A Correlation of

Elevate Science Modules ©2019

To the

Massachusetts Science and Technology/Engineering Learning Standards, Grade 7

SAVVAS

A Correlation of Elevate Science Modules, Grades 6-8, ©2019
To the
Massachusetts Science and Technology/Engineering Learning Standards

Introduction

This document demonstrates how ***Elevate Science Modules ©2019*** meets the Massachusetts Science and Technology/Engineering Learning Standards, **Grade 7**. Correlation page references are to the Student and Teacher's Editions and cited at the page level.

Savvas is proud to introduce ***Elevate Science Modules*** for Middle Grades – where exploration is the heart of science! Designed to address the rigors of new science standards, students will experience science up close and personal, using real-world, relevant phenomena to solve project-based problems. Our newest program prepares students for the challenges of tomorrow, building strong reasoning skills and critical thinking strategies as they engage in explorations, formulate claims, and gather and analyze data that promote evidence-based arguments. The blended print and digital curriculum covers all Next Generation Science Standards at every grade level.

Elevate Science helps teachers transform learning, promote innovation, and manage their classroom.

Transform science classrooms by immersing students in active, three-dimensional learning.
Elevate Science engages students with real-world tasks, open-ended Quests, uDemonstrate performance-based labs, and in the engineering/design process with uEngineer It! investigations.

- A new 3-D learning model enhances best practices.
- Engineering-focused features infuse STEM learning.
- Phenomena-based activities put students at the heart of a Quest for knowledge.

Innovate learning by focusing on 21st century skills.
Students are encouraged to think, collaborate, and innovate! With ***Elevate Science***, students explore STEM careers, experience engineering activities, and discover our scientific and technological world. The content, strategies, and resources of Elevate Science equip the science classroom for scientific inquiry and science and engineering practices.

- Problem-based learning Quests put students on a journey of discovery.
- STEM connections help integrate curriculum.
- Coding and innovation engage students and build 21st century skills.

Manage the classroom with confidence.
Teachers will lead their class in asking questions and engaging in argumentation. Evidence-based assessments provide new options for monitoring student understanding.

- Professional development offers practical point-of-use support.
- Embedded standards in the program allow for easy integration.
- ELL and differentiated instruction strategies help instructors reach every learner.
- Interdisciplinary connections relate science to other subjects.

Designed for today's classroom, preparing students for tomorrow's world. ***Elevate Science*** promises to:

- Elevate thinking.
- Elevate learning.
- Elevate teaching.

A Correlation of Elevate Science Modules, Grades 6-8, ©2019
To the
Massachusetts Science and Technology/Engineering Learning Standards

Table of Contents

Massachusetts Science and Technology / Engineering Learning Standards	Elevate Science Modules Grades 6-8, ©2019
7.MS-ESS Earth and Space Sciences	
7.MS-ESS2 Earth's Systems	
7.MS-ESS2-2 Construct an explanation based on evidence for how Earth's surface has changed over scales that range from local to global in size.	**Module SE/TE: Earth Systems** Convection Currents, 56 Convection Currents in Earth, 57 Hypothesis of Continental Drift, 99-101 Evidence From Land Features, 100 Evidence From Climate, 101 Model It!: Predict North America's Movement, 105 Lesson 1 Check, 106 Types of Crust, 110 Convection Drives Plate Motions, 110 Plate Motions Over Time, 111 Tectonic Plates and the "Ring of Fire", 112 Lesson 2 Check, 117 Case Study: Australia on the Move, 118-119 Stress and Earth's Crust, 121-122 Landslides, 129 Lesson 3 Check, 130 Quest Check-In, 130 Lesson 4 Check, 141 Topic Review and Assess, 142-143 **Module SE/TE: Changing Earth and Human Activity** Breaking Down Earth's Surface, 5 Groundwater Changes of Earth's Surface, 29-30 Case Study: Buyer Beware!, 32-33 Glacial Erosion, 37 Quest Check-In, 43 Evidence-Based Assessment, 46-47

