IAA Curriculum

Content Area	Science	Grade	10
Course Name	Earth Science		

Unit 1/ Concepts	Unit 1: Hydrosphere
Big Ideas	• Introduction to Earth's systems • Basic requirements for sustaining life • Water cycle • Surface water, groundwater, assessing and protecting water supplies • Global patterns of ocean circulation • How wind and density differences drive ocean currents • Global conveyor belt • El Niño
Key learning objectives and skills	• Identify systems • Label parts of systems • Collect data • Interpret data • Show cause and effect • Develop a scientific model • Apply scientific concepts
Essential Questions	What are the ways water reaches the ocean? What are the major stages of the water cycle? What is the difference between condensation and precipitation? Why are most local water budgets not balanced? How does vegetation and rainfall affect the local water budget? How can we ensure a continuous supply of freshwater? How do rivers form? What are the parts of a river system? How does water temperature affect dissolved gases? How does freezing and evaporation affect salinity? What is a thermocline? How does density drive the movement of deep ocean currents? Why does the ocean appear blue? How can we use aquaculture to sustain life?

Dates	Smart Objectives	Instructional Strategies and Activities	PA CC Standards	Keystone Anchors	Keystone Eligible Content	Vocabulary

5-6 weeks	Earth's systems ● Identify parts of water cycle ● Categorize human needs for survival ● Assess local patterns of groundwater runoff and water supply. ● Formulate predictions for global ocean circulation ● Critique ancient oceanic travel patterns ● Cite evidence for El Niño	***Sustaining life*** ● Direct Instruction ● Guided notes ● Question/Answer ● Visual Aids ● Using Tables and Graphs ● Using Models ● Ed Puzzles ● Graphic Organizers ● Lab inquiry activities ● Debate student uses of resources ● evaluate use of resources ***Water cycle*** ● Direct Instruction ● Guided notes ● Question/Answer ● Visual Aids ● Lab or Visual Demonstrations ● Using Tables and Graphs ● Using Models ● Ed Puzzles ● Graphic Organizers ● Lab inquiry activities ● Computer simulations ● Label parts of water cycle ● Model watershed ***Ocean Currents*** ● Direct Instruction ● Guided notes ● Question/Answer ● Visual Aids ● Lab or Visual Demonstrations ● Using Tables and Graphs ● Using Models ● Ed Puzzles ● Graphic Organizers ● Lab inquiry activities ● Computer simulations of ancient travelers' routes ● Model ocean gyres ● Analyze temperature maps ***Water Density*** ● Direct Instruction ● Guided notes ● Question/Answer ● Visual Aids ● Lab or Visual Demonstrations	3.2.10.B3 3.3.10.A3 3.3.10.A4 3.3.10.A5 3.3.10.A6 3.3.10.A7 3.3.10.B3	BIO.A.2.1 BIO.A.2.3 BIO.A.3.1 BIO.A.3.2 BIO.A.4.2	BIO.A.2.1.1 BIO.A.2.3.2 BIO.A.3.1.1 BIO.A.3.2.1 BIO.A.3.2.2 BIO.A.4.2.1	Water cycle Evaporanspiration Condensation Precipitation Desalinization Tributary Watershed Stream load Discharge Gradient Meander Braided stream Delta Alluvial fan Floodplain Salinity Density Desalinization Current Coriolis effect Gyre Gulf stream Deep current

		• Using Tables and Graphs • Using Models • Ed Puzzles • Graphic Organizers • Lab inquiry activities • Computer simulations • Apply Mathematical Equations ***Wind and current*** • Direct Instruction • Guided notes • Question/Answer • Visual Aids • Lab or Visual Demonstrations • Using Tables and Graphs • Using Models • Ed Puzzles • Graphic Organizers • Lab inquiry activities • Computer simulations ***Global currents*** • Direct Instruction • Guided notes • Question/Answer • Visual Aids • Lab or Visual Demonstrations • Using Tables and Graphs • Using Models • Ed Puzzles • Graphic Organizers • Lab inquiry activities • Computer simulations ***El Niño*** • Direct Instruction • Guided notes • Question/Answer • Visual Aids • Lab or Visual Demonstrations • Using Tables and Graphs • Using Models • Ed Puzzles • Graphic Organizers • Lab inquiry activities • Computer simulations				

