

Introduction

This Pennsylvania Learns iTunes U course is a collection of resources to support teaching and learning in the Grade 4 classroom. The content of this course is organized around the Grade 4 Pennsylvania Academic Standards for Science and Technology and Engineering. We believe that Pennsylvania teachers know what is needed to support their instructional design and delivery, as well as what engages students in their own learning. For these reasons, the materials and resources provided in this course were curated by teachers. This course is not a curriculum; rather, it is a collection of assets aligned to Pennsylvania Academic Standards to support teaching and learning. The topics found in this course do not need to be taught in order.

Module Title	Message	Assignment / Call to Action (200 Character Max)	Content Directions	Resource / URL	Info about the URL (published on the "i" button of a resource/ url)	Notes
3.3. Earth and Space Sciences	In this module, you will learn Earth's place in space, as well as properties that comprise the earth's surface and how our globe has changed over the years.					
Earth Structure, Processes and Cycles: Earth Features and the Processes that Change It	In this lesson, you will learn about landforms and the processes, including weathering, that change these landforms over time. 3.3.4.A1.	LEARN about the different kinds of elements that can change the Earth's surface.		https://www.youtube.com/watch?v=H2h6uXIL8gl		VIDEO
		LEARN about the layers of the earth.		https://www.youtube.com/watch?v=NAHY6965o08		VIDEO
		EXPLORE the attributes of earth's landforms.		https://itunes.apple.com/us/app/earths-landforms-school/id835600448?mt=8		APP: Earth's Landforms
		CREATE an instructional video that ILLUSTRATES the layers of the earth.		https://itunes.apple.com/us/app/imovie/id377298193?mt=8		iMovie
		LEARN the movement of plate tectonics.		https://www.youtube.com/watch?v=tcPghqnnTVk		VIDEO
		LEARN about the process of weathering. ASSESS your understanding of weathering with a quiz.		https://itunes.apple.com/us/book/weathering/id960167497?mt=11		
		EXPLORE examples of weathering and erosion.		http://www.geography4kids.com/files/land_weathering.html		
		INVESTIGATE real world examples of weathering and erosion.		https://www.youtube.com/watch?v=R-lak3Wvh9c		
		IDENTIFY qualities of erosion and weathering. CREATE a presentation using Explain Everything and uploading the document.		https://docs.google.com/drawings/d/18WzinauJ2cw7SiK5DUf307F-a3ukQk0ZIKEDIUcyyH0/pub?w=966&h=644	PDF COMPLETED	

Earth's Resources: Exploring and Identifying Various Kinds of Rocks	In this lesson, you will explore rocks and identify various types of rock based on their properties. 3.3.4.A2.	LEARN about rocks and soil.		https://itunes.apple.com/us/book/rocks-soil/id597244595?mt=11	This book has interactive pages with a quiz embedded.	
		LEARN about the 3 types of rocks and their attributes.		https://www.youtube.com/watch?v=jPgE74Vltdc		
		EXPLORE examples of the different kinds of rocks.		http://www.sciencekids.co.nz/sciencefacts/earth/rocksandminerals.html	Student will use the information to create the rock cycle	
		SHARE your understanding of different types of rocks as well as the rock cycle as you CREATE an informational video.		https://itunes.apple.com/us/app/explain-everything-interactive/id431493086?mt=8	Please feel free to use another presentation program if you so choose.	
		CONSTRUCT your own virtual world using variety of earth materials.		https://itunes.apple.com/us/app/sandbox-build-create-your/id520777858?mt=8		
Earth's History: Learning About Fossils	In this lesson, you will learn about fossil formation as well as using fossils to compare with living creatures today. 3.3.4.A3. 3.1.4.C3.	LEARN how fossils are formed.		https://www.youtube.com/watch?v=3rkGu0BItKM	This is questionable on Copyright - Awesome video with good details but looks like brainpop video but is not labeled as such	
		LEARN about fossils.		http://www.kidsdinos.com/palaeontology-what-are-fossils.php	Includes a video that explains about fossils.	READ with VIDEO
		EXPLORE a prehistoric dig site to discover fossils and clues to the ancient past.		https://itunes.apple.com/us/app/prehistoric-fish-bones/id977955327?mt=12		\$2.99
		PRESENT 3 facts you learned about fossils.		https://itunes.apple.com/us/app/pic-collage-photo-video-text/id448639966?mt=8		APP: Pic Coll
		LEARN about radioactive dating.		http://www.sciencechannel.com/tv-shows/greatest-discoveries/videos/100-greatest-discoveries-plate-tectonics/		VIDEO

