

Grade Level: 11-12<sup>th</sup> Grade

Course: Physics

Timeline/ Month(s) /Rotation (include date of rotation]	Content / concept	Grade Level Expectations (GLE's) [include GLE number & statement]	Skill(s) Use verbs to describe student's expected performance (i.e., identify nouns, describe components)	Resources (books, FOSS kits, guest speakers, models, etc.)	List all measures you used to check student understanding (e.g., assessments, performance, projects, homework) [If using FOSS kit assessments just list the item such as, Observation.]
September – November	Kinematics	EALR 1.1.2 Describe the average speed, direction of motion, and average acceleration of objects; for example: increasing, decreasing, or constant acceleration.	Describe motion in one dimension, including displacement, velocity, and acceleration. Describe motion in two dimensions, including displacement, velocity, and acceleration. Resolve vectors into components. Add vectors to find resultants.	Holt <i>Physics</i> text book Ch. 1-3, <i>Conceptual Physics</i> text book (used as needed as a supplement), <i>Physics by Inquiry</i> activities ( <i>Pbi</i> Kinematics chapter), scenes from <i>Speed, XXX</i> .	Chapter homework assignments, Chapter tests, lab reports
November- December	Dynamics	EALR 1.3.1 Identify various forces and their relative magnitudes and explain everyday situations in terms of force.  EALR 1.3.2 Explain the effects of unbalanced forces in changing the direction of the motion of objects.	Use free-body diagrams to analyze forces acting on an object. Explain that unbalanced forces result in a change in an object's state of motion. Explain that the acceleration of an object is directly proportional to the net external force acting on the object, and inversely proportional to the object's mass. Identify action-reaction pairs. Use Newton's Laws to find the amount of applied force needed to produce a given acceleration, or the amount of acceleration that would result from a given applied force, both with and without friction. Experimentally determine the coefficient of friction for various surfaces.	Holt <i>Physics</i> text book Ch. 4, <i>Conceptual Physics</i> text book (used as needed as a supplement), scenes from <i>Superman, Batman, Spider-Man, Batman Begins, Superman Returns</i> .	Chapter homework assignments, Chapter tests, lab reports, Force Concept Inventory
December – January	Work and Energy	EALR 1.2.2 Understand many forms of energy as they are found in common situations on Earth and in the universe.	Distinguish between the scientific and non-scientific meanings of the term "work". Calculate the amount of work done	Holt <i>Physics</i> text book Ch. 5, <i>Conceptual Physics</i> text book (used as needed as a	Chapter homework assignments, Chapter tests, lab reports

		EALR 1.2.3 Understand that total energy is conserved: analyze decreases and increases of energy during energy transfers in terms of energy conservation.	in various situations. Describe the relationship between work and energy. Use conservation of mechanical energy to determine the kinetic and potential energy of various objects.	supplement).	
<b>January</b>	Momentum	EALR 1.3.2 Explain the effects of unbalanced forces in changing the direction of the motion of objects.  EALR 1.2.3 Understand that total energy is conserved: analyze decreases and increases of energy during energy transfers in terms of energy conservation.	Understand that changes in momentum are the result of force being applied over a period of time, and that the same change in momentum can be produced by a large force applied over a short amount of time, or by a small force applied over a long time interval. Use conservation of momentum to predict the results of various collisions. Distinguish between elastic and inelastic collisions.	Holt <i>Physics</i> text book Ch. 6, <i>Conceptual Physics</i> text book (used as needed as a supplement), scenes from <i>True Lies</i> , <i>Speed II</i> , <i>Mission Impossible II</i> .	same
<b>January-February</b>	Rotational motion	EALR 1.1.2 Describe the average speed, direction of motion, and average acceleration of objects; for example: increasing, decreasing, or constant acceleration.  EALR 1.3.2 Explain the effects of unbalanced forces in changing the direction of the motion of objects.	Describe rotational motion. Find the center of gravity of various objects. Use center of gravity to predict stability/toppling. Explain the causes of circular motion.	Holt