

Springdale Public Schools

PAP Chemistry-Integrated Unit 3



Title of Unit	The Electromagnetic Spectrum	Grade Level	secondary
Subject	PAP Chemistry-Integrated	Time Frame	
Developed By	SPS Science	Date Modified	7/20/2021

Identify Desired Results

Standards Covered in this Unit

(Evidence statements are LINKED from the standard number. Evidence statements assist in clarifying outcomes)

ACI-ESS1-2 Construct an explanation of the Big Bang theory based on astronomical evidence of light spectra, motion of distant galaxies, and composition of matter in the universe. [Clarification Statement: Emphasis is on the astronomical evidence of the redshift of light from galaxies as an indication that the universe is currently expanding, the cosmic microwave background as the remnant radiation from the Big Bang, and the observed composition of ordinary matter of the universe, primarily found in stars and interstellar gases (from the spectra of electromagnetic radiation from stars), which matches that predicted by the Big Bang theory (3/4 hydrogen and 1/4 helium).]

ACI-ESS1-3 Communicate scientific ideas about the way stars, over their life cycle, produce elements. (2.b.v) [Clarification Statement: Emphasis is on the way nucleosynthesis, and therefore the different elements created, varies as a function of the mass of a star and the stage of its lifetime.] [Assessment Boundary: Details of the many different nucleosynthesis pathways for stars of differing masses are not assessed.]

ACI-PS4-1 Use mathematical representations to support a claim regarding relationships among the frequency, wavelength, and speed of waves traveling in various media. [AR Clarification Statement: This PE is fully addressed in this course. Examples of data could include electromagnetic radiation traveling in a vacuum and glass as well as seismic waves traveling through the Earth.] [Assessment Boundary: Assessment is limited to algebraic relationships and describing those relationships qualitatively.]

ACI-PS4-3 Evaluate the claims, evidence, and reasoning behind the idea that electromagnetic radiation can be described either by a wave model or a particle model, and that for some situations one model is more useful than the other. [Clarification Statement: Emphasis is on how the experimental evidence supports the claim and how a theory is generally modified in light of new evidence. Examples of a phenomenon could include resonance, interference, diffraction, and photoelectric effect.] [Assessment Boundary: Assessment does not include using quantum theory.]

ACI-PS4-4 Evaluate the validity and reliability of claims in published materials of the effects that different frequencies of electromagnetic radiation have when absorbed by matter. [Clarification Statement: Emphasis is on the idea that photons associated with different frequencies of light have different energies, and the damage to living tissue from electromagnetic radiation depends on the energy of the radiation. Examples of published materials could include trade books, magazines, web resources, videos, and other passages that may reflect bias.] [Assessment Boundary: Assessment is limited to qualitative descriptions.]

ACI-PS4-5 Communicate technical information about how some technological devices use the principles of wave behavior and wave interactions with matter to transmit and capture information and energy.* [Clarification Statement: Examples could include solar cells capturing light and converting it to electricity; medical imaging; and communications technology.] [Assessment Boundary: Assessments are limited to qualitative information. Assessments do not include band theory.]

Learning Outcomes for the Unit

What relevant goals will this unit address? These must come from the standards.

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Key Vocabulary for the Unit

Enduring Understandings for the Unit (for discussion within science and across content areas)

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Essential Questions for the Unit

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Misunderstandings That Will Be Addressed

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Content Literacy Skills for the Unit (Interpretation of data, experimental design, SEPs, CCs) [minimum list]

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Assessment Evidence

What type(s) of Common Formative Assessment (CFA) will be given?

What type of District Formative Assessment will be given?

TBD

Overview of All Choices of Lessons for Unit
This is not a lesson plan!

Standard(s) #	Formative Assessment(s) (Indicate which is the CFA)	Main Instructional Strategy	Activity/Activities
HS-ESS1-2	Ticket out the door	Create actual elements	X-ray Spectroscopy NASA lesson
HS-ESS1-3			
HS-PS4-1			
HS-PS4-3			
HS-PS4-4			

HS-PS4-5			

Common Resources

Title and Description of Usage	Location
This is an option for a lab notebook that is virtual.	Blank Digital Lab Notebook
This is a lesson plan template that pairs with the Unit plan. It allows for easy information transfer.	Lesson Plan Template