Massachusetts Science and Technology / Engineering Learning Standards	Elevate Science Modules Grades 6-8, ©2019
7.MS-ESS2-4 Develop a model to explain how the energy of the Sun and Earth's gravity drive the cycling of water, including changes of state, as it moves through multiple pathways in Earth's hydrosphere.	**Module SE/TE: Cycles Influencing Weather and Climate** Model It!: Identify Patterns, 19 The Water Cycle, 19 **Module SE/TE: Earth Systems** Lesson 1 Check, 10 The Water Cycle, 25-26 Condensation, 26 Precipitation, 26 uDemonstrate Lab: Modeling a Watershed, 40
7.MS-ESS3 Earth and Human Activity	
7.MS-ESS3-2 Obtain and communicate information on how data from past geologic events are analyzed for patterns and used to forecast the location and likelihood of future catastrophic events.	**Module SE/TE: Cycles Influencing Weather and Climate** Storm Safety, 46 Case Study: The Case of the Runaway Hurricane, 48-49 **Module SE/TE: Earth Systems** Math Toolbox: Finding an Epicenter, 127 uEngineer It!: Designing to Prevent Destruction, 131 uDemonstrate Lab: Modeling Sea-Floor Spreading, 146-149 Connect It!, 164 Evidence-Based Assessment, 184-185 **Module SE/TE: Changing Earth and Human Activity** uEngineer It!: Ground Shifting Advances, 13 Quest Check-In, 20

Massachusetts Science and Technology / Engineering Learning Standards	Elevate Science Modules Grades 6-8, ©2019
7.MS-ESS3-4 Construct an argument supported by evidence that human activities and technologies can mitigate the impact of increases in human population and per capita consumption of natural resources on the environment.	**Module SE/TE: Energy Transfer** Case Study: US Energy Consumption, 40-41 **Module SE/TE: Systems, Reproduction, and Growth** Evidence-Based Assessment, 226-227 **Module SE/TE: Cycles Influencing Weather and Climate** uEngineer It!: Windmills of the Future, 81 Alternative Energy, 132 **Module SE/TE: Changing Earth and Human Activity** Natural Resources, 57 Lesson 1 Check, 65 Quest Check-In, 65 Connect It!, 66 Reducing Fossil Fuel Usage, 67 Solar Energy, 68 Alternative Sources of Energy, 68-71 Hydroelectric Resources, 69 Wind Energy, 70 Geothermal Energy, 71 Bioenergy Resources, 71 Lesson 2 Check, 72 Quest Check-In, 72 Micro-Hydro Power, 73 Topic Review and Assess, 92-93 Connect It!, 104 Human Activity, 108 Impact on the Earth System, 109 Balancing Needs, 110 Changing Energy Usage, 118 Land as a Resource, 123-124 Quest Check-In, 133 Topic Review and Assess, 146-147 **Module SE/TE: Earth's Place in the Universe** Quest Kickoff: How are tides related to our place in space?, 2-3 uEngineer It!: Power from the Tides, 35

Massachusetts Science and Technology / Engineering Learning Standards	Elevate Science Modules Grades 6-8, ©2019
7.MS-LS Life Science	
7.MS-LS1 From Molecules to Organisms: Structures and Processes	
7.MS-LS1-4 Construct an explanation based on evidence for how characteristic animal behaviors and specialized plant structures increase the probability of successful reproduction of animals and plants.	**Module SE/TE: Systems, Reproduction, and Growth** Characteristics of Living Things, 5-7 Cellular Organization, 6 Reproduction, 7 Life Produces More Life, 8-9 Lesson 2 Check, 200 uEngineer It!: Gardening in Space, 201 Connect It!, 202 Animal Behavior, 203-205 Mating Behaviors, 204-205 Communication, 205 Competition, 205 Parental Investment, 206 Reproductive Strategies, 206-209 Fertilization Strategies, 207 Cooperative Behaviors, 208 Migratory Behaviors, 209 Quest Check-In, 210 Lesson 3 Check, 210 Extraordinary Science: Avian Artists, 211 Quest Check-In, 221 Case Study: Warmer Waters, Fewer Fish, 222
7.MS-LS2 Ecosystems: Interactions, Energy, and Dynamics	
7.MS-LS2-1 Analyze and interpret data to provide evidence for the effects of periods of abundant and scarce resources on the growth of organisms and the size of populations in an ecosystem.	**Module SE/TE: Relationships Within Ecosystems** Ecosystem Organization, 39 Math Toolbox: Graphing Population Changes, 40 Space and Shelter, 42 Lesson 1 Check, 43 Quest Check-In, 43 Case Study: The Case of the Disappearing Cerulean Warbler, 44-45 Population Size, 83