Resources	• SEPUP-Lab aids textbook
	  ○ Lab activities
	  ○ Videos
	• Materials to model content

Formative Assessments	What evidence (product and/or performance) will be collected to establish that content and skills are being learned? • Exit tickets • Lab reports • Models • Quiz • Do now • Discussion • Stations • Oral questioning • Independent practice
Summative Assessments	What evidence (produce and/or performance) will be collected to determine that content and skills have been learned? • Chapter tests • Unit Test • Project
Strategies for ELL and IEP Support	What tools, strategies, and resources will be used to provide accommodations and modifications to support students? • Productive pacing • Incorporate native languages • Use visuals • Small group teaching • Provide different levels of materials • Simplify language • Repetition • Provide content in multiple forms
Acceleration Strategies	What tools, strategies, and resources will be used to help advance students closer to grade-level expectations • Scaffolding of material • Collaboration with others • Grouping of students • Concrete examples • Visuals • Integrate technology • Goal setting

IAA Curriculum

Content Area	Science	**Grade**	10
Course Name	Earth Science		

Unit 2/Concepts	Unit 2: Atmosphere & Climate
Big Ideas	• Climate and weather • Influence of latitude, atmospheric circulation, proximity to the ocean, elevation, land features, and prevailing winds on regional climate • Energy balance, albedo effect, greenhouse effect, carbon cycle, positive and negative feedback loops • Paleoclimatology, climate proxies, climate change in Earth's past, Milankovitch cycles, tectonic processes that influence climate, human impact on climate
Key learning objectives and skills	• Identify systems • Label parts of systems • Collect data • Interpret data • Show cause and effect • Develop a scientific model • Apply scientific concepts
Essential Questions	• What is an air mass? • How do different air masses form? • How do the four main types of air masses affect weather in North America? • What air mass forms over the warm water over the Atlantic Ocean? • What are the four types of fronts? • What are the characteristic weather patterns of cold fronts and warm fronts? • What type of front causes a squall line? • What are the stages of the development of the thunderstorm/hurricane? • Why are tornadoes so destructive? • What four instruments do scientists use to measure low atmospheric conditions? • Why are scientists interested in weather conditions in the upper atmosphere? • How do meteorologists send weather instruments into the upper atmosphere? • How do satellites/computers help meteorologists study weather? • What are the six different pieces of information that can be obtained from a station model? • How do computer models help meteorologists forecast weather? • What are the three types of weather scientists have tried to control? • What two factors are used to describe climate? • How does latitude determine the amount of solar energy received? • How does latitude determine wind pattern? • What conditions cause monsoons/El Niño? • How does elevation affect climate? • What is the rain shadow effect? • What are the four methods that climatologists use to study climate? • What four factors cause climate to change? • How do orbital changes affect climate? • How does CO_2 affect global temperatures?

	• How can countries work together to reduce global warming?					
Dates	**Smart Objectives**	**Instructional Strategies and Activities**	**PA CC Standards**	**Keystone Anchors**	**Keystone Eligible Content**	**Vocabulary**
5-6 weeks	• Identify the difference between climate and weather. • Show the cause and effect between latitude, atmospheric circulation, proximity to the ocean, elevation, land features, and prevailing winds on regional climate. • Apply concepts of Energy balance, albedo effect, greenhouse effect, carbon cycle, positive and negative feedback loops to climate. • Explain phenomena in terms of concepts of climate change in Earth's past.	***Climate and Weather*** • Direct Instruction • Guided notes • Question/Answer • Visual Aids • Lab or Visual Demonstrations • Using Tables and Graphs • Using Models • Ed Puzzles • Graphic Organizers • Lab inquiry activities • Computer simulations • Analyze climate data ***Influence of latitude, atmospheric circulation, proximity to the ocean, elevation, land features, and prevailing winds on regional climate*** • Direct Instruction • Guided notes • Question/Answer • Visual Aids • Lab or Visual Demonstrations • Using Tables and Graphs • Using Models • Ed Puzzles • Graphic Organizers • Lab inquiry activities • Computer simulations • Study photographs of landscapes ***Energy balance, albedo effect, greenhouse effect, carbon cycle, positive and negative feedback loops*** • Direct Instruction • Guided notes • Question/Answer • Visual Aids • Lab or Visual Demonstrations • Using Tables and Graphs • Using Models • Ed Puzzles • Graphic Organizers • Lab inquiry activities	3.3.10.A2 3.3.10.A3 3.3.10.A4 3.3.10.A5 3.3.10.A6 3.3.10.A7 3.3.10.A8 3.3.10.B2	BIO.A.2.1 BIO.A.2.3 BIO.A.3.1 BIO.A.3.2 BIO.A.4.2	BIO.A.2.1.1 BIO.A.2.3.2 BIO.A.3.1.1 BIO.A.3.2.1 BIO.A.3.2.2 BIO.A.4.2.1	Air mass Cold front Warm front Stationary front Thunderstorm Hurricane Tornado Barometer Thermometer Anemometer Wind vane Radar Station model Climate Specific heat Monsoon Tropical climate Middle-latitude Polar climate Microclimate Global warming Climatologist

