SAU 16 SCIENCE LEARNING PROGRESSION

Graduation Competencies

Patterns

Student will demonstrate the ability to support claims and make predictions by observing and describing patterns in natural and human designed phenomena.

Cause and Effect

Students will demonstrate the ability to investigate, explain, and evaluate cause and effect relationships by using evidence to support claims and predictions about the mechanisms that drive those relationships.

Scale, Proportion, and Quantity

Students will demonstrate the ability to recognize proportional relationships as size, time, and energy scales change.

Systems and System Models

Students will demonstrate the ability to investigate and analyze natural or human designed systems by using or developing models.

Energy and Matter in Systems

Students will demonstrate the ability to describe, predict, and evaluate the flow of energy and matter in and between systems.

Structure and Function

Students will demonstrate the ability to use evidence to support claims about the relationship between structure and function of naturally occurring and human designed objects.

Stability and Change of Systems

Students will demonstrate the ability to explain and predict changes over time by investigating and analyzing naturally occurring and human designed systems.

Nature of Science

Students will demonstrate the ability to work collaboratively and individually to integrate scientific methods, engineering practices, and technology to investigate the world around them.

Grade 6 Science Learning Progressions Toward Graduation Competencies	
GRADUATION COMPETENCY	GRADE LEVEL COMPETENCY
Patterns	Students will understand the natural phenomena caused by the Earth, moon, and sun system.
	Students will understand how cells contribute to the function of living organisms.
Cause and Effect	Students will understand the natural phenomena caused by the Earth, moon, and sun system.
	Students will understand how cells contribute to the function of living organisms.
Scale, Proportion, and Quantity	Students will understand the natural phenomena caused by the Earth, moon, and sun system.
	Students will understand how cells contribute to the function of living organisms.
	Students will understand how forces and motions are universal.
Systems and System Models	Students will understand the natural phenomena caused by the Earth, moon, and sun system.
	Students will understand how cells contribute to the function of living organisms.
	Students will understand how forces and motions are universal.
Energy and Matter in Systems	Students will understand how forces and motions are universal.
Structure and Function	Students will understand the natural phenomena caused by the Earth, moon, and sun system.

	Students will understand how cells contribute to the function of living organisms.
Stability and Change of Systems	Students will understand the natural phenomena caused by the Earth, moon, and sun system.
Nature of Science	Students will understand how cells contribute to the function of living organisms.
	Students will understand the natural phenomena caused by the Earth, moon, and sun system.

Grade 7 SCIENCE Learning Progressions Toward Graduation Competencies	
GRADUATION COMPETENCY	GRADE LEVEL COMPETENCY
Patterns	Students will demonstrate understanding that the physical world is composed of matter having characteristic properties that distinguish one substance from another.
	Students will understand how different processes change the Earth's crust and effect Earth's land and resource distribution.
Cause and Effect	Students will understand that ecosystems are made up of many interacting components and that the sum is greater than that of it's parts.
	Students will understand how different processes change the Earth's crust and effect Earth's land and resource distribution.
Scale, Proportion, and Quantity	Students will understand how different processes change the Earth's crust and effect Earth's land and resource distribution.
Systems and System Models	Students will demonstrate understanding that the physical world is composed of matter having characteristic properties that distinguish one substance from another.
	Students will understand that ecosystems are made up of many interacting components and that the sum is greater than that of it's parts.

Energy and Matter in Systems	Students will understand that ecosystems are made up of many interacting components and that the sum is greater than that of it's parts.
	Students will understand how different processes change the Earth's crust and effect Earth's land and resource distribution.
Structure and Function	Students will demonstrate understanding that the physical world is composed of matter having characteristic properties that distinguish one substance from another.
Stability and Change of Systems	Students will understand how different processes change the Earth's crust and effect Earth's land and resource distribution.
Nature of Science	Students will demonstrate understanding that the physical world is composed of matter having characteristic properties that distinguish one substance from another.
	Students will understand that ecosystems are made up of many interacting components and that the sum is greater than that of it's parts.
	Students will understand how different processes change the Earth's crust and effect Earth's land and resource distribution..
	Students will understand how to choose and apply appropriate metric measurement and safety techniques in science.

