ORExt Standard Code: S08ESS1.2 Equivalent ODE Standard: MS-ESS1-2 and MS-PS2-4	
Oregon Science Standard 2022: MS-ESS1-2: Develop and use a model to describe the role of gravity in the motions within galaxies and the solar system. MS-PS2-4: Construct and present arguments using evidence to support the claim that gravitational interactions are attractive and depend on the masses of interacting objects. **Oregon Science Standard Clarifications/Assessment Boundary 2022:** MS-ESS1-2: [Clarification Statement: Emphasis for the model is on gravity as the force that holds together the solar system and Milky Way galaxy and controls orbital motions within them. Examples of models can be physical (such as the analogy of distance along a football field or computer visualizations of elliptical orbits) or conceptual (such as mathematical proportions relative to the size of familiar objects such as students' school or state).] [Assessment Boundary: Assessment does not include Kepler's Laws of orbital motion or the apparent retrograde motion of the planets as viewed from Earth.] MS-PS2-4: [Clarification Statement: Examples of evidence for arguments could include data generated from simulations or digital tools; and charts displaying mass, strength of interaction, distance from the Sun, and orbital periods of objects within the solar system.] [Assessment Boundary: Assessment does not include Newton's Law of Gravitation or Kepler's Laws.]	**Oregon Alternate Academic Achievement Standard (Essentialized Standard):** Recognize that gravity influences the way objects move on Earth and in space (progression from S05PHS2.1). **Low (L), Medium (M), High (H) Parameters:** **L:** Use questions and diagrams to ask about the direction that common objects will fall when dropped (i.e., a ball moves downward when dropped) based on the role of gravity, including the use of the term. **M:** Extend L-level to include role of gravity involving Earth-Moon relations and Earth-Sun relations. **H:** Extend M-level to include role of gravity involving other objects in the solar system (e.g., other planets and the Sun, moons of other planets, comets).

Science Grade 8

ORExt Standard Code: S08ESS1.3 Equivalent ODE Standard: MS-ESS1-3	
Oregon Science Standard 2022: Analyze and interpret data to determine scale properties of objects in the solar system. **Oregon Science Standard Clarifications/Assessment Boundary 2022:** [Clarification Statement: Emphasis is on the analysis of data from Earth-based instruments, space-based telescopes, and spacecraft to determine similarities and differences among solar system objects. Examples of scale properties include the sizes of an object's layers (such as crust and atmosphere), surface features (such as volcanoes), and orbital radius. Examples of data include statistical information, drawings and photographs, and models.] [Assessment Boundary: Assessment does not include recalling facts about properties of the planets and other solar system bodies.]	**Oregon Alternate Academic Achievement Standard (Essentialized Standard):** Identify and compare objects in the solar system and their features. **Low (L), Medium (M), High (H) Parameters:** **L:** Identify the Sun and the Earth as compared to other unrelated objects here on Earth. **M:** Identify the Sun, Earth, and Moon as compared to other related space objects in the solar system. **H:** Extend M-level to involve the comparison of various objects (e.g., their size or shape) in the solar system (i.e., Sun, Moon, Earth, other planets, comets, asteroids) using diagrams, graphs, and models.

Science Grade 8

ORExt Standard Code: S08ESS2.2 Equivalent ODE Standard: MS-ESS2-2	
Oregon Science Standard 2022: Construct an explanation based on evidence for how geoscience processes have changed Earth's surface at varying time and spatial scales. **Oregon Science Standard Clarifications/Assessment Boundary 2022:** [Clarification Statement: Emphasis is on how processes change Earth's surface at time and spatial scales that can be large (such as slow plate motions or the uplift of large mountain ranges) or small (such as rapid landslides or microscopic geochemical reactions), and how many geoscience processes (such as earthquakes, volcanoes, and meteor impacts) usually behave gradually but are punctuated by catastrophic events. Examples of geoscience processes include surface weathering and deposition by the movements of water, ice, and wind. Emphasis is on geoscience processes that shape local geographic features, where appropriate.]	**Oregon Alternate Academic Achievement Standard (Essentialized Standard):** Identify different geoscience processes that shape the Earth (progression from S05ESS2.1). **Low (L), Medium (M), High (H) Parameters:** **L:** Identify the process that leads to erosion when provided a model (e.g., water, ice, or wind). **M:** Identify conditions that lead to specific types of surface weathering (i.e., with water, ice, or wind as mechanism). **H:** Identify geoscience processes that shape local geographic features (e.g., earthquakes, volcanoes, river erosion, meteorites/craters).