		• Computer simulations • Model the greenhouse effect ***Paleoclimatology, climate proxies, climate change in Earth's past, Milankovitch cycles, tectonic processes that influence climate, human impact on climate*** • Direct Instruction • Guided notes • Question/Answer • Visual Aids • Lab or Visual Demonstrations • Using Tables and Graphs • Using Models • Ed Puzzles • Graphic Organizers • Lab inquiry activities • Computer simulations • Debates on global warming				

Resources	Materials, texts, videos, internet sites, software, human to support instruction
	• SEPUP-Lab aids textbook
	  ○ Lab activities
	  ○ Videos
	• Materials to model content

Formative Assessments	What evidence (product and/or performance) will be collected to establish that content and skills are being learned? • Exit tickets • Lab reports • Models • Quiz • Do now • Discussion • Stations • Oral questioning • Independent practice •
Summative Assessments	What evidence (produce and/or performance) will be collected to determine that content and skills have been learned? • Chapter tests • Unit Test • Project
Strategies for ELL and IEP Support	What tools, strategies, and resources will be used to provide accommodations and modifications to support students? • Productive pacing • Incorporate native languages • Use visuals • Small group teaching

	• Provide different levels of materials • Simplify language • Repetition • Provide content in multiple forms
Acceleration Strategies	What tools, strategies, and resources will be used to help advance students closer to grade-level expectations • Scaffolding of material • Collaboration with others • Grouping of students • Concrete examples • Visuals • Integrate technology • Goal setting

IAA Curriculum

Content Area	Science	Grade	10
Course Name	Earth Science		

Unit 3/concept	Unit 3: Earth's Place in the Universe
Big Ideas	• Solar system formation • Kepler's Laws • Radioactive dating • Life cycle of stars • Spectroscopy
Key learning objectives and skills	• Identify systems • Label parts of systems • Collect data • Interpret data • Show cause and effect • Develop a scientific model • Apply scientific concepts
Essential Questions	• What does Maria look like and how did it become known as Maria? • How does the thickness of the moon's crust on the near side compare to the thickness of the far side? • How and when was Maria formed? • How would the surface of the moon be different today if meteorites had continued to hit it at the same rate as 3 billion years ago? • How did breccias form on the moon? • How did scientists think the moon formed? • What causes a total solar eclipse? • Why does a lunar eclipse not occur every time the moon revolves around Earth? • How does a solar eclipse differ from a lunar eclipse? • How does the appearance of the moon change when it is waxing? • Why do the moon phases repeat every 29.5 days? • How does the moon cause tidal bulges? • What are the characteristics of phobos and deimos? • Why does Triton have an unusual orbit? • Where is the asteroid belt located in our solar system? • What are the four main parts of a comet? • What is the relationship between the oort cloud and comets? • Where is the Kuiper belt? • What do astronomers analyze to determine the composition and temperature of a star? • Why do stars appear to move westward across the sky? • What units are used to measure distance to stars? • What method do astronomers use to measure distance to stars? • What is the difference between Apparent magnitude and Absolute magnitude? • What are the steps that a gas nebula goes through to become a star? • What causes a nova explosion? • Why can only massive stars form black holes?