Massachusetts Science and Technology / Engineering Learning Standards	Elevate Science Modules Grades 6-8, ©2019
7.MS-LS2-2 Describe how relationships among and between organisms in an ecosystem can be competitive, predatory, parasitic, and mutually beneficial and that these interactions are found across multiple ecosystems.	**Module SE/TE: Relationships Within Ecosystems** Niche, 80 Competition, 81 Competition and Predation, 81-83 Predation, 82 Adaptations, 82 Mutualism, 84-85 Symbiotic Relationships, 84-86 Parasitism, 86 Lesson 1 Check, 87 Case Study: The Dependable Elephant, 108-109
7.MS-LS2-3 Develop a model to describe that matter and energy are transferred among living and nonliving parts of an ecosystem and that both matter and energy are conserved through these processes.	**Module SE/TE: Systems, Reproduction, and Growth** Food, 10 **Module SE/TE: Relationships Within Ecosystems** Conservation of Matter and Energy, 57 Lesson 3 Check, 64 Evidence-Based Assessment, 68-69 uDemonstrate Lab: Last Remains, 70-73 Supporting Services, 114
7.MS-LS2-4 Analyze data to provide evidence that disruptions (natural or human-made) to any physical or biological component of an ecosystem can lead to shifts in all its populations.	**Module SE/TE: Relationships Within Ecosystems** Secondary Succession, 91 Niche Diversity, 100 Math Toolbox: Room to Roam, 102 Lesson 3 Check, 107 Quest Check-In, 107 Literacy Connection: Write Arguments, 116 Evidence-Based Assessment, 122-123 uDemonstrate Lab: Changes in an Ecosystem, 124-127

Massachusetts Science and Technology / Engineering Learning Standards	Elevate Science Modules Grades 6-8, ©2019
7.MS-LS2-5 Evaluate competing design solutions for protecting an ecosystem. Discuss benefits and limitations of each design.	**Module SE/TE: Relationships Within Ecosystems** Quest Check-In: Hands-On Lab, 107 Design it! Ecological Restoration , 117 uEngineer It!: From Bulldozers to Biomes: Design Challenge, 119
7.MS-LS2-6(MA) Explain how changes to the biodiversity of an ecosystem—the variety of species found in the ecosystem—may limit the availability of resources humans use.	**Module SE/TE: Atoms and Chemical Reactions** uEngineer It!: Making Water Safe to Drink, 77 **Module SE/TE: Relationships Within Ecosystems** The Value of Biodiversity, 97-99 Economic Value, 98 Ecological Value, 99 Factors Affecting Biodiversity, 100-102 Protecting Biodiversity, 105 Lesson 3 Check, 107 Ecosystem Services, 111-114 Cultural Services, 112 Factors Impacting Ecosystem Services, 115-116 Biodiversity, 115 Human Activities, 116 Conservation, 117 Lesson 4 Check, 118 uEngineer It!: From Bulldozers to Biomes, 119 **Module SE/TE: Changing Earth and Human Activity** Connect It!, 104 Using Natural Resources, 108-109 Lesson 1 Check, 111

Massachusetts Science and Technology / Engineering Learning Standards	Elevate Science Modules Grades 6-8, ©2019
7.MS-PS Physical Science	
7.MS-PS2 Motion and Stability: Forces and Interactions	
7.MS-PS2-3 Analyze data to describe the effect of distance and magnitude of electric charge on the strength of electric forces.	**Module SE/TE: Forces** Electric Force, Fields, and Energy, 57-59 Electric Force, 58 Electric Field Lines, Figure 3, 58 Lesson 1 Check, 64 uEngineer It!: Electromagnetism In Action, 81
7.MS-PS2-5 Use scientific evidence to argue that fields exist between objects with mass, between magnetic objects, and between electrically charged objects that exert force on each other even though the objects are not in contact.	**Module SE/TE: Forces** Electric Force, Fields, and Energy, 57-59 Question It!, 59 Quest Check-In, 64 Lesson 1 Check, 64 Extraordinary Science: Bumblebees and Electric Flowers, 65 Magnetic Force and Energy, 67-68 Magnetic Force, 68 Lesson 2 Check, 73 Magnetic Force on Moving Charges, 83-85 Galvanometers, 84 Loop of Current in a Magnetic Field, 84 Electric Motors, 85 Electromagnetic Induction, 86-88 Induced Current and Moving Conductors, 86 Induced Current and Moving Magnets, 87 Generators and Transformers, 89-90 How Generators Work, 89 How Transformers Work, 90
7.MS-PS3 Energy	
7.MS-PS3-1 Construct and interpret data and graphs to describe the relationships among kinetic energy, mass, and speed of an object.	**Module SE/TE: Energy Transfer** Factors Affecting Kinetic Energy, 15 Kinetic Energy, 15-16 Lesson 2 Check, 20 Kinetic and Potential Energy, 34 Lesson 4 Check, 39 Topic Review and Assess, 42-43