Science Grade 8

ORExt Standard Code: S08ESS2.4 Equivalent ODE Standard: MS-ESS2-4	
Oregon Science Standard 2022: Develop a model to describe the cycling of water through Earth's systems driven by energy from the Sun and the force of gravity. **Oregon Science Standard Clarifications/Assessment Boundary 2022:** Clarification Statement: Emphasis is on the ways water changes its state as it moves through the multiple pathways of the hydrologic cycle. Examples of models can be conceptual or physical.] [Assessment Boundary: A quantitative understanding of the latent heats of vaporization and fusion is not assessed.]	**Oregon Alternate Academic Achievement Standard (Essentialized Standard):** Identify water in its various forms, and how water changes, including through the water cycle. **Low (L), Medium (M), High (H) Parameters:** **L:** Identify the three forms of water as compared to other unrelated objects. **M:** Identify a specific form of water as compared to other forms of water. **H:** Connect the forms of water to various (simple) points in the water cycle using diagrams and picture representations.

ORExt Standard Code: S08ESS2.5 Equivalent ODE Standard: MS-ESS2-5	
Oregon Science Standard 2022: Collect data to provide evidence for how the motions and complex interactions of air masses result in changes in weather conditions. **Oregon Science Standard Clarifications/Assessment Boundary 2022:** [Clarification Statement: Emphasis is on how air masses flow from regions of high pressure to low pressure, causing weather (defined by temperature, pressure, humidity, precipitation, and wind) at a fixed location to change over time, and how sudden changes in weather can result when different air masses collide. Emphasis is on how weather can be predicted within probabilistic ranges. Examples of data can be provided to students (such as weather maps, diagrams, and visualizations) or obtained through laboratory experiments (such as with condensation).] [Assessment Boundary: Assessment does not include recalling the names of cloud types or weather symbols used on weather maps or the reported diagrams from weather stations.]	**Oregon Alternate Academic Achievement Standard (Essentialized Standard):** Identify different types of weather conditions and their characteristics. **Low (L), Medium (M), High (H) Parameters:** **L:** Identify different simple weather conditions (i.e., rain, cloudy, sunny, foggy, stormy, etc.) as compared to objects or conditions that are unrelated. **M:** Identify different simple weather conditions (i.e., rain, cloudy, sunny, foggy, etc.) as compared to objects or conditions that are related (i.e., other weather conditions). **H:** Connect physical conditions to weather (e.g., wet to rain, dry or hot to sunny).

Science Grade 8

ORExt Standard Code: S08ESS3.3 Equivalent ODE Standard: MS-ESS3-3	
Oregon Science Standard 2022: Apply scientific principles to design a method for monitoring and minimizing a human impact on the environment.* **Oregon Science Standard Clarifications/Assessment Boundary 2022:** [Clarification Statement: Examples of the design process include examining human environmental impacts, assessing the kinds of solutions that are feasible, and designing and evaluating solutions that could reduce that impact. Examples of human impacts can include water usage (such as the withdrawal of water from streams and aquifers or the construction of dams and levees), land usage (such as urban development, agriculture, or the removal of wetlands), and pollution (such as of the air, water, or land).]	**Oregon Alternate Academic Achievement Standard (Essentialized Standard):** Identify ways in which people and communities protect the Earth's environment (progression from S05ESS3.1). **Low (L), Medium (M), High (H) Parameters:** **L:** Identify which among several simple and common choices is a way to protect or help the Earth/environment (e.g., putting trash in can, recycling, riding bike for transportation, using less water) as compared to common and unrelated activities (e.g., playing with a toy, reading a book). **M:** Identify which of several simple and common choices is a way to protect or help the Earth/environment (e.g., putting trash in can, recycling, riding bike) as compared to activities that pollute or harm the Earth (e.g., pollution from a factory, littering in streams/ocean, oil spilling from a ship). **H:** Identify and compare simple methods for monitoring or reducing human impact on the Earth/environment (e.g., a graph comparing the amount of trash three cities produce, the amount of water three cities consume, the amount of materials recycled by three schools).