Grade 8 SCIENCE Learning Progressions Toward Graduation Competencies	
GRADUATION COMPETENCY	GRADE LEVEL COMPETENCY
Patterns	Students will understand the role of genetics in reproduction and its contributions to biological evolution.
	Students will understand the chemistry behind chemical reactions, the signs of a chemical reaction, and the connection of thermal energy to chemistry.
Cause and Effect	Students will understand the factors that determine an area's weather and climate. Students will understand the role of genetics in reproduction and its contributions to biological evolution.
	Students will understand how DNA becomes protein, the connection to inheritance and to biological evolution.
	Students will understand the chemistry behind chemical reactions, the signs of a chemical reaction, and the connection of thermal energy to chemistry.
Scale, Proportion, and Quantity	
Systems and System Models	Students will understand that the sun is the ultimate source of energy for atmospheric processes.

Energy and Matter in Systems	Students will understand the chemistry behind chemical reactions, the signs of a chemical reaction, and the connection of thermal energy to chemistry.
Structure and Function	Students will understand how DNA becomes protein, the connection to inheritance and to biological evolution.
Stability and Change of Systems	Students will understand the factors that determine an area's weather and climate.
Nature of Science	Students will understand the factors that determine an area's weather and climate.
	Students will understand how DNA becomes protein, the connection to inheritance and to biological evolution.

Grade 9: Physical Science Learning Progressions Toward Graduation Competencies	
GRADUATION COMPETENCY	COURSE COMPETENCY

Patterns	Students will demonstrate their understanding that matter is made of particles whose properties determine the observable characteristics of matter and its reactivity. Students will demonstrate their understanding of the relationship between motion and the forces that govern the natural world and the effects on the universe. Students will demonstrate their understanding that energy is constantly transformed and drives the forces that shape the modern world and universe around us.
Cause and Effect	Students will demonstrate their understanding that matter is made of particles whose properties determine the observable characteristics of matter and its reactivity. Students will demonstrate their understanding of the relationship between motion and the forces that govern the natural world and the effects on the universe. Students will demonstrate their understanding that energy is constantly transformed and drives the forces that shape the modern world and universe around us.
Scale, Proportion, and Quantity	Students will demonstrate their understanding that matter is made of particles whose properties determine the observable characteristics of matter and its reactivity. Students will demonstrate their understanding of the relationship between motion and the forces that govern the natural world and the effects on the universe. Students will demonstrate their understanding that energy is constantly transformed and drives the forces that shape the modern world and universe around us.

Systems and System Models	Students will demonstrate their understanding that matter is made of particles whose properties determine the observable characteristics of matter and its reactivity. Students will demonstrate their understanding of the relationship between motion and the forces that govern the natural world and the effects on the universe. Students will demonstrate their understanding that energy is constantly transformed and drives the forces that shape the modern world and universe around us.
Energy and Matter in Systems	Students will demonstrate their understanding that matter is made of particles whose properties determine the observable characteristics of matter and its reactivity. Students will demonstrate their understanding of the relationship between motion and the forces that govern the natural world and the effects on the universe. Students will demonstrate their understanding that energy is constantly transformed and drives the forces that shape the modern world and universe around us.
Structure and Function	Students will demonstrate their understanding that matter is made of particles whose properties determine the observable characteristics of matter and its reactivity. Students will demonstrate their understanding of the relationship between motion and the forces that govern the natural world and the effects on the universe. Students will demonstrate their understanding that energy is constantly transformed and drives the forces that shape the modern world and universe around us.

Stability and Change of Systems	Students will demonstrate their understanding that matter is made of particles whose properties determine the observable characteristics of matter and its reactivity. Students will demonstrate their understanding of the relationship between motion and the forces that govern the natural world and the effects on the universe. Students will demonstrate their understanding that energy is constantly transformed and drives the forces that shape the modern world and universe around us.
Nature of Science	Students will demonstrate their understanding that the steps of the scientific method are utilized in science to investigate problems, analyze data, and communicate conclusions. Students will demonstrate their ability to read and analyze scientific literature and to produce technical writing.