	● What are two types of supernovas? ● How do we use half life to estimate ages?

Dates	Smart Objectives	Instructional Strategies and Activities	PA CC Standards	Keystone Anchors	Keystone Eligible Content	Vocabulary
3-4 weeks	● Identify how radiometric dating is used ● Describe the life cycle of stars ● Predict the future of our sun. ● Analyze the solar nebula condensation theory. ● Explain the phenomena of tides. ● Create a prototype to travel to the Earth's core. ● Create a model of the Earth's interior. ● Analyze data to predict Earth's inner core.	***Solar system formation*** ● Direct Instruction ● Guided notes ● Question/Answer ● Visual Aids ● Lab or Visual Demonstrations ● Using Tables and Graphs ● Using Models ● Ed Puzzles ● Graphic Organizers ● Lab inquiry activities ● Computer simulations of solar nebula ***Life cycle of stars*** ● Direct Instruction ● Guided notes ● Question/Answer ● Visual Aids ● Lab or Visual Demonstrations ● Using Tables and Graphs ● Create models of earth's core ● Ed Puzzles ● Graphic Organizers ● Lab inquiry activities ● Computer simulations ***Spectroscopy*** ● Direct Instruction ● Guided notes ● Question/Answer ● Ed Puzzles ● Graphic Organizers ● Lab inquiry activities ● Computer simulations	3.3.10.A4 3.3.10.A7 3.3.10.B1 3.3.10.B2 3.3.10.B3	BIO.A.2.1 BIO.A.2.3 BIO.A.3.1 BIO.A.3.2 BIO.A.4.2	BIO.A.2.1.1 BIO.A.2.3.2 BIO.A.3.1.1 BIO.A.3.2.1 BIO.A.3.2.2 BIO.A.4.2.1	Solar system planet Solar nebula Planetesimal Eccentricity Orbital period Inertia Gas giant Kuiper belt Satellite moon crater Apogee Perigee Eclipse solar/lunar eclipse Phase Galilean moon Asteroid Comet Oort cloud Meteoroid Meteor Star Doppler effect Light year Parallax Apparent magnitude Absolute magnitude Nebula Giant White dwarf Nova Neutron star Pulsar Galaxy Quasar Black hole Big bang theory
Resources	Materials, texts, videos, internet sites, software, human to support instruction ● SEPUP-Lab aids textbook ○ Lab activities ○ Videos ● Materials to model content					

Formative Assessments	What evidence (product and/or performance) will be collected to establish that content and skills are being learned? ● Exit tickets ● Lab reports ● Models ● Quiz ● Do now ● Discussion ● Stations ● Oral questioning ● Independent practice
Summative Assessments	What evidence (produce and/or performance) will be collected to determine that content and skills have been learned? ● Chapter tests ● Unit Test ● Project
Strategies for ELL and IEP Support	What tools, strategies, and resources will be used to provide accommodations and modifications to support students? ● Productive pacing ● Incorporate native languages ● Use visuals ● Small group teaching ● Provide different levels of materials ● Simplify language ● Repetition ● Provide content in multiple forms
Acceleration Strategies	What tools, strategies, and resources will be used to help advance students closer to grade-level expectations ● Scaffolding of material ● Collaboration with others ● Grouping of students ● Concrete examples ● Visuals ● Integrate technology ● Goal setting

