Next Generation Science Standards Curriculum Map - Science / Physical Science
QUARTER 1

Unit 1: Properties of Matter

Vision of the Graduate:
Collaboration
Content Knowledge
Critical Thinking & Innovation

Next Generation Science Standards and Content to Be Learned	***Essential Questions***	***Instructional Strategies***	***Assessment*** Formative Assessments (FA) Interim Assessments (IA) Summative Assessments (SA)
NGSS Standards for this unit: • **Content to be learned:** • Composition of matter • Physical and Chemical Properties • Physical and Chemical Changes	• What are the differences and similarities in the properties of elements, compounds, and mixtures? • How are homogeneous and heterogeneous mixtures recognized using solutions, suspensions, and colloids? • What is the difference between physical properties and chemical properties? • What is the difference between physical changes and chemical changes?	• Teacher Presentations • Student Collaboration • Lab Activities • Virtual Simulation • Instructional Demos • Ed. Tech. Tools • Guided Inquiry • Independent Inquiry	• Entrance/exit slips, etc. • Class discussion • Homework • Quizzes • Lab activities/reports • Teacher generated test • Presentations/projects

Resources:

- Student text
- Complementary texts
- Charts and graphs
- Interactive white board
- Video clips
- Documentaries

Next Generation Science Standards Curriculum Map - Science / Physical Science
QUARTER 1

Unit 2: States of Matter

Vision of the Graduate:
Collaboration
Content Knowledge
Critical Thinking & Innovation

Next Generation Science Standards and Content to Be Learned	***Essential Questions***	***Instructional Strategies***	***Assessment*** Formative Assessments (FA) Interim Assessments (IA) Summative Assessments (SA)
NGSS Standards for this unit: • PS3-1 • PS3-2 **Content to be learned:** • Solids, liquids, and gases • The Gas Laws • Phase Changes	• How does the kinetic theory relate to the three phases of matter? • How are the three phases of matter related in their size, shape, volume, and density? • How is the gas measured in relation to its volume, pressure, and temperature? • What are the energy changes involved in a change of state and how are they related to the 3 phases of matter?	• Teacher Presentations • Student Collaboration • Lab Activities • Virtual Simulation • Instructional Demos • Ed. Tech. Tools • Guided Inquiry • Independent Inquiry	• Entrance/exit slips, etc. • Class discussion • Homework • Quizzes • Lab activities/reports • Teacher generated test • Presentations/projects

Resources:

- Student text
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- Interactive white board
- Video clips
- Documentaries

Next Generation Science Standards Curriculum Map - Science / Physical Science
QUARTER 1

Unit 3: Atomic Structure and the Periodic Table

Vision of the Graduate:
Collaboration
Content Knowledge
Critical Thinking & Innovation

Next Generation Science Standards and Content to Be Learned	***Essential Questions***	***Instructional Strategies***	***Assessment*** Formative Assessments (FA) Interim Assessments (IA) Summative Assessments (SA)
NGSS Standards for this unit: • PS1-1 • PS1-2 **Content to be learned:** • The structure of an atom. • The periodic table. • Arrangement of elements and groups on the periodic table.	• What properties can be used to compare protons, neutrons, and electrons? • How do the atoms of an element differ from one another? • How is the modern periodic table organized? • How do properties vary across a period in the periodic table? • Why do elements of a group have similar properties?	• Teacher Presentations • Student Collaboration • Lab Activities • Virtual Simulation • Instructional Demos • Ed. Tech. Tools • Guided Inquiry • Independent Inquiry	• Entrance/exit slips, etc. • Class discussion • Homework • Quizzes • Lab activities/reports • Teacher generated test • Presentations/projects

Resources:

- Student text
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- Interactive white board
- Video clips
- Documentaries

Next Generation Science Standards Curriculum Map - Science / Physical Science
QUARTER 2

Unit 4: Nuclear Chemistry

Vision of the Graduate:
Collaboration
Content Knowledge
Critical Thinking & Innovation

Next Generation Science Standards and Content to Be Learned	***Essential Questions***	***Instructional Strategies***	***Assessment*** Formative Assessments (FA) Interim Assessments (IA) Summative Assessments (SA)
NGSS Standards for this unit: • PS1-8 **Content to be learned:** • Radioactivity • Rates of Nuclear Decay • Fission and Fusion	• What happens during nuclear decay? • What are the three types of nuclear radiation? • How do nuclear decay rates differ from chemical reaction rates (half-life)? • What is the difference between fission and fusion?	• Teacher Presentations • Student Collaboration • Lab Activities • Virtual Simulation • Instructional Demos • Ed. Tech. Tools • Guided Inquiry • Independent Inquiry	• Entrance/exit slips, etc. • Class discussion • Homework • Quizzes • Lab activities/reports • Teacher generated test • Presentations/projects