Massachusetts Science and Technology / Engineering Learning Standards	Elevate Science Modules Grades 6-8, ©2019
7.MS-PS3-2 Develop a model to describe the relationship between the relative position of objects interacting at a distance and their relative potential energy in the system.	**Module SE/TE: Energy Transfer** Potential Energy, 17-19 Gravitational Potential Energy, 18 Lesson 2 Check, 20 Model It!: Conservation in Demolition, 35 Lesson 4 Check, 39 Evidence-Based Assessment, 44-45 **Module SE/TE: Forces** Hands-On Lab, 18 Gravitational Potential Energy, 40 Forces and Motion, 41 Model It!: Develop Models, 41 Topic Review and Assess, 44-45 uDemonstrate Lab: Stopping on a Dime, 48-51 Question It!, 58
7.MS-PS3-3 Apply scientific principles of energy and heat transfer to design, construct, and test a device to minimize or maximize thermal energy transfer.	**Module SE/TE: Energy Transfer** Quest Kickoff: How can you keep hot water from cooling down?, 52-53 uEngineer It!: Shockwave to the Future, 69 Testing Thermal Conductivity, 84-87 **Module SE/TE: Structure and Properties of Matter** Temperature and Thermal Energy, 30 Thermal Energy, 57 **Module SE/TE: Energy Transfer** Thermal Energy, 25 Lesson 3 Check, 30 Connect It!, 62 Types of Heat Transfer, 63-65 Thermal Properties of Materials, 73-75 Topic Review and Assess, 80-81 **Module SE/TE: Cycles Influencing Weather and Climate** Methods of Heat Transfer, 68

Massachusetts Science and Technology / Engineering Learning Standards	Elevate Science Modules Grades 6-8, ©2019
7.MS-PS3-4 Conduct an investigation to determine the relationships among the energy transferred, how well the type of matter retains or radiates heat, the mass, and the change in the average kinetic energy of the particles as measured by the temperature of the sample.	**Module SE/TE: Structure and Properties of Matter** Temperature, 57 Interactivity, 60 **Module SE/TE: Energy Transfer** Temperature And Its Measurement, 56 Model It!, 58 Changes in Temperature, 59 Thermal Energy and Work, 66-67 Quest Check-In, 68 Evidence-Based Assessment, 82-83 uDemonstrate Lab: Testing Thermal Conductivity, 84-87 **Module SE/TE: Cycles Influencing Weather and Climate** Heat Transfer in the Atmosphere, 67-69 Methods of Heat Transfer, 68
7.MS-PS3-5 Present evidence to support the claim that when the kinetic energy of an object changes, energy is transferred to or from the object.	**Module SE/TE: Energy Transfer** Literacy Connection: Cite Textual Evidence, 24 Energy Changes Form, 33-35 Kinetic and Potential Energy, 34 Energy Transformation and Transfer, 35 Lesson 4 Check, 39 Topic Review and Assess, 42-43 Evidence-Based Assessment, 82-83
7.MS-PS3-6(MA) Use a model to explain how thermal energy is transferred out of hotter regions or objects and into colder ones by convection, conduction, and radiation.	**Module SE/TE: Energy Transfer** Connect It!, 62 Interactivity, 63 Hands-on Lab, 64 Math Toolbox: Graphic Changes in Temperature , 65 Question It!, 67 Lesson 2 Check, 68 **Module SE/TE: Cycles Influencing Weather and Climate** Model It!: The Earth is Heating Up, 76