* This performance expectation integrates traditional science content with engineering through a practice or disciplinary core idea.

Science Grade 8

ORExt Standard Code: S08ESS3.4 Equivalent ODE Standard: MS-ESS3-4	
Oregon Science Standard 2022: Construct an argument supported by evidence for how increases in human population and per-capita consumption of natural resources impact Earth's systems. **Oregon Science Standard Clarifications/Assessment Boundary 2022:** [Clarification Statement: Examples of evidence include grade-appropriate databases on human populations and the rates of consumption of food and natural resources (such as freshwater, mineral, and energy). Examples of impacts can include changes to the appearance, composition, and structure of Earth's systems as well as the rates at which they change. The consequences of increases in human populations and consumption of natural resources are described by science, but science does not make the decisions for the actions society takes.]	**Oregon Alternate Academic Achievement Standard (Essentialized Standard):** Identify ways in which people and communities use and impact the Earth's resources (progression from S05ESS3.1). **Low (L), Medium (M), High (H) Parameters:** **L:** Identify natural resources as compared to other unrelated items or objects. **M:** Identify natural resources based on their use (e.g., Which is burned for fire?; Which do we use for energy?). **H:** Extend M-level to human use of natural resources and its effects using simple graphs and diagrams (e.g., Which city consumes/produces the most food resources/water/energy?).

ORExt Standard Code: S08ETS1.1 Equivalent ODE Standard: MS-ETS1-1	
Oregon Science Standard 2022: Define the criteria and constraints of a design problem with sufficient precision to ensure a successful solution, taking into account relevant scientific principles and potential impacts on people and the natural environment that may limit possible solutions.	**Oregon Alternate Academic Achievement Standard (Essentialized Standard):** Identify and compare different problems, including design-related problems, that impact people and the environment (progression from S05ETS1.1). **Low (L), Medium (M), High (H) Parameters:** **L:** Questions are of the type "Which shows a (design) problem to solve?", and are restricted to a picture and description of a simple problem compared to other activities or situations that are obviously not (e.g., flat tire/missing bike tire/broken toy compared to reading a book, eating food, driving a car). **M:** Questions are of the type "Which shows a (design) problem to solve?", and are restricted to more complex problems (e.g., displaying cars/airplanes) with answers showing a possible (design) problem compared to those that are not (e.g., running out of fuel, missing a wheel/wing vs. car driving/plane flying). **H:** Extend the complexity of M-level, including the use of graphs (e.g., weakest material among distractors) and diagrams, and questions about likelihood based on simple data (e.g., Which material is likely to break first?).

ORExt Standard Code: S08ETS1.2 Equivalent ODE Standard: MS-ETS1-2	
Oregon Science Standard 2022: Evaluate competing design solutions using a systematic process to determine how well they meet the criteria and constraints of the problem.	**Oregon Alternate Academic Achievement Standard (Essentialized Standard):** Identify and compare possible solutions to different problems, including design-related problems, that impact people and the environment (progression from S05ETS1.2). **Low (L), Medium (M), High (H) Parameters:** **L:** Questions involve simple solutions and are restricted to common problems and solutions and/or the tools that solve them (i.e., flat bike/car tire - use a bike pump: plants dying – use a sprinkler or hose/give plant food: nail or screw sticking out - use a hammer or screwdriver) compared to obvious non-solutions/unrelated actions (e.g., play outside, go to the park). **M:** Questions involve simple solutions and are restricted to common problems and actions and/or the tools that solve them (i.e., flat bike/car tire - use a pump: plants in garden dying – use sprinkler or hose/give plant food: nail or a screw sticking out - use a hammer or screwdriver) compared to solutions to other similar problems. **H:** Extend the complexity of M-level, including the use of graphs (e.g., strongest metal, hardest material, best material for making something) and diagrams (e.g., simple flow charts).