Resources:
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- Video clips
- Documentaries

Next Generation Science Standards Curriculum Map - Science / Physical Science
QUARTER 2

Unit 5: Forces and Motion

Vision of the Graduate:
Collaboration
Content Knowledge
Critical Thinking & Innovation

Next Generation Science Standards and Content to Be Learned	***Essential Questions***	***Instructional Strategies***	***Assessment*** Formative Assessments (FA) Interim Assessments (IA) Summative Assessments (SA)
NGSS Standards for this unit: • PS2-1 • PS2-2 • PS2-4 **Content to be learned:** • Early pioneers of physics: Aristotle, Galileo, Newton • Newton's Laws of Motion • Force and the relationship between gravity, friction, air resistance, and falling objects • Relationship between weight and mass • Conservation of momentum	• What is the relationship between force, mass, velocity, momentum, and acceleration? • How does the understanding of the relationship between force and motion allow us to predict the movement of all objects? • What are Newton's Laws of Motion?	• Teacher Presentations • Student Collaboration • Lab Activities • Virtual Simulation • Instructional Demos • Ed. Tech. Tools • Guided Inquiry • Independent Inquiry	• Entrance/exit slips, etc. • Class discussion • Homework • Quizzes • Lab activities/reports • Teacher generated test • Presentations/projects

Resources:

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- Video clips
- Documentaries

Next Generation Science Standards Curriculum Map - Science / Physical Science
QUARTER 2

Unit 6: Electromagnetic Spectrum and Light

Vision of the Graduate:
Collaboration
Content Knowledge
Critical Thinking & Innovation

Next Generation Science Standards and Content to Be Learned	***Essential Questions***	***Instructional Strategies***	***Assessment*** Formative Assessments (FA) Interim Assessments (IA) Summative Assessments (SA)
NGSS Standards for this unit: • PS4-1 • PS4-3 • PS4-4 **Content to be learned:** • Electromagnetic Spectrum • Wave characteristics • Wave energy and amplitude • Reflection, Refraction, and interference • Waves in different mediums	• What is the electromagnetic spectrum? • What waves are included in the electromagnetic spectrum? • How do electromagnetic waves differ from one another? • What is wave energy and wave amplitude? • What is refraction and reflection in waves? • How does light behave when it enters a new medium?	• Teacher Presentations • Student Collaboration • Lab Activities • Virtual Simulation • Instructional Demos • Ed. Tech. Tools • Guided Inquiry • Independent Inquiry	• Entrance/exit slips, etc. • Class discussion • Homework • Quizzes • Lab activities/reports • Teacher generated test • Presentations/projects

Resources:

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Next Generation Science Standards Curriculum Map - Science / Physical Science
QUARTER 3

Unit 7: Earth's Materials, Systems, and Plate Tectonics

Vision of the Graduate:
Collaboration
Content Knowledge

Next Generation Science Standards and Content to Be Learned	***Essential Questions***	***Instructional Strategies***	***Assessment*** Formative Assessments (FA) Interim Assessments (IA) Summative Assessments (SA)
NGSS Standards for this unit: • ESS2-1 • ESS2-2 • ESS2-3 • ESS2-4 **Content to be learned:** • Earth's core, crust, and mantle • The theory of plate tectonics • Continental drift • Constructive and destructive forces • Sea floor spreading • Plate boundaries • Seismic waves • Earthquakes • Volcanic activity	• What are the characters of Earth's principle layers? • What is plate tectonics? • Who developed the theory of continental drift and how does it explain plate tectonics? • What is sea floor spreading and what evidence is there that shows it occurred? • What causes stress in the earth's crust? • What are seismic waves? • How do earthquakes occur? • What are the different types of volcanoes and how are they formed?	• Teacher Presentations • Student Collaboration • Lab Activities • Virtual Simulation • Instructional Demos • Ed. Tech. Tools • Guided Inquiry • Independent Inquiry	• Entrance/exit slips, etc. • Class discussion • Homework • Quizzes • Lab activities/reports • Teacher generated test • Presentations/projects

Resources:

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Next Generation Science Standards Curriculum Map - Science / Physical Science
QUARTER 3

