Standard ID	Standard Text	Edgenuity Lesson Name
EALR 1	Systems	
1.9-12 SYS	Systems (SYS) Predictability and Feedback	
1.9-12 SYSA	Feedback is a process in which the output of a system provides information used to regulate the operation of the system. Positive feedback increases the disturbance to a system. Negative feedback reduces the disturbance to a system.	
1.9-12 SYSA.1	Give examples of a positive feedback system and explain its regulatory mechanism (e.g., global warming causes Earth's ice caps to melt, reflecting less energy to space, increasing temperatures).	Systems of the Biosphere
1.9-12 SYSA.2	Give examples of a negative feedback system and explain its regulatory mechanism (e.g., when a human body overheats, it produces sweat that cools the body by evaporation).	Systems of the Biosphere
1.9-12 SYSB	Systems thinking can be especially useful in analyzing complex situations. To be useful, a system needs to be specified as clearly as possible.	
1.9-12 SYSB.1	Determine if a systems approach will be helpful in answering a question or solving a problem.	Application of Newton's Laws Conservation of Energy Conservation of Momentum Electric Circuits Electromagnetic Induction Lab - Newton's Second Law
1.9-12 SYSB.2	Represent the system with a diagram specifying components, boundaries, flows, and feedbacks.	Application of Newton's Laws Conservation of Energy Electric Circuits Electromagnetic Induction Planets and Satellites
1.9-12 SYSB.3	Describe relevant subsystems and the larger system that contains the system being analyzed.	Application of Newton's Laws Conservation of Energy Electric Circuits Electromagnetic Induction Planets and Satellites
1.9-12 SYSB.4	Determine how the system functions with respect to other systems.	Application of Newton's Laws Conservation of Energy

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1.9-12 SYSB.4	Determine how the system functions with respect to other systems. *(Cont'd)*	Electric Circuits Electromagnetic Induction Planets and Satellites
1.9-12 SYSC	In complex systems, entirely new and unpredictable properties may emerge. Consequently, modeling a complex system in sufficient detail to make reliable predictions may not be possible.	
1.9-12 SYSC.1	Create a simplified model of a complex system. Trace the possible consequences of a change in one part of the system and explain how the simplified model may not be adequate to reliably predict consequences.	Electricity Use in Homes and Businesses Radio Waves and Applications
1.9-12 SYSD	Systems can be changing or in equilibrium.	
1.9-12 SYSD.1	Analyze whether or not a system (e.g., population) is changing or in equilibrium.	Application of Newton's Laws Buoyancy
1.9-12 SYSD.2	Determine whether a state of equilibrium is static or dynamic (e.g., inflows equal outflows).	Application of Newton's Laws Buoyancy
EALR 2	Inquiry	
2.9-12 INQ	Inquiry (INQ) Conducting Analyses and Thinking Logically	
2.9-12 INQA	Scientists generate and evaluate questions to investigate the natural world.	
2.9-12 INQA.1	Generate and evaluate a question that can be answered through a scientific investigation. Critique questions generated by others and explain whether or not the questions are scientific.	Formulating Scientific Questions
2.9-12 INQB	Scientific progress requires the use of various methods appropriate for answering different kinds of research questions, a thoughtful plan for gathering data needed to answer the question, and care in collecting, analyzing, and displaying the data.	
2.9-12 INQB.1	Plan and conduct a scientific investigation, choosing a method appropriate to the question being asked.	Designing Scientific Investigations Methods of Science Safe Practices in the Lab
2.9-12 INQB.2	Collect, analyze, and display data using calculators, computers, or other technical devices when available.	Data Analysis Measurement Standards