ORExt Standard Code: S08LFS1.3 Equivalent ODE Standard: MS-LS1-3	
Oregon Science Standard 2022: Construct an explanation supported by evidence for how the body is composed of interacting systems consisting of cells, tissues, and organs working together to maintain homeostasis. **Oregon Science Standard Clarifications/Assessment Boundary 2022:** [Clarification Statement: Emphasis should be on the function and interactions of the major body systems (e.g. circulatory, respiratory, nervous, musculoskeletal).] [Assessment Boundary: Assessment is focused on the interactions between systems not on the functions of individual systems.]	**Oregon Alternate Academic Achievement Standard (Essentialized Standard):** Identify different parts or systems of the human body, including that they are composed of different materials and have different functions. **Low (L), Medium (M), High (H) Parameters:** **L:** Identify simple external parts of the body. **M:** Identify simple internal parts or systems of the body using simple terminology and diagrams. **H:** Connect human body parts to their materials and function (e.g., skeletal system/bones providing structure, muscles providing strength for movement).

ORExt Standard Code: S08LFS1.4 Equivalent ODE Standard: MS-LS1-4	
Oregon Science Standard 2022: Use argument based on empirical evidence and scientific reasoning to support an explanation for how characteristic animal behaviors and specialized plant structures affect the probability of successful reproduction of animals and plants respectively. **Oregon Science Standard Clarifications/Assessment Boundary 2022:** [Clarification Statement: Emphasis is on both animals and plants (behaviors and structures). Examples of behaviors that affect the probability of animal reproduction could include nest building to protect young from cold, herding of animals to protect young from predators, and vocalization of animals and colorful plumage to attract mates for breeding. Examples of animal behaviors that affect the probability of plant reproduction could include transferring pollen or seeds and creating conditions for seed germination and growth. Examples of plant structures could include bright flowers attracting butterflies that transfer pollen, flower nectar and odors that attract insects that transfer pollen, and hard shells on nuts that squirrels bury.]	**Oregon Alternate Academic Achievement Standard (Essentialized Standard):** Identify different ways in which animals and plants better survive (i.e., behaviors/structures in animals and structures in plants connected to successful functions) (progression from S05LFS1.1, S05LFS1.2). **Low (L), Medium (M), High (H) Parameters:** **L:** Identify or distinguish animals and plants from other objects (e.g., Which is an animal?). **M:** Identify different animal and plant behaviors and structures (e.g., Which part is the flower? Which part shows the ears?; Which shows a bear hibernating?). **H:** Connect animal and plant behaviors/structures to their function (e.g., Which body parts help the cheetah run fast?; Which tree gets the most sunlight?; Which body parts help the owl see prey at night?).

ORExt Standard Code: S08LFS1.6 Equivalent ODE Standard: MS-LS1-6	
Oregon Science Standard 2022: Construct a scientific explanation based on evidence for the role of photosynthesis in the cycling of matter and flow of energy into and out of organisms. **Oregon Science Standard Clarifications/Assessment Boundary 2022:** [Clarification Statement: Emphasis is on tracing movement of matter and flow of energy.] [Assessment Boundary: Assessment does not include the biochemical mechanisms of photosynthesis.]	**Oregon Alternate Academic Achievement Standard (Essentialized Standard):** Recognize that plants need light, air, and water to grow through a process called photosynthesis (progression from S05LFS1.1). **Low (L), Medium (M), High (H) Parameters:** **L:** Questions use simple pictures and diagrams to ask what a plant/tree/flower needs to grow (i.e., the correct answer being light, water, or air compared to materials that would not help it grow such as complete darkness, soda, salt). **M:** Questions use simple pictures and diagrams to compare the (potential) growth of a plant/tree/flower (if one is given light, water, and/or air, and the other is not), while including the term/role/description of photosynthesis in questions about what would help the plant grow (comparisons between two different plants may be used). **H:** Extend M-level by incorporating into diagrams images of the Sun, arrows that indicate flow of energy, intake of carbon dioxide, release of oxygen, with questions pertaining to growth under different environmental conditions during photosynthesis.