IAA Curriculum

Content Area	Science	**Grade**	10
Course Name	Earth Science		

Unit 4/ concept	Unit 4: Plate Tectonics
Key learning objectives and skills	• Identify systems • Label parts of systems • Collect data • Interpret data • Show cause and effect • Develop a scientific model • Apply scientific concepts
Big Ideas	• Transform-fault boundaries, earthquakes, physical and computer models, earthquake forecasting • Subduction zones, volcanoes, and types of volcanic eruptions, technologies for volcano monitoring, data analyses • Seafloor spreading, paleomagnetism, plate tectonics summary, landforms associated with plate boundaries
Essential Questions	• What observations first led to Wegener's hypothesis of continental drift? What evidence supports the hypothesis? • How do scientists know the Earth's magnetic poles have reversed many times during Earth's history? • How do scientists date C4 rocks? • What is the plate tectonic theory? • Why do earthquakes and volcanoes occur at plate boundaries? • What are the three types of plate boundaries? • What is the role of convection in plate movement? • How does rifting and accretion create change in the shape of continents? • How does continental rifting lead to changes in plants and animals? • What is the supercontinent cycle? • How does the theory of plate tectonics relate to the formation and breakup of pangea? • What three changes in geography are likely to happen in the future? • What are the three types of stresses on the Earth's crust? • What are the four types of faults? • What are the three types of tectonic plate collisions that form mountains? • How are fault block mountains formed? • How are dome mountains formed? • How are volcanic mountains formed? • What instrument is used to record seismic waves? • How is a seismograph different from a seismogram? • What scale is used to measure earthquake magnitude? • What is the difference between magnitude and intensity? • How are tsunamis and earthquakes related? • What changes in a rock may signal an earthquake? • What conditions affect magma formation? • What's the difference between magma and lava? • What three tectonic settings identify where volcanoes occur? • How does a hotspot form?

	• What's the difference between mafic and felsic magma? • What are the three types of lava flows? • What are the three examples of pyroclastic material? • How do calderas form?					
Dates	**Smart Objectives**	**Instructional Strategies and Activities**	**PA CC Standards**	**Keystone Anchors**	**Keystone Eligible Content**	**Vocabulary**
4-5 weeks	• Identify evidence of plate movement. • Use modern technology to track plate movements • Predict plate movements in California. • Create a model of the San Andreas fault • Identify the locations of volcanoes. • Appraise the chances of Mount Rainier erupting. • Analyze how seafloor spreading is affected by plate tectonics. • Use knowledge of chemistry to predict volcanic eruptions • Hypothesize how seismographs work.	***Transform-fault boundaries, earthquakes, physical and computer models, earthquake forecasting*** • Direct Instruction • Guided notes • Question/Answer • Visual Aids • Lab or Visual Demonstrations • Using Tables and Graphs • Using Models • Ed Puzzles • Graphic Organizers • Lab inquiry activities • Computer simulations ***Subduction zones, volcanoes, and types of volcanic eruptions, technologies for volcano monitoring, data analyses*** • Direct Instruction • Guided notes • Question/Answer • Visual Aids • Lab or Visual Demonstrations • Using Tables and Graphs • Using Models • Ed Puzzles • Graphic Organizers • Lab inquiry activities • Computer simulations ***Seafloor spreading, paleomagnetism, plate tectonics summary, landforms associated with plate boundaries*** • Direct Instruction • Guided notes • Question/Answer • Visual Aids • Lab or Visual Demonstrations • Using Tables and Graphs • Using Models	3.3.10.A1 3.3.10.A2 3.3.10.A3 3.3.10.A4 3.3.10.A7 3.3.10.A8	BIO.B.3.1 BIO.B.3.2 BIO.B.3.3	BIO.B.3.1.1 BIO.B.3.1.2 BIO.B.3.1.3 BIO.B.3.2.1 BIO.B.3.3.1	GPS Richter scale Magnitude Convergent boundary Transform boundary Divergent boundary Earthquake Fault Seismograph Tsunamii Subduction zone Magma Lava Igneous rock intrusive extrusive Hot spot Shield volcano Stratovolcanoes Tephra Pyroclastic flow Lahars Pangea Bathymetric profile Mid ocean ridge Mercator projection Paleomagnetic data Ring of fire Island arc

		• Ed Puzzles • Graphic Organizers • Lab inquiry activities • Computer simulations				

Resources	Materials, texts, videos, internet sites, software, human to support instruction
	• SEPUP-Lab aids textbook
	  ○ Lab activities
	  ○ Videos
	• Materials to model content

Formative Assessments	What evidence (product and/or performance) will be collected to establish that content and skills are being learned? • Exit tickets • Lab reports • Models • Quiz • Do now • Discussion • Stations • Oral questioning • Independent practice
Summative Assessments	What evidence (produce and/or performance) will be collected to determine that content and skills have been learned? • Unit Test • Project
Strategies for ELL and IEP Support	What tools, strategies, and resources will be used to provide accommodations and modifications to support students? • Productive pacing • Incorporate native languages • Use visuals • Small group teaching • Provide different levels of materials • Simplify language • Repetition • Provide content in multiple forms
Acceleration Strategies	What tools, strategies, and resources will be used to help advance students closer to grade-level expectations • Scaffolding of material • Collaboration with others • Grouping of students • Concrete examples • Visuals • Integrate technology • Goal setting

