143-147, 645-646, 649-653, 654-659, 660-664, 669
8) Use mathematical or computational representations to predict motions of the various kinds of objects in our solar system, including planets, satellites, comets, and asteroids, and the influence of gravity, inertia, and collisions on these motions.	**SE/TE:** 481, 622-629, 644-648, 660-664, 665
9) Evaluate the evidence for the role of gravitational force and heat production in theories about the origin and formation of Earth. Design a research study to confirm or refute one aspect of such evidence.	**SE/TE:** 4-5, 365, 720-721
10) Summarize available sources of data within the solar system which provide clues about Earth's formation. Using engineering principles, design a means to gather more data.	**SE/TE:** 4-5, 365, 715-719, 720-721

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Tennessee Academic Standards for Science Earth and Space Science	Earth Science Tarbuck, ©2017
ESS.ESS2: Earth's Systems	
1) Given an environmental disaster, analyze its effect upon the geosphere, hydrosphere, atmosphere, and/or biosphere, including sphere-to-sphere interactions. Analysis should conclude with an identification of future research to improve our ability to predict such interactions.	**SE/TE:** 144-147, 228-232, 238-239, 558, 567-569, 571-577, 578-579, 580-581
2) Construct an argument based on evidence about how global and regional climate is impacted by interactions among the Sun's energy output, tectonic events, ocean circulation, vegetation, and human activities. The argument should include discussion of a variety of time scales from sudden (volcanic ash clouds) to intermediate (ice ages) to long-term tectonic cycles.	**SE/TE:** 110, 450-451, 587, 588-591, 602-603, 691
3) Communicate scientific and technical information to explain how evidence from deep probes and seismic waves, reconstructions of historical changes in Earth's surface and its magnetic field, and an understanding of physical and chemical processes lead to a model of Earth with a hot but solid inner core, a liquid outer core, a solid mantle, and crust.	**SE/TE:** 222-224, 233-237, 248-253, 261-268, 270-271
4) Analyze surface features of Earth and identify and explain the geologic processes responsible for their formation.	**SE/TE:** 11-17, 308-311, 312-319, 320-325, 326-327
5) Develop a visual model to illustrate the formation and reformation of rocks over time including processes such as weathering, sedimentation, and plate movement. The model should include a comparison of the physical properties of various rock types, common rock-forming minerals, and continental rocks versus the oceanic crust.	**SE/TE:** 44-49, 50-55, 62, 66-69, 80-83, 86-87

Tennessee Academic Standards for Science Earth and Space Science	Earth Science Tarbuck, ©2017
6) Make and defend a claim based on evidence to describe the formation and on-going availability of mined resources such as phosphorous, platinum, rare minerals, rare earth elements, and/or fossil fuels.	**SE/TE:** 94-101, 111, 112, 113-116, 117, 118-119
7) Apply scientific principles regarding thermal convection and gravitational movement of dense materials to predict the outcomes of continued development and movement of lithospheric plates from their growing margins at a divergent boundary (mid-ocean ridge) to their destructive margin at a convergent boundary (subduction zone).	**SE/TE:** 233-237, 254-260, 264-268, 269, 270-271, 280, 308-311
8) Using maps and numerical data, evaluate the claims, evidence, and reasoning that forces due to plate tectonics cause earthquake activity, volcanic eruptions, and mountain building.	**SE/TE:** 217, 219-221, 227, 238-239, 252, 253, 256-260
9) Design a research study to examine an area of increasing seismic or volcanic activity and predict what will occur in that area over the next month, year, and decade. The description should include the instruments and measures to be used in the study and an explanation of their capabilities and limitations.	**SE/TE:** 224-227, 228-232, 265-267, 272-273, 279, 280-285
10) Construct a model which shows the interactions between processes of the hydrologic cycle and the greenhouse effect.	**SE/TE:** 158-163, 487, 602-603
11) Obtain, evaluate, and communicate information about human or natural threats to Tennessee.	**SE/TE:** 168-170, 226-227, 228-232, 557, 558-563, 573-577, 602-603
12) Engage in an argument from evidence to explain the degree to which the dynamics of oceanic currents could contribute to at least one aspect of climate change.	**SE/TE:** 448-453, 600-601

Tennessee Academic Standards for Science Earth and Space Science	Earth Science Tarbuck, ©2017
13) Use a model to predict how variations in the flow of energy through radiation, conduction, and convection into and out of Earth's systems could contribute to global atmospheric processes and climactic effects.	**SE/TE:** 483-487, 496-497, 602-603
14) Using data, weather maps, and other scientific tools, predict weather conditions from an analysis of the movement of air masses, high and low pressure systems, and frontal boundaries.	**SE/TE:** 537-542, 558-563, 564-567, 570
15) Use satellite-based image datasets to compare and explain how weather and climate patterns at various latitudes, elevations, and proximities to water and ocean currents are a function of heat, evaporation, condensation, and rotation of the planet. The comparison should also include an examination of the same location across various seasons or years.	**SE/TE:** 450, 538-539, 540-542, 588-591
16) Design a mathematical model of Earth's energy budget showing how the electromagnetic radiation from the sun in watts/ m2 is reflected, absorbed, stored, redistributed among the atmosphere, ocean, and land systems, and reradiated back into space. The model should provide a means to predict how changes in greenhouse gases could affect Earth's temperatures.	**SE/TE:** 484-487, 602, 674-677
17) Analyze the multiple sources of energy that provide power in the state of Tennessee and compare them to each other and to an alternative energy source. The analysis should include their functional components (such as infrastructure cost, on-going costs, safety, and reliability), and their social, cultural, and environmental impacts (including emissions of greenhouse gases).	**SE/TE:** 102-107, 115

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18) Identify the organisms that are major drivers in the global carbon cycle and trace how greenhouse gases are continually moved through the carbon reservoirs and fluxes represented by the ocean, land, life, and atmosphere.	**SE/TE:** 85, 110, 587
ESS.ESS3: Earth and Human Activity	
1) Identify a geographical region or small area where energy and mineral resources are scarce and evaluate competing design solutions for developing, managing, and utilizing these energy and mineral resources based on a cost-benefit analysis.	**SE/TE:** 94-101, 102-107
2) Obtain, evaluate, and communicate information on how natural resource availability, natural hazard occurrences, and climatic changes impact individuals and society.	**SE/TE:** 94-101, 602-603
3) Design, evaluate, or refine a technological solution that reduces impacts of human activities on natural systems.	**SE/TE:** 600-603
4) Analyze geoscience data and the results from global climate models to make an evidence-based forecast of the current rate of global or regional climate change and associated future impacts to Earth systems.	**SE/TE:** 110, 487, 587, 588-591, 600-601, 602-603, 606-607