ORExt Standard Code: S08LFS1.7 Equivalent ODE Standard: MS-LS1-7	
Oregon Science Standard 2022: Develop a model to describe how food is rearranged through chemical reactions forming new molecules that support growth and/or release energy as this matter moves through an organism. **Oregon Science Standard Clarifications/Assessment Boundary 2022:** [Clarification Statement: Emphasis is on describing that molecules are broken apart and put back together and that in this process, energy is released.] [Assessment Boundary: Assessment does not include details of the chemical reactions for photosynthesis or respiration.]	**Oregon Alternate Academic Achievement Standard (Essentialized Standard):** Recognize that food helps living organisms grow and obtain energy (progression from S05LFS2.1). **Low (L), Medium (M), High (H) Parameters:** **L:** Questions are related to humans and animals needing food to grow (e.g., Which do you eat to grow?; Which helps the kitten grow?). **M:** Extend L-level questions to involve food providing "energy" to humans and animals. **H:** Introduce graphical displays/diagrams to ask questions about the relative amount of energy or expected growth based on a given situation (e.g., a bar chart showing varying amounts of food/water given to a pet/plant).

OrExt Standard Code: S08LFS2.1 Equivalent ODE Standard: MS-LS2-1, MS-LS1-5 and MS-LS2-4	
Oregon Science Standard 2022: MS-LS2-1: Analyze and interpret data to provide evidence for the effects of resource availability on organisms and populations of organisms in an ecosystem. MS-LS1-5: Construct a scientific explanation based on evidence for how environmental and genetic factors influence the growth of organisms. MS-LS2-4: Construct an argument supported by empirical evidence that changes to physical or biological components of an ecosystem affect populations. **Oregon Science Standard Clarifications/Assessment Boundary 2022:** MS-LS2-1: [Clarification Statement: Emphasis is on cause and effect relationships between resources and growth of individual organisms and the numbers of organisms in ecosystems during periods of abundant and scarce resources.] MS-LS1-5: [Clarification Statement: Examples of local environmental conditions could include availability of food, light, space, and water. Examples of genetic factors could include large breed cattle and species of grass affecting growth of organisms. Examples of evidence could include drought decreasing plant growth, fertilizer increasing plant growth, different varieties of plant seeds growing at different rates in different conditions, and fish growing larger in large ponds than they do in small ponds.] [Assessment Boundary: Assessment does not include genetic mechanisms, gene regulation, or biochemical processes.] MS-LS2-4: [Clarification Statement: Emphasis is on recognizing patterns in data and making warranted inferences about changes in populations, and on evaluating empirical evidence supporting arguments about changes to ecosystems.]	**Oregon Alternate Academic Achievement Standard (Essentialized Standard):** Recognize that the availability of and changes in resources (i.e., food, water, shelter, habitat) effects the growth and number of living organisms in an ecosystem (progression from S05LFS2.1). **Low (L), Medium (M), High (H) Parameters:** **L:** Differentiate between individual living organisms and groups of living organisms (e.g., Which is a living organism?; Which shows a group of living animals?). **M:** Identify various resources that individual or groups of living organisms need to grow, reproduce, or sustain their population. **H:** Extend M-level to involve simple changes in resources and how such changes might affect an individual or group of living organisms.

ORExt Standard Code: S08LFS2.2 Equivalent ODE Standard: MS-LS2-2	
Oregon Science Standard 2022: Construct an explanation that predicts patterns of interactions among organisms across multiple ecosystems. **Oregon Science Standard Clarifications/Assessment Boundary 2022:** [Clarification Statement: Emphasis is on predicting consistent patterns of interactions in different ecosystems in terms of the relationships among and between organisms and abiotic components of ecosystems. Examples of types of interactions could include competitive, predatory, and mutually beneficial.]	**Oregon Alternate Academic Achievement Standard (Essentialized Standard):** Identify ways in which living organisms interact with other living and non-living ecosystem components. **Low (L), Medium (M), High (H) Parameters:** **L:** Identify related living organisms versus (specifically) non-living parts of ecosystems and vice versa (e.g., Which shows a pond - pond, frog, fish). **M:** Extend L-level to involve interactions between living and non-living aspects of a given ecosystem (e.g., habitat, shelter, water). **H:** Extend M-level to involve interaction between individual or groups of living organisms (e.g., predator-prey, competitive, mutually beneficial).