IAA Curriculum

Content Area	Science	**Grade**	10
Course Name	Earth Science		

Unit 5/ concept	Unit 5: The Rock Cycle
Big Ideas	• Erosion and deposition, deltaic processes, formation of sedimentary rock • The nature of rocks and minerals, rock cycle, relative dating, Earth's history
Key learning objectives and skills	• Identify systems • Label parts of systems • Collect data • Interpret data • Show cause and effect • Develop a scientific model • Apply scientific concepts
Essential Questions	• What three factors affect rocks melting? • How does cooling magma rates affect the texture of igneous rocks? • What are the three families of igneous rock and what are their compositions? • What are five intrusive/four extrusive igneous rocks? • How do the processes of compaction and cementation form sedimentary rock? • How do chemical and organic sedimentary rocks form? • What are the physical characteristics of sediments that changed during transport? • What seven features identify the depth depositional environment that rocks are formed in? • What is the process of metamorphism? • What is the difference between foliated and nonfoliated metamorphic rock? • How do we classify rocks?

Dates	Smart Objectives	Instructional Strategies and Activities	PA CC Standards	Keystone Anchors	Keystone Eligible Content	Vocabulary
3-4 weeks	• Create a physical model that shows how sediment is carried by river water. • Examine photographs of river deltas. • Explain how core sampling is used to identify deposition. • Describe how Hutton influenced modern theories of the rock cycle. • Identify materials in	***Erosion and deposition, deltaic processes, formation of sedimentary rock*** • Direct Instruction • Guided notes • Question/Answer • Visual Aids • Lab or Visual Demonstrations • Using Tables and Graphs • Using Models • Ed Puzzles • Graphic Organizers • Lab inquiry activities • Computer simulations • Creating model of sediment that is carried	3.3.10.A1 3.3.10.A3 3.3.10.A4 3.3.10.A5	BIO.B.4.1 BIO.B.4.2	BIO.B.4.1.1 BIO.B.4.2.3 BIO.B.4.2.4	Rock cycle Bowen's reaction series Igneous rock Felsic Mafic Compaction Cementation chemical/organic/clastic sedimentary rock Metamorphism Foliation Nonfoliated Estuary Lagoon

	sedimentary, igneous, and metamorphic rock. ● Identity the minerals in rocks.	by river water ***The nature of rocks and minerals, rock cycle, relative dating, Earth's history*** ● Direct Instruction ● Guided notes ● Question/Answer ● Visual Aids ● Lab or Visual Demonstrations ● Using Tables and Graphs ● Using Models ● Ed Puzzles ● Graphic Organizers ● Lab inquiry activities ● Computer simulations				
Resources	Materials, texts, videos, internet sites, software, human to support instruction ● SEPUP-Lab aids textbook ○ Lab activities ○ Videos ● Materials to model content					
Formative Assessments	What evidence (product and/or performance) will be collected to establish that content and skills are being learned? ● Exit tickets ● Lab reports ● Models ● Quiz ● Do now ● Discussion ● Stations ● Oral questioning ● Independent practice					
Summative Assessments	What evidence (produce and/or performance) will be collected to determine that content and skills have been learned? ● Chapter tests ● Unit Test ● Project					
Strategies for ELL and IEP Support	What tools, strategies, and resources will be used to provide accommodations and modifications to support students? ● Productive pacing ● Incorporate native languages ● Use visuals ● Small group teaching ● Provide different levels of materials ● Simplify language ● Repetition ● Provide content in multiple forms					
Acceleration Strategies	What tools, strategies, and resources will be used to help advance students closer to grade-level expectations					

	• Scaffolding of material • Collaboration with others • Grouping of students • Concrete examples • Visuals • Integrate technology • Goal setting