Earth's History: Water	In this lesson, you will learn about where various forms of water can be found on our planet, and will investigate transforming water from one state to another. 3.3.4.A4.	LEARN about the water cycle.		https://www.youtube.com/watch?v=zBnKgwnn7i4		
		EXPLORE the water cycle and the variables which affect it.		https://itunes.apple.com/us/app/the-water-cycle/id483114651?mt=8		
		LEARN about the location and forms of water on earth.		http://www.greenfacts.org/en/water-resources/index.htm#2		
		INVESTIGATE the qualities of the water cycle.		http://water.usgs.gov/edu/watercycle-kids-beg.html		
		LEARN about earth's water distribution and ANALYZE the information graphic.		http://www.greenfacts.org/en/water-resources/images/figure-4-1.jpg		
		DEMONSTRATE an understanding of earth's water. CREATE a presentation about the previous graphic.	You can save the image to your camera roll and import into your app.	https://itunes.apple.com/us/app/explain-everything-interactive/id431493086?mt=8		
Earth's History: Weather and Climate	Describe basic weather elements. Identify weather patterns over time. 3.3.4.A5.	LEARN about weather fronts and how they affect weather.		https://www.youtube.com/watch?v=G7Ewqm0YHUI		
		INVESTIGATE the qualities of cold and warm fronts.		https://www.youtube.com/watch?v=naarbGHoAGU		
		LEARN about what causes air pressure and its affect on the weather.		https://www.youtube.com/watch?v=aiYyCurh_SU		
		EXPLORE different types of weather data.	As you explore the different weather maps choose one to screenshot and explain in the next activity.	https://itunes.apple.com/us/app/weather-underground-forecasts/id486154808?mt=8		
		DEMONSTRATE an understanding of weather. CREATE a presentation to share your understanding.		https://itunes.apple.com/us/app/explain-everything-interactive/id431493086?mt=8		
Earth and Space Sciences: Composition and Structure	In this lesson, you will explore the solar system, including the orbit of the earth, and the planets within it. 3.3.4.B1., 3.3.4.B2.	LEARN about our solar system.		https://www.youtube.com/watch?v=Qd6nLM2QIWw		

		EXPLORE the orbit of earth and other attributes it has within our solar system.		http://www.planetsforkids.org/planet-earth.html		
		INTERACT with our solar system and earth's orbit and the variables that affect them.		https://itunes.apple.com/us/app/a-solar-system-journey/id444804070?mt=8		
		INVESTIGATE our solar system and the planets within it.		https://itunes.apple.com/app/id347546771?referrer=click%3D01dbeeb2-cdf8-46c1-b715-e027fbc86f4d		

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3.2. Physical Sciences: Chemistry and Physics	In this module, you will discover that matter is the building blocks of life, and energy is necessary for sustaining life. You will explore various forms of energy and will uncover the changing states of matter through interactive lessons, videos, and engaging articles.					
Chemistry: Properties of Matter & Energy	In this lesson, you will investigate the process of changing states of matter and learn more about these processes as they occur in the environment and in daily life. 3.2.4.A1, 3.2.4.A3, 3.2.4.A5	LEARN about the changing states of matter.		https://www.youtube.com/watch?v=jd0RXHfKJQ		
		INVESTIGATE the process and affects of changing states of matter.		http://easyscienceforkids.com/all-about-states-of-matter/		
		LEARN more about the states of matter and the changes that can occur.		http://idahoptv.org/sciencetrek/topics/matter/facts.cfm		
		DEMONSTRATE your understanding of the changing states of matter. CREATE a presentation to share your understanding.		https://itunes.apple.com/us/app/explain-everything-interactive/id431493086?mt=8		
		LEARN about conservation of mass.		http://cache.eb.com/new-multimedia/mp4/matter101.mp4		
Chemistry: Structure of Matter	In this lesson, you will learn that atoms are the building blocks of matter and will model this understanding through investigations of their attributes. 3.2.4.A2	LEARN about atoms the building block of matter.		https://www.youtube.com/watch?v=hc0EtPPpZUU		
		LEARN about what an atom is and how it fits into our lives.		http://www.chem4kids.com/files/atom_intro.html		
		DISCOVER why atoms are the building blocks of matter.		http://www.chem4kids.com/files/atom_structure.html		
		MODEL understanding of the parts of an atom. CREATE a presentation to share your understanding.		https://itunes.apple.com/us/app/explain-everything-interactive/id431493086?mt=8	https://drive.google.com/file/d/0B99Um_mvTWdGSFYx_dnVnVUpWS2s/view?usp=sharing	