Unit 8: Hydrologic Cycle, System Interactions, and Climate Change

Vision of the Graduate:
Content Knowledge
Critical Thinking & Innovation

Next Generation Science Standards and Content to Be Learned	***Essential Questions***	***Instructional Strategies***	***Assessment*** Formative Assessments (FA) Interim Assessments (IA) Summative Assessments (SA)
NGSS Standards for this unit: • ESS2-5 • ESS2-6 • ESS2-7 • ESS3-1 **Content to be learned:** • Hydrologic cycle and carbon cycle • Physical and chemical properties of water • Erosion and deposition • Chemical Weathering • Gradual atmospheric changes due to human activity	• How does the properties of water affect Earth's materials and surface processes? • How does the carbon cycle affect the Earth? • How do changes in climate and the availability of natural resources influence human activity?	• Teacher Presentations • Student Collaboration • Lab Activities • Virtual Simulation • Instructional Demos • Ed. Tech. Tools • Guided Inquiry • Independent Inquiry	• Entrance/exit slips, etc. • Class discussion • Homework • Quizzes • Lab activities/reports • Teacher generated test • Presentations/projects

Resources:
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- Documentaries

Next Generation Science Standards Curriculum Map - Science / Physical Science
QUARTER 4

Unit 9: The Universe and Its Stars

Vision of the Graduate:
Collaboration
Content Knowledge

Next Generation Science Standards and Content to Be Learned	*Essential Questions*	*Instructional Strategies*	*Assessment* Formative Assessments (FA) Interim Assessments (IA) Summative Assessments (SA)
NGSS Standards for this unit: • HS-ESS1-1 • HS-ESS1-2 • HS-ESS1-3 **Content to be learned:** • Life cycle of the sun/stars • Light spectra/brightness/composition of stars • Big Bang theory • Red shift/blue shift	• What is the role of the life span of the sun and the role of nuclear fusion in the sun's core to release energy that eventually reaches the Earth in the form of radiation? • What is the Big Bang theory in relation to astronomical evidence of light spectra, motion of distant galaxies and composition of matter in the universe? • How do stars, over their life cycle, produce elements?	• Teacher Presentations • Student Collaboration • Lab Activities • Virtual Simulation • Instructional Demos • Ed. Tech. Tools • Guided Inquiry • Independent Inquiry	• Entrance/exit slips, etc. • Class discussions • Homework • Quizzes • Lab activities/reports • Teacher generated tests • Presentations/projects

Resources:

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Next Generation Science Standards Curriculum Map - Science / Physical Science
QUARTER 4

Unit 10: Earth and the Solar System

Vision of the Graduate:
Collaboration
Content Knowledge
Critical Thinking & Innovation

Next Generation Science Standards and Content to Be Learned	***Essential Questions***	***Instructional Strategies***	***Assessment*** Formative Assessments (FA) Interim Assessments (IA) Summative Assessments (SA)
NGSS Standards for this unit: • HS-ESS1-4 **Content to be learned:** • Kepler's Law • Gravitational effects/collisions in the solar system • Elliptical orbits of planets • Planets	• How are mathematical/computational representations used to predict the motion of orbiting objects in the solar system?	• Teacher Presentations • Student Collaboration • Lab Activities • Virtual Simulation • Instructional Demos • Ed. Tech. Tools • Guided Inquiry • Independent Inquiry	• Entrance/exit slips, etc. • Class discussions • Homework • Quizzes • Lab activities/reports • Teacher generated tests • Presentations/projects

<u>Resources:</u>
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Next Generation Science Standards Curriculum Map - Science / Physical Science
QUARTER 4

Unit 11: The History of the Planet Earth

Vision of the Graduate:
Collaboration
Content Knowledge
Critical Thinking & Innovation

Next Generation Science Standards and Content to Be Learned	***Essential Questions***	***Instructional Strategies***	***Assessment*** Formative Assessments (FA) Interim Assessments (IA) Summative Assessments (SA)
NGSS Standards for this unit: • HS-ESS1-5 • HS-ESS1-6 **Content to be learned:** • Earth's rock record (age of continental rocks vs. oceanic rocks) • Meteorites • Asteroids • Lunar rocks • Cosmic debris	• How does evidence of the past and current movements of continental and oceanic crust and the theory of plate tectonics used to explain the ages of crustal rocks? • What scientific reasoning and evidence from ancient Earth materials, meteorites and other planetary surfaces aid in constructing an account of Earth's formation and early history?	• Teacher Presentations • Student Collaboration • Lab Activities • Virtual Simulation • Instructional Demos • Ed. Tech. Tools • Guided Inquiry • Independent Inquiry	• Entrance/exit slips, etc. • Class discussions • Homework • Quizzes • Lab activities/reports • Teacher generated tests • Presentations/projects

Resources:

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- Complementary texts
- Charts and graphs
- Interactive white board
- Video clips
- Documentaries