Grade 10: Biology Learning Progressions Toward Graduation Competencies	
GRADUATION COMPETENCY	COURSE COMPETENCY
Patterns	Introduction and Nature of Science Students will demonstrate their understanding that the steps of the scientific method and proper safety procedures are utilized in science to investigate problems, analyze data, and communicate conclusions in lab reports. Plant and Animal Homeostasis Students will demonstrate their understanding that organizational systems and biochemicals maintain homeostasis in living organisms, including themselves, through cellular

	structures and metabolism. Heredity and Evolution Students will demonstrate their understanding that the change in species over time is the result of heredity and natural selection. Ecology Students will demonstrate their understanding that the interactions between biotic and abiotic factors influence the success and distribution of species.
Cause and Effect	Introduction and Nature of Science Students will demonstrate their understanding that the steps of the scientific method and proper safety procedures are utilized in science to investigate problems, analyze data, and communicate conclusions in lab reports. Plant and Animal Homeostasis Students will demonstrate their understanding that organizational systems and biochemicals maintain homeostasis in living organisms, including themselves, through cellular structures and metabolism. Heredity and Evolution Students will demonstrate their understanding that the change in species over time is the result of heredity and natural selection. Ecology Students will demonstrate their understanding that the interactions between biotic and abiotic factors influence the success and distribution of species.

Scale, Proportion, and Quantity	Introduction and Nature of Science Students will demonstrate their understanding that the steps of the scientific method and proper safety procedures are utilized in science to investigate problems, analyze data, and communicate conclusions in lab reports. Plant and Animal Homeostasis Students will demonstrate their understanding that organizational systems and biochemicals maintain homeostasis in living organisms, including themselves, through cellular structures and metabolism. Heredity and Evolution Students will demonstrate their understanding that the change in species over time is the result of heredity and natural selection. Ecology Students will demonstrate their understanding that the interactions between biotic and abiotic factors influence the success and distribution of species.
Systems and System Models	Introduction and Nature of Science Students will demonstrate their understanding that the steps of the scientific method and proper safety procedures are utilized in science to investigate problems, analyze data, and communicate conclusions in lab reports. Plant and Animal Homeostasis Students will demonstrate their understanding that organizational systems and biochemicals maintain homeostasis in living organisms, including themselves, through cellular structures and metabolism.

	Heredity and Evolution Students will demonstrate their understanding that the change in species over time is the result of heredity and natural selection. Ecology Students will demonstrate their understanding that the interactions between biotic and abiotic factors influence the success and distribution of species.
Energy and Matter in Systems	Introduction and Nature of Science Students will demonstrate their understanding that the steps of the scientific method and proper safety procedures are utilized in science to investigate problems, analyze data, and communicate conclusions in lab reports. Plant and Animal Homeostasis Students will demonstrate their understanding that organizational systems and biochemicals maintain homeostasis in living organisms, including themselves, through cellular structures and metabolism. Heredity and Evolution Students will demonstrate their understanding that the change in species over time is the result of heredity and natural selection. Ecology Students will demonstrate their understanding that the interactions between biotic and abiotic factors influence the success and distribution of species.
Structure and Function	Plant and Animal Homeostasis Students will demonstrate their understanding

	that organizational systems and biochemicals maintain homeostasis in living organisms, including themselves, through cellular structures and metabolism. Heredity and Evolution Students will demonstrate their understanding that the change in species over time is the result of heredity and natural selection. Ecology Students will demonstrate their understanding that the interactions between biotic and abiotic factors influence the success and distribution of species.
Stability and Change of Systems	Plant and Animal Homeostasis Students will demonstrate their understanding that organizational systems and biochemicals maintain homeostasis in living organisms, including themselves, through cellular structures and metabolism. Heredity and Evolution Students will demonstrate their understanding that the change in species over time is the result of heredity and natural selection. Ecology Students will demonstrate their understanding that the interactions between biotic and abiotic factors influence the success and distribution of species.
Nature of Science	Introduction and Nature of Science Students will demonstrate their understanding that the steps of the scientific method and proper safety procedures are utilized in science

	to investigate problems, analyze data, and communicate conclusions in lab reports. Plant and Animal Homeostasis Students will demonstrate their understanding that organizational systems and biochemicals maintain homeostasis in living organisms, including themselves, through cellular structures and metabolism. Heredity and Evolution Students will demonstrate their understanding that the change in species over time is the result of heredity and natural selection. Ecology Students will demonstrate their understanding that the interactions between biotic and abiotic factors influence the success and distribution of species. Technical Writing Students will demonstrate their ability to read and analyze scientific literature and to produce technical writing