		INVESTIGATE the attributes of atoms and molecules and how modifying atoms changes them.		https://itunes.apple.com/us/app/atom-builder/id549485037?mt=8		
Chemistry: Reactions	In this lesson, you will learn about compounds and investigate the effects of combining various elements together through interactive apps. 3.2.4.A4	LEARN about compounds.		https://www.youtube.com/watch?v=avgFqINML5o		
		INVESTIGATE combining elements together and applying other variables.	This is a fictional app that allows you to explore how compounds are made. Try to produce as many compounds as you can and notice what changes them.	https://itunes.apple.com/us/app/toca-lab/id748057890?mt=8		
		ENGAGE in the NOVA app to EXPLORE the many elements found in our world.		https://itunes.apple.com/us/app/nova-elements/id512772649?mt=8&ign-mpt=uo%3D8		
Physics: Force & Motion of Particles and Rigid Bodies	In this lesson, you will investigate forces in motion as they you learn about Newton's Laws. 3.2.4.B1	LEARN about inertia and the motion of objects.	Read only the first section "Inertia and Mass".	http://www.physicsclassroom.com/class/newtlaws/Lesson-1/Inertia-and-Mass		
		LEARN about Newton's Three Laws of Motion and how they are represented in the physical world.		http://www.slideshare.net/icheema/newtons-laws-of-motion-with-real-life-examples		
		LEARN about work, force, energy and motion and the relationship between them.		https://www.youtube.com/watch?v=iCqm5uxc2dE		
		LEARN about Newton's First Law of Motion in this video demonstration.		https://www.youtube.com/watch?v=-MDILG7Znk		
		DISCOVER examples of mechanics and motion.		http://www.physics4kids.com/files/motion_intro.html		
		LEARN about kinematics and motion. ASSESS your understanding of kinematics and motion	Read through some of the examples found on this website.	http://www.school-for-champions.com/science/motion.htm#.Vbj07pNVhBc		
		INVESTIGATE the variables that affect forces, motion, friction and acceleration.		https://phet.colorado.edu/sims/html/forces-and-motion-basics/latest/forces-and-motion-basics_en.html		

Energy Storage and Transformations: Conservation Laws	In this lesson, you will identify forms of kinetic and potential energy, as well as identify real-world forms of energy. 3.2.4.B2, 3.2.4.B3	LEARN about the different types of energy and IDENTIFY their real-world application.		http://www.slideshare.net/Cristinam0626/types-of-energy-10076124		
		LEARN about kinetic and potential energy and examples of each type.		http://www.eia.gov/Kids/energy.cfm?page=about_forms_of_energy-basics-k.cfm		
		REVIEW the different forms of energy.		http://www.eschooltoday.com/energy/kinds-of-energy/all-about-energy.html		
		TAKE this quiz to ASSESS your understanding of energy and energy transfer.		http://www.proprofs.com/quiz-school/story.php?title=energy-transfer_1		
Electrical and Magnetic Energy	In this lesson, you will read about magnets in everyday life, and will interact with applications to explore electrical circuits. 3.2.4.B4	LEARN about electrical circuits.		https://www.youtube.com/watch?v=VnnpLaKsqGU		
		LEARN about series and parallel circuits.		http://www.slideshare.net/Melodia/series-and-parallel		
		LEARN about the types of electrical circuits.		https://www.youtube.com/watch?v=RQ3djios_LY8		
		EXPLAIN both parallel and series circuits. CREATE a presentation to explain your thinking.		https://itunes.apple.com/us/app/explain-everything-interactive/id431493086?mt=8		
		LEARN about magnets, their poles, and everyday uses for them.		http://www.slideshare.net/mercedesrg/profits-of-magnetism		
		EXPLORE and INTERACT with simple circuits.		https://itunes.apple.com/us/app/exploriments-electricity-simple/id490164401?mt=8		
Nature of Waves Sound and Light Energy	In this lesson, you will explore light and sound through video clips and engaging simulations. 3.2.4.B5	LEARN about waves.		https://edpuzzle.com/media/551040203ecc5fad037781d9	Link only the first 2:25	
		DISCOVER amazing things that sound waves can do.		http://youtu.be/Ude8pPjawKI		
		LEARN about the transfer of energy through sound waves.		http://youtu.be/17tqXgvCN0E		