IAA Curriculum

Content Area	Science	Grade	10
Course Name	Earth Science		

Unit 6/ concept	Unit 6: Earth's Resources
Big Ideas	• The geological processes by which mineral ores are formed, mineral prospecting, mineral extraction and processing • Fossil Fuel formation, petroleum resources, and exploration technologies
Key learning objectives and skills	• Identify systems • Label parts of systems • Collect data • Interpret data • Show cause and effect • Develop a scientific model • Apply scientific concepts
Essential Questions	• How is petroleum made? • How does oil pool? • Why do natural gas, oil, and water form in the same rock formations? • Why does gas, oil and water not move upward in shale? • What type of rock would typically be a cap stone? • What is the setting for finding oil?What does a crystal in a magma chamber cool from? • What happens when granite melts and solidifies? • Where do you find placer deposits? • What happens to sediment when the velocity of a stream decreases? • How do scientists use the rock cycle to describe mineral crystals? • How can we conserve mineral resources? • Where would you find a cooling magma chamber? • How do mining procedures differ? • Is it more economically feasible to recycle or mine minerals?

Dates	Smart Objectives	Instructional Strategies and Activities	PA CC Standards	Keystone Anchors	Keystone Eligible Content	Vocabulary
2-3 weeks	• Analyze how various materials are found in the Earth's crust • Formulate a plan for finding metal, rocks, and valuable minerals. • Describe why some areas are	***The geological processes by which mineral ores are formed, mineral prospecting, mineral extraction and processing*** • Direct Instruction • Guided notes • Question/Answer • Visual Aids • Lab or Visual Demonstrations • Using Tables and Graphs • Using Models • Ed Puzzles	3.3.10.A1 3.3.10.A2 3.3.10.A3 3.3.10.A4 3.3.10.A5 3.3.10.A7 3.3.10.A8	BIO.A.2.1 BIO.A.2.3 BIO.A.3.1 BIO.A.3.2 BIO.A.4.2 BIO.B.3.1 BIO.B.3.2 BIO.B.3.3	BIO.A.2.1.1 BIO.A.2.3.2 BIO.A.3.1.1 BIO.A.3.2.1 BIO.A.3.2.2 BIO.A.4.2.1 BIO.B.3.1.1 BIO.B.3.1.2 BIO.B.3.1.3 BIO.B.3.2.1 BIO.B.3.3.1	Minerals Metal Copper Gypsum Ore Deposit Nonrenewable resource Renewable resource Hydrothermal deposit Placer deposit Open pit mine

	high in ore deposits ● Critique mineral formations ● Debate the pros and cons of recycling ● Assess the different types of mining ● Discuss how oil reservoirs form ● Describe how permeability affects oil formation	● Graphic Organizers ● Lab inquiry activities ● Computer simulations ● Have debates about the pros and cons for mining new metals and rocks in the Earth vs recycling them. ***Fossil Fuel formation, petroleum resources, and exploration technologies*** ● Direct Instruction ● Guided notes ● Question/Answer ● Visual Aids ● Lab or Visual Demonstrations ● Using Tables and Graphs ● Using Models ● Ed Puzzles ● Create Graphic Organizers for oil exploration and production ● Lab inquiry activities ● Computer simulations				Deep mine Refining Geologist Density Viscosity Crystal Petroleum Permeable Seal Cap rock
Resources	Materials, texts, videos, internet sites, software, human to support instruction ● SEPUP-Lab aids textbook ○ Lab activities ○ Videos ● Materials to model content					
Formative Assessments	What evidence (product and/or performance) will be collected to establish that content and skills are being learned? ● Exit tickets ● Lab reports ● Models ● Quiz ● Do now ● Discussion ● Stations ● Oral questioning ● Independent practice					
Summative Assessments	What evidence (produce and/or performance) will be collected to determine that content and skills have been learned? ● Chapter tests ● Unit Test ● Project					
Strategies for ELL and IEP Support	What tools, strategies, and resources will be used to provide accommodations and modifications to support students? ● Productive pacing ● Incorporate native languages ● Use visuals ● Small group teaching ● Provide different levels of materials					

	• Simplify language • Repetition • Provide content in multiple forms
Acceleration Strategies	What tools, strategies, and resources will be used to help advance students closer to grade-level expectations • Scaffolding of material • Collaboration with others • Grouping of students • Concrete examples • Visuals • Integrate technology • Goal setting