ORExt Standard Code: S08LFS3.2 Equivalent ODE Standard: MS-LS3-2	
Oregon Science Standard 2022: Develop and use models to describe why asexual reproduction results in offspring with identical genetic information and sexual reproduction results in offspring with genetic variation. **Oregon Science Standard Clarifications/Assessment Boundary 2022:** [Clarification Statement: Emphasis is on using models such as Punnett squares, diagrams, and simulations to describe the cause and effect relationship of gene transmission from parent(s) to offspring and resulting genetic variation.]	**Oregon Alternate Academic Achievement Standard (Essentialized Standard):** Recognize that reproduction produces offspring with similar though varied traits. **Low (L), Medium (M), High (H) Parameters:** **L:** Identify (match) the offspring of a given living organism (i.e., plants, animals, humans): answer should be exactly or very closely identical and distractors include different species. **M:** Identify the offspring of a given living organism (i.e., plants, animals, humans): answer should not be identical, and distractors should be different species. **H:** Identify the offspring of a given living organism (i.e., plants, animals, humans): should not be identical, and include variations of the same and different species.

ORExt Standard Code: S08LFS4.2 Equivalent ODE Standard: MS-LS4-2 and MS-LS4-1	
Oregon Science Standard 2022: MS-LS4-2: Apply scientific ideas to construct an explanation for the anatomical similarities and differences among modern organisms and between modern and fossil organisms to infer evolutionary relationships. MS-LS4-1: Analyze and interpret data for patterns in the fossil record that document the existence, diversity, extinction, and change of life forms throughout the history of life on Earth under the assumption that natural laws operate today as in the past. **Oregon Science Standard Clarifications/Assessment Boundary 2022:** MS-LS4-2: [Clarification Statement: Emphasis is on explanations of the evolutionary relationships among organisms in terms of similarity or differences of the gross appearance of anatomical structures.] MS-LS4-1: [Clarification Statement: Emphasis is on finding patterns of changes in the level of complexity of anatomical structures in organisms and the chronological order of fossil appearance in the rock layers.] [Assessment Boundary: Assessment does not include the names of individual species or geological eras in the fossil record.]	**Oregon Alternate Academic Achievement Standard (Essentialized Standard):** Recognize anatomically similar organisms, including that they are likely related. **Low (L), Medium (M), High (H) Parameters:** **L:** Identify like animals based on their physical characteristics (i.e., dogs with dogs, or cats with cats, with distractors being very different organisms such as a bug and bird, while like animals look slightly different - e.g., add spots, face a different way). **M:** Identify similar animals based on their physical characteristics with more reasonable distractors (e.g., lion with cat). **H:** Extend M-level to include fossils of common extinct organisms.

ORExt Standard Code: S08LFS4.4 Equivalent ODE Standard: MS-LS4-4	
Oregon Science Standard 2022: Construct an explanation based on evidence that describes how genetic variations of traits in a population increase some individuals' probability of surviving and reproducing in a specific environment. **Oregon Science Standard Clarifications/Assessment Boundary 2022:** [Clarification Statement: Emphasis is on using simple probability statements and proportional reasoning to construct explanations.]	**Oregon Alternate Academic Achievement Standard (Essentialized Standard):** Identify genetic traits that help living organisms survive. **Low (L), Medium (M), High (H) Parameters:** **L:** Identify simple traits of animals that help them survive or reproduce (though not referring to survival/reproduction) as compared to traits or objects that are unrelated to animal. **M:** Extend L-level by directly referring to/asking about traits that help them survive as compared to traits from other animals that help them survive. **H:** Questions ask about the function of traits related to a single animal or group of same animal (e.g., Which trait helps the giraffe reach food from the tops of trees?; Which trait helps the owl see prey in the dark?) among other traits of the target animal.