		LEARN about light.		https://www.youtube.com/watch?v=iletCKDCt_0#t=31		
		DISCOVER and ENGAGE in how waves travel.		https://phet.colorado.edu/sims/html/wave-on-a-string/latest/wave-on-a-string_en.html		
		CONSTRUCT A MODEL to observe amplitude, wavelength, and transfer of energy.		http://www.knowitall.org/nasa/pdf/scifiles/redlight_full.pdf	Page 19 only if possible	

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Life Sciences	In this module, you will explore the life cycles of plants and animals, beginning with common threads throughout each cycle, up through natural selection and heredity.					
Organisms and Cells: Common Characteristics of Life	In this lesson, you will discover what plants and animals need to survive in their environment, such as air, water, food and shelter. 3.1.4.A1	RESEARCH and RECORD the characteristics of mammals, reptiles, birds, amphibians, and fish.		http://www.sheppardsoftware.com/content/animals/kidscorner/kc_classification_mammals.htm	May need permission to use this site.	ARTICLE
		LEARN about the structures of living things.		http://www.thunderboltkids.co.za/Grade4/01-life-and-living/chapter2.html	Easy to read article with accompanying photos that allow most students to read independently	ARTICLE GOOD QUALITY
		CREATE your own labeled plant.		https://itunes.apple.com/us/app/doodle-buddy-for-ipad-paint/id364201083?mt=8		APP Doodle Buddy-
		LEARN about the function of plant structure		https://itunes.apple.com/us/itunes-u/the-amoeba-sisters/id718923638?mt=10	The Amoeba Sisters provide several other popcasts to help students understand difficult science concepts.	PODCAST
		EXTEND your learning and view this time-lapse video to OBSERVE how plants move, why plants move, and how their structure helps them to survive and grow.		http://www.watchknowlearn.org/Video.aspx?VideoID=56480&CategoryID=6202	Approx. a 4 minute video that would be a great lesson opener or discussion starter.	VIDEO
Organisms and Cells: Energy Flow	In this lesson, you will learn the basic needs of plants and animals and will describe what each needs to survive. 3.1.4.A2	LEARN the basic needs of survival for plants and animals.		https://docs.google.com/presentation/d/11HpzUf7uoG6_ju0GfmDc-C4OKDiZi_RQmBsRbnGEF/Sg/embed?slide=id.i0		
		LEARN what animals need to survive.		http://ecosystems.psu.edu/youth/sftrc/lesson-plan-pdfs/habitat		
		COMPLETE this Venn diagram MODEL understanding of the diets of different animals		http://ecosystems.psu.edu/youth/sftrc/lesson-plan-pdfs/venn		
		ASSESS understanding of previous reading as you COMPLETE pages 7 and 8 of this PDF.		http://ecosystems.psu.edu/youth/sftrc/lesson-plan-pdfs/wildlife-all		