Massachusetts Science and Technology / Engineering Learning Standards	Elevate Science Modules Grades 6-8, ©2019
7.MS-PS3-7(MA) Use informational text to describe the relationship between kinetic and potential energy and illustrate conversions from one form to another.	**Module SE/TE: Energy Transfer** Quest Check-In, 20 Quest Connection, 22 Determining Mechanical Energy, 23 Connect It!, 32 Energy Changes Form, 33-35 Kinetic and Potential Energy, 34 Model It!: Conservation in Demolition, 35 Energy Transformation and Transfer, 35 **Module SE/TE: Forces** uEngineeer It! Generating Energy from Potholes, 33 Model It!, 41
7.MS-ETS Technology/Engineering	
7.MS-ETS1 Engineering Design	
7.MS-ETS1-2 Evaluate competing solutions to a given design problem using a decision matrix to determine how well each meets the criteria and constraints of the problem. Use a model of each solution to evaluate how variations in one or more design features, including size, shape, weight, or cost, may affect the function or effectiveness of the solution.	**Module SE/TE: Energy Transfer** uDemonstrate Lab: 3, 2, 1…Liftoff!, 46-49 **Module SE/TE: Forces** Quest Kickoff: How can you take the crash out of a collision? , 2-3 Quest Check-In, 42 Quest Findings, Interactivity, 47 uDemonstrate Lab: Stopping on a Dime, 48-51 **Module SE/TE: Relationships Within Ecosystems** uEngineeer It! From Bulldozers to Biomes, 119 **Module SE/TE: Earth's Place in the Universe** Design a Solution, 110
7.MS-ETS1-4 Generate and analyze data from iterative testing and modification of a proposed object, tool, or process to optimize the object, tool, or process for its intended purpose.	**Module SE/TE: Forces** Quest Kickoff: How can you take the crash out of a collision? , 2-3 uDemonstrate Lab: Stopping on a Dime, 48-51 **Module SE/TE: Earth's Place in the Universe** Test and Evaluate a Solution, 110

Massachusetts Science and Technology / Engineering Learning Standards	Elevate Science Modules Grades 6-8, ©2019
7.MS-ETS1-7(MA) Construct a prototype of a solution to a given design problem.	**Module SE/TE: Forces** uDemonstrate Lab: Stopping on a Dime, 48-51 **Module SE/TE: Relationships Within Ecosystems** uEngineer It! Engineeering Artificial Photosynthesis, 13 **Module SE/TE: Earth Systems** uEngineer It: A Daring Bridge, 23 uEngineer It: Designing to Prevent Destruction, 131
7.MS-ETS3 Technological Systems	
7.MS-ETS3-1(MA) Explain the function of a communication system and the role of its components, including a source, encoder, transmitter, receiver, decoder, and storage.	**Module SE/TE: Waves and Information Technologies** Transmitting Signals , 83 Case Study: Super Ultra High Definition, 86-87
7.MS-ETS3-2(MA) Compare the benefits and drawbacks of different communication systems.	**Module SE/TE: Waves and Information Technologies** Math Toolbox: Digital Data Explosion, 91 Roger That!, 92
7.MS-ETS3-3(MA) Research and communicate information about how transportation systems are designed to move people and goods using a variety of vehicles and devices. Identify and describe subsystems of a transportation vehicle, including structural, propulsion, guidance, suspension, and control subsystems.	**Module SE/TE: Forces** Quest Kickoff: How can you take the crash out of a collision? , 2-3 Quest Check-In, 91 Quest Findings, 97
7.MS-ETS3-4(MA) Show how the components of a structural system work together to serve a structural function. Provide examples of physical structures and relate their design to their intended use.	**Module SE/TE: Forces** Electromagnetism in Action, 81 **Module SE/TE: Waves and Information Technologies** Say Cheese! , 23 uDemonstrate Lab: Over and Out, 103

Massachusetts Science and Technology / Engineering Learning Standards	Elevate Science Modules Grades 6-8, ©2019
7.MS-ETS3-5(MA) Use the concept of systems engineering to model inputs, processes, outputs, and feedback among components of a transportation, structural, or communication system.	**Module SE/TE: Forces** Case Study: The X-57 Maxwell, 92-93 **Module SE/TE: Waves and Information Technologies** uDemonstrate Lab: Over and Out, 103