ORExt Standard Code: S08PHS1.2 Equivalent ODE Standard: MS-PS1-2	
Oregon Science Standard 2022: Analyze and interpret data on the properties of substances before and after the substances interact to determine if a chemical reaction has occurred. **Oregon Science Standard Clarifications/Assessment Boundary 2022:** [Clarification Statement: Examples of reactions could include burning sugar or steel wool, fat reacting with sodium hydroxide, and mixing zinc with hydrogen chloride.] [Assessment Boundary: Assessment is limited to analysis of the following properties: density, melting point, boiling point, solubility, flammability, and odor.]	**Oregon Alternate Academic Achievement Standard (Essentialized Standard):** Identify and measure the physical and chemical properties of matter, including before or after they change (progression from 5.PHS1.3). **Low (L), Medium (M), High (H) Parameters:** **L:** Identify and compare simple physical properties including size, shape, hardness/softness, weight, mass and density of common objects, with the chemical property restricted to whether or not a substance is flammable. **M:** Properties include all of those in L-level and may involve identifying properties after a physical/chemical change to a given substance, including the use of graphs and data tables of such properties. **H:** Extend M-level to physical versus chemical changes, including which has occurred and simple results.

ORExt Standard Code: S08PHS1.3 Equivalent ODE Standard: MS-PS1-3	
Oregon Science Standard 2022: Gather and make sense of information to describe that synthetic materials come from natural resources and impact society. **Oregon Science Standard Clarifications/Assessment Boundary 2022:** [Clarification Statement: Emphasis is on natural resources that undergo a chemical process to form the synthetic material. Examples of new materials could include new medicine, foods, and alternative fuels.] [Assessment Boundary: Assessment is limited to qualitative information.]	**Oregon Alternate Academic Achievement Standard (Essentialized Standard):** Identify different materials we use and that they come from the Earth's natural resources. **Low (L), Medium (M), High (H) Parameters:** **L:** Identify different types of common and everyday objects or materials. **M:** Identify different types of common and everyday objects or materials that come from natural resources. **H:** Identify the natural resource from which common and everyday objects or materials come from (e.g., paper comes from wood/trees, metal in a car comes from iron/aluminum).

Science Grade 8

OrExt Standard Code: S08PHS2.1 Equivalent ODE Standard: MS-PS2-1	
Oregon Science Standard 2022: Apply Newton's Third Law to design a solution to a problem involving the motion of two colliding objects.* **Oregon Science Standard Clarifications/Assessment Boundary 2022:** [Clarification Statement: Examples of practical problems could include the impact of collisions between two cars, between a car and stationary objects, and between a meteor and a space vehicle.] [Assessment Boundary: Assessment is limited to vertical or horizontal interactions in one dimension.]	**Oregon Alternate Academic Achievement Standard (Essentialized Standard):** Identify objects in motion and actions, including associated reactions. **Low (L), Medium (M), High (H) Parameters:** **L:** Identify objects that are at rest or in motion. **M:** Identify actions that will involve an associated reaction. **H:** Identify and associate simple actions and reactions.

***** This performance expectation integrates traditional science content with engineering through a practice or disciplinary core idea.

ORExt Standard Code: S08PHS2.2 Equivalent ODE Standard: MS-PS2-2	
Oregon Science Standard 2022: Plan an investigation to provide evidence that the change in an object's motion depends on the sum of the forces on the object and the mass of the object. **Oregon Science Standard Clarifications/Assessment Boundary 2022:** [Clarification Statement: Emphasis is on balanced (Newton's First Law) and unbalanced forces in a system, qualitative comparisons of forces, mass and changes in motion (Newton's Second Law), frame of reference, and specification of units.] [Assessment Boundary: Assessment is limited to forces and changes in motion in one-dimension in an inertial reference frame and to change in one variable at a time. Assessment does not include the use of trigonometry.]	**Oregon Alternate Academic Achievement Standard (Essentialized Standard):** Recognize that the force, mass, and motion of objects are related and comparable. **Low (L), Medium (M), High (H) Parameters:** **L:** Identify or compare objects in relation to their mass. **M:** Qualitatively link mass with force and motion. **H:** Qualitatively compare forces, mass, and changes in motion in various situations.