		REVIEW the process of photosynthesis.		https://s-media-cache-ak0.pinimg.com/736x/80/e7/8f/80e78f6b81b6ba782854e394aae64c64.jpg	
		LEARN about the importance of the food chain.		http://www.dec.ny.gov/docs/remediation_hudson_pdf/hrlpk3fchain.pdf	
		ENGAGE in the food chain and the variables that affect it.		https://itunes.apple.com/us/app/food-web/id565839214?mt=8	
Organisms and Cells: Life Cycles	In this lesson, you will experience life cycles of plants and animals. You will be able to construct models of demonstrating these life cycles and will recognize that reproduction is necessary for life to continue. 3.1.4.A3, 3.1.4.A8, 3.1.4.B2	LEARN about plant reproduction.		https://itunes.apple.com/us/podcast/flowering-plant-reproduction/id718923638?i=308440746&mt=2	PODCAST Flowering Plant - 10
		DISCOVER some unusual life cycles. First, look at what gives birth to baby seahorse.		http://www.iflscience.com/plants-and-animals/male-seahorse-births-babies-underwater-shotgun	VIDEO
		CREATE a visual display to show the steps in the life of a seahorse.		https://seahorseproject.wordpress.com/2012/01/26/the-life-cycle-of-a-seahorse/	ARTICLE
		VIEW this video of a mosquito's life cycle.		http://www.youtube.com/watch?v=sjV0JplAH78#t=89	VIDEO
		EXPLORE sea turtles adaptation and their environment.		http://www.seeturtles.org/sea-turtle-life-cycle?gclid=C1zB76G1-sECFW5o7AodyCYAAA	ARTICLE
		COMPARE and CONTRAST the life cycle of two of the creatures you have just learned about.		https://itunes.apple.com/us/app/venn-diagram/id666981188?mt=8	APP Venn Diagram
		REINFORCE your understanding of the butterfly life cycle as you READ this infographic.		http://www.kidzone.ws/animals/monarchlifecycle.gif	
		PRACTICE identifying the life cycle of the butterfly. CREATE a presentation to share your understanding.	Go to the link, tap and hold the picture and choose "Save Image" Then open in the Explain Everything app.	http://www.kidzone.ws/animals/monarchlifecyclenowords.gif	

Organisms and Cells: Form and Function	In this lesson, you will learn ways vertebrates and invertebrates adapt to survive in specific environments. 3.1.4.A5	LEARN the basics of vertebrate.		http://www.biology4kids.com/files/vert_main.html	A great assignment and the invertebrate article provided on the same website could be to create a Venn Diagram synthesizing these readings	ARTICLE
		LEARN about Invertebrates.		http://www.biology4kids.com/files/invert_main.html		ARTICLE
		EXPLORE invertebrates and vertebrates.		http://createwebquest.com/chantag/invertebrates-vs-vertebrates		
		CREATE a presentation using the notes you took about vertebrates/ invertebrates. SHARE the haikudeck with others.		https://www.haikudeck.com	Can use the attached website of download an APP	
		LEARN how animals survive in the desert.		https://www.youtube.com/watch?v=hTfBSIYTG4k		
Genetics: Heredity	In this lesson, you will describe features visible in parents and children. 3.1.4.B1	LEARN about characteristics that are passed down from parent to child.		http://learn.genetics.utah.edu/content/inheritance/observable/		
		LEARN about heredity and examples of what it is.		https://www.youtube.com/watch?v=bGiKRD5QHkl		
		EXPLORE characteristics that are passed down from parent to child.	Activity is found on pages 5 and 6.	http://teach.genetics.utah.edu/content/heredity/files/InventoryOfTraits.pdf		
		DISCOVER characteristics that you share with your parents.		https://www.teachervision.com/tv/printables/0876281390_127.pdf		
Evolution: Natural Selection	In this lesson, you will learn about climate change and its effects on the plants and animals living on earth. 3.1.4.C1	LEARN about natural selection and evolution.		https://www.youtube.com/watch?v=0SCjhl86grU		
		LEARN about how climate change affects birds.		http://climatekids.nasa.gov/extreme-weather-birds/		
		LEARN about climate change.		https://www.youtube.com/watch?v=ko6GNA58YOA		
Evolution: Adaptation	In this lesson, you will explore how plants and animals have adapted in order to survive on our ever-changing planet. 3.1.4.C2	LEARN about animal adaptations.		https://itunes.apple.com/us/book/adaptations/id642658736?mt=11		

		EXPLORE how animals have adapted to extreme environments.	Much of this site you can explore. For this lesson you will have to focus on the "Adapted to extremes" section.	http://www.bbc.co.uk/nature/adaptations		
		LEARN about interesting animal and plant adaptations		https://www.youtube.com/watch?v=5WECs5-jNlc		
		LEARN about defensive features organisms developed over time.		https://itunes.apple.com/us/book/adaptations/id642658736?mt=11		
		EXPLORE adaption and how the environment affects them.	This is a simulated game that allows you to create and modify a creature which needs to survive their environment. Take a screenshot of your final BioBot and explain in the next activity.	https://itunes.apple.com/us/app/biobots-under-sea-rescue/id493081393?mt=8		