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2.9-12 INQC	Conclusions must be logical, based on evidence, and consistent with prior established knowledge.	
2.9-12 INQC.1	Draw conclusions supported by evidence from the investigation and consistent with established scientific knowledge.	
		Analyzing Data and Drawing Conclusions
2.9-12 INQC.2	Analyze alternative explanations and decide which best fits the data and evidence.	
		Analyzing Data and Drawing Conclusions Analyzing Evidence
2.9-12 INQD	The methods and procedures that scientists use to obtain evidence must be clearly reported to enhance opportunities for further investigation.	
2.9-12 INQD.1	Write a detailed laboratory report that includes: the question that motivated the study, a justification for the kind of investigation chosen, hypotheses (if any), a description of what was done, a summary of data in tables and graphs, and a conclusion, based on the evidence, that responds to the question.	
		Lab - Conservation of Linear Momentum Lab - Determining the Acceleration Due to Gravity from Pendulum Motion Lab - Electromagnetic Induction Lab - Mechanical Equivalent of Heat Lab - Motion with Constant Acceleration Lab - Newton's Second Law Lab - Ohm's Law Lab - Waves and Diffraction Science-Based Communication
2.9-12 INQE	The essence of scientific investigation involves the development of a theory or conceptual model that can generate testable predictions.	
2.9-12 INQE.1	Formulate one or more hypotheses based on a model or theory of a causal relationship. Demonstrate creativity and critical thinking to formulate and evaluate the hypotheses.	
		Designing Scientific Investigations Methods of Science
2.9-12 INQF	Science is a human endeavor that involves logical reasoning and creativity and entails the testing, revision, and occasional discarding of theories as new evidence comes to light.	
2.9-12 INQF.1	Evaluate an investigation to determine if it was a valid means of answering the question, and whether or not the results were reliable.	
		Analyzing Data and Drawing Conclusions Analyzing Evidence Evaluating Scientific Design

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2.9-12 INQF.2	Describe the development of a scientific theory that illustrates logical reasoning, creativity, testing, revision, and replacement of prior ideas in light of new evidence.	Methods of Science
2.9-12 INQG	Public communication among scientists is an essential aspect of research. Scientists evaluate the validity of one another's investigations, check the reliability of results, and explain inconsistencies in findings.	
2.9-12 INQG.1	Participate in a scientific discussion about one's own investigations and those performed by others.	
2.9-12 INQG.2	Respond to questions and criticisms, and if appropriate, revise explanations based on these discussions.	
2.9-12 INQH	Scientists carefully evaluate sources of information for reliability before using that information. When referring to the ideas or findings of others, they cite their sources of information.	
2.9-12 INQH.1	Provide appropriate citations for all ideas, findings, and information used in any and all written reports.	
2.9-12 INQH.2	Explain the consequences for failure to provide appropriate citations.	
EALR 3	Application	
3.9-12 APP	Application (APP)	
	Science, Technology, and Society	
3.9-12 APPA	Science affects society and cultures by influencing the way many people think about themselves, others, and the environment. Society also affects science by its prevailing views about what is important to study and by deciding what research will be funded.	
3.9-12 APPA.1	Describe ways that scientific ideas have influenced society or the development of differing cultures.	The Nature of Physics
3.9-12 APPA.2	List questions that scientists investigate that are stimulated by the needs of society (e.g., medical research, global climate change).	Formulating Scientific Questions The Nature of Physics
3.9-12 APPB	The technological design process begins by defining a problem in terms of criteria and constraints, conducting research, and generating several different solutions.	
3.9-12 APPB.1	Work collaboratively with other students to generate ideas for solving a problem. Identify criteria and constraints, research the problem, and generate several possible solutions.	
3.9-12 APPC	Choosing the best solution involves comparing alternatives with respect to criteria and constraints, then building and testing a model or other representation of the final design.	
3.9-12 APPC.1	Choose the best solution for a problem, create a model or drawing of the final design, and devise a way to test it. Redesign the solution, if necessary, then present it to peers.	Lab - Conservation of Linear Momentum Lab - Determining the Acceleration Due to Gravity from Pendulum Motion Lab - Electromagnetic Induction Lab - Mechanical Equivalent of Heat

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3.9-12 APPC.1	Choose the best solution for a problem, create a model or drawing of the final design, and devise a way to test it. Redesign the solution, if necessary, then present it to peers. *(Cont'd)*	Lab - Motion with Constant Acceleration Lab - Newton's Second Law Lab - Ohm's Law Lab - Waves and Diffraction Work and Kinetic Energy
3.9-12 APPD	The ability to solve problems is greatly enhanced by use of mathematics and information technologies.	
3.9-12 APPD.1	Use proportional reasoning, functions, graphing, and estimation to solve problems.	Electric Circuits Identifying Accuracy and Precision Impulse and Momentum Lab - Ohm's Law Mathematical Data Manipulation Newton's Laws Phase Changes Simple Harmonic Motion Waves
3.9-12 APPD.2	Use computers, probes, and software when available to collect, display, and analyze data.	Lab - Conservation of Linear Momentum Lab - Determining the Acceleration Due to Gravity from Pendulum Motion Lab - Electromagnetic Induction Lab - Mechanical Equivalent of Heat Lab - Motion with Constant Acceleration Lab - Newton's Second Law Lab - Ohm's Law Lab - Waves and Diffraction
3.9-12 APPE	Perfect solutions do not exist. All technological solutions involve trade-offs in which decisions to include more of one quality means less of another. All solutions involve consequences, some intended, others not.	
3.9-12 APPE.1	Analyze a societal issue that may be addressed through science and/or technology. Compare alternative solutions by considering trade-offs and unintended consequences (e.g., removing dams to increase salmon spawning).	Devices That Transform Energy Electricity Use in Homes and Businesses Radio Waves and Applications

Standard ID	Standard Text	Edgenuity Lesson Name
3.9-12 APPE.1	Analyze a societal issue that may be addressed through science and/or technology. Compare alternative solutions by considering trade-offs and unintended consequences (e.g., removing dams to increase salmon spawning).	
	(Cont'd)	Systems of the Biosphere The Nature of Physics
3.9-12 APPF	It is important for all citizens to apply science and technology to critical issues that influence society.	
3.9-12 APPF.1	Critically analyze scientific information in current events to make personal choices or to understand public-policy decisions.	
		Analyzing Evidence Devices That Transform Energy Systems of the Biosphere The Nature of Physics
EALR 4	Physical Science	
4.9-11 PS1	Force and Motion (PS1) Newton's Laws	
4.9-11 PS1A	Average velocity is defined as a change in position with respect to time. Velocity includes both speed and direction.	
4.9-11 PS1A.1	Calculate the average velocity of a moving object, given the object's change in position and time ($v = x_2\text{-}x_1/t_2\text{-}t_1$).	
		Motion in One Dimension Motion in Two Dimensions
4.9-11 PS1A.2	Explain how two objects moving at the same speed can have different velocities.	
		Motion in One Dimension Motion in Two Dimensions
4.9-11 PS1B	Average acceleration is defined as a change in velocity with respect to time. Acceleration indicates a change in speed and/or a change in direction.	
4.9-11 PS1B.1	Calculate the average acceleration of an object, given the object's change in velocity with respect to time ($a = v_2\text{-}v_1/t_2\text{-}t_1$).	
		Lab - Motion with Constant Acceleration Motion in One Dimension Motion in Two Dimensions
4.9-11 PS1B.2	Explain how an object moving at constant speed can be accelerating.	
		Planets and Satellites Rotational Motion

Standard ID	Standard Text	Edgenuity Lesson Name
4.9-11 PS1C	An object at rest will remain at rest unless acted on by an unbalanced force. An object in motion at constant velocity will continue at the same velocity unless acted on by an unbalanced force. (Newton's First Law of Motion, the Law of Inertia)	
4.9-11 PS1C.1	Given specific scenarios, compare the motion of an object acted on by balanced forces with the motion of an object acted on by unbalanced forces.	
		Application of Newton's Laws
		Buoyancy
		Conservation of Momentum
		Impulse and Momentum
		Lab - Conservation of Linear Momentum
		Lab - Newton's Second Law
		Newton's Laws
		Properties of Fluids
4.9-11 PS1D	A net force will cause an object to accelerate or change direction. A less massive object will speed up more quickly than a more massive object subjected to the same force. (Newton's Second Law of Motion, F=ma)	
4.9-11 PS1D.1	Predict how objects of different masses will accelerate when subjected to the same force.	
		Application of Newton's Laws
		Lab - Newton's Second Law
		Newton's Laws
4.9-11 PS1D.2	Calculate the acceleration of an object, given the object's mass and the net force on the object, using Newton's Second Law of Motion (F=ma).	
		Application of Newton's Laws
		Lab - Newton's Second Law
		Newton's Laws
4.9-11 PS1E	Whenever one object exerts a force on another object, a force of equal magnitude is exerted on the first object in the opposite direction. (Newton's Third Law of Motion)	
4.9-11 PS1E.1	Illustrate with everyday examples that for every action there is an equal and opposite reaction (e.g., a person exerts the same force on the Earth as the Earth exerts on the person).	
		Newton's Laws
		Universal Law of Gravitation
4.9-11 PS1F	Gravitation is a universal attractive force by which objects with mass attract one another. The gravitational force between two objects is proportional to their masses and inversely proportional to the square of the distance between the objects. (Newton's Law of Universal Gravitation)	
4.9-11 PS1F.1	Predict how the gravitational force between two bodies would differ for bodies of different masses or different distances apart.	
		Universal Law of Gravitation

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4.9-11 PS1F.2	Explain how the weight of an object can change while its mass remains constant.	
		Newton's Laws
4.9-11 PS1G	Electrical force is a force of nature independent of gravity that exists between charged objects. Opposite charges attract while like charges repel.	
4.9-11 PS1G.1	Predict whether two charged objects will attract or repel each other, and explain why.	
		Charging
		Electric Charges and Coulomb's Law
4.9-11 PS1H	Electricity and magnetism are two aspects of a single electromagnetic force. Moving electric charges produce magnetic forces, and moving magnets produce electric forces.	
4.9-11 PS1H.1	Demonstrate and explain that an electric current flowing in a wire will create a magnetic field around the wire (electromagnetic effect).	
		Electric Circuits
		Electric Currents
		Electric Fields
		Electric Potential
		Electricity Use in Homes and Businesses
		Lab - Ohm's Law
		Magnetic Fields
		Magnetic Forces
4.9-11 PS1H.2	Demonstrate and explain that moving a magnet near a wire will cause an electric current to flow in the wire (the generator effect).	
		Electromagnetic Induction
		Lab - Electromagnetic Induction
4.9-11 PS3	Energy: Transfer, Transformation, and Conservation (PS3) Transformation and Conservation of Energy	
4.9-11 PS3A	Although energy can be transferred from one object to another and can be transformed from one form of energy to another form, the total energy in a closed system remains the same. The concept of conservation of energy, applies to all physical and chemical changes.	
4.9-11 PS3A.1	Describe a situation in which energy is transferred from one place to another and explain how energy is conserved.	
		Conservation of Energy
		Flow
		Heat Transfer
		Lab - Mechanical Equivalent of Heat
		Phase Changes
		States of Matter

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4.9-11 PS3A.1	Describe a situation in which energy is transferred from one place to another and explain how energy is conserved. *(Cont'd)*	Temperature and Heat Thermodynamics
4.9-11 PS3A.2	Describe a situation in which energy is transformed from one form to another and explain how energy is conserved.	Conservation of Energy Devices That Transform Energy Flow Heat Transfer Lab - Mechanical Equivalent of Heat Phase Changes States of Matter Systems of the Biosphere Temperature and Heat Thermodynamics
4.9-11 PS3B	Kinetic energy is the energy of motion. The kinetic energy of an object is defined by the equation: $E_k = ½ mv^2$	
4.9-11 PS3B.1	Calculate the kinetic energy of an object, given the object's mass and velocity.	Work and Kinetic Energy
4.9-11 PS3C	Gravitational potential energy is due to the separation of mutually attracting masses. Transformations can occur between gravitational potential energy and kinetic energy, but the total amount of energy remains constant.	
4.9-11 PS3C.1	Give an example in which gravitational potential energy and kinetic energy are changed from one to the other (e.g., a child on a swing illustrates the alternating transformation of kinetic and gravitational potential energy).	Conservation of Energy Potential Energy
4.9-11 PS3D	Waves (including sound, seismic, light, and water waves) transfer energy when they interact with matter. Waves can have different wavelengths, frequencies, and amplitudes, and travel at different speeds.	
4.9-11 PS3D.1	Demonstrate how energy can be transmitted by sending waves along a spring or rope. Characterize physical waves by frequency, wavelength, amplitude, and speed.	Diffraction Electromagnetic Waves Interference Lab - Determining the Acceleration Due to Gravity from Pendulum Motion Lab - Waves and Diffraction

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4.9-11 PS3D.1	Demonstrate how energy can be transmitted by sending waves along a spring or rope. Characterize physical waves by frequency, wavelength, amplitude, and speed.	
	(Cont'd)	Mirrors and Lenses Pendulum Motion Properties of Sound Waves Reflection and Refraction Simple Harmonic Motion Sound Waves Waves
4.9-11 PS3D.2	Apply these properties to the pitch and volume of sound waves and to the wavelength and magnitude of water waves.	
		Properties of Fluids Properties of Sound Waves Sound Waves
4.9-11 PS3E	Electromagnetic waves differ from physical waves because they do not require a medium and they all travel at the same speed in a vacuum. This is the maximum speed that any object or wave can travel. Forms of electromagnetic waves include Xrays, ultraviolet, visible light, infrared, and radio.	
4.9-11 PS3E.1	Illustrate the electromagnetic spectrum with a labeled diagram, showing how regions of the spectrum differ regarding wavelength, frequency, and energy, and how they are used (e.g., infrared in heat lamps, microwaves for heating foods, X-rays for medical imaging).	
		Electromagnetic Waves Radio Waves and Applications