ORExt Standard Code: S08PHS3.4 Equivalent ODE Standard: MS-PS3-4, MS-PS1-4, and MS-PS3-3	
Oregon Science Standard 2022: MS-PS3-4: Plan an investigation to determine the relationships among the energy transferred, the type of matter, the mass, and the change in the average kinetic energy of the particles as measured by the temperature of the sample. MS-PS1-4: Develop a model that predicts and describes changes in particle motion, temperature, and state of a pure substance when thermal energy is added or removed. MS-PS3-3: Apply scientific principles to design, construct, and test a device that either minimizes or maximizes thermal energy transfer. **Oregon Science Standard Clarifications/Assessment Boundary 2022:** MS-PS3-4: [Clarification Statement: Examples of experiments could include comparing final water temperatures after different masses of ice melted in the same volume of water with the same initial temperature, the temperature change of samples of different materials with the same mass as they cool or heat in the environment, or the same material with different masses when a specific amount of energy is added.] [Assessment Boundary: Assessment does not include calculating the total amount of thermal energy transferred.] MS-PS1-4: [Clarification Statement: Emphasis is on qualitative molecular-level models of solids, liquids, and gases to show that adding or removing thermal energy increases or decreases kinetic energy of the particles until a change of state occurs. Examples of models could include drawings and diagrams. Examples of particles could include molecules or inert atoms. Examples of pure substances could include water, carbon dioxide, and helium.] MS-PS3-3: [Clarification Statement: Examples of devices could include an insulated box, a solar cooker, and a Styrofoam cup.] [Assessment Boundary: Assessment does not include calculating the total amount of thermal energy transferred.]	**Oregon Alternate Academic Achievement Standard (Essentialized Standard):** Recognize temperature as a measure of how hot or cold matter is, and that heat is transferable. **Low (L), Medium (M), High (H) Parameters:** **L:** Recognize the difference between hot and cold (e.g., using objects, outside vs. inside). **M:** Recognize that hot and cold are related to measures of temperature, including changes in temperature. **H:** Identify examples of heat transfer, and how such transfer might be minimized or maximized (e.g., wearing a coat to stay warm).

Science Grade 8

ORExt Standard Code: S08PHS4.2 Equivalent ODE Standard: MS-PS4-2 and MS-PS4-1	
Oregon Science Standard 2022: MS-PS4-2: Develop and use a model to describe that waves are reflected, absorbed, or transmitted through various materials. MS-PS4-1: Use mathematical representations to describe a simple model for waves that includes how the amplitude of a wave is related to the energy in a wave. **Oregon Science Standard Clarifications/Assessment Boundary 2022:** MS-PS4-2: [Clarification Statement: Emphasis is on both light and mechanical waves. Examples of models could include drawings, simulations, and written descriptions.] [Assessment Boundary: Assessment is limited to qualitative applications pertaining to light and mechanical waves.] MS-PS4-1: [Clarification Statement: Emphasis is on describing waves with both qualitative and quantitative thinking.] [Assessment Boundary: Assessment does not include electromagnetic waves and is limited to standard repeating waves.]	**Oregon Alternate Academic Achievement Standard (Essentialized Standard):** Identify different types of mechanical (e.g., ocean sound) and electromagnetic (e.g., light) waves, and describe/compare them qualitatively/quantitatively. **Low (L), Medium (M), High (H) Parameters:** **L:** Identify waves as compared to other objects. **M:** Describe waves qualitatively. **H:** Describe or compare waves qualitatively and quantitatively.

Standards not Essentialized:
Please refer to Oregon's published content standards for the full description and context of these codes.

MS-ESS1-1	MS-ESS3-5	MS-LS2-5	MS-PS1-6
MS-ESS1-4	MS-ETS1-3	MS-LS3-1	MS-PS2-3
MS-ESS2-1	MS-ETS1-4	MS-LS4-3	MS-PS2-5
MS-ESS2-3	MS-LS1-1	MS-LS4-5	MS-PS3-1
MS-ESS2-6	MS-LS1-2	MS-LS4-6	MS-PS3-2
MS-ESS3-1	MS-LS1-8	MS-PS1-1	MS-PS3-5
MS-ESS3-2	MS-LS2-3	MS-PS1-5	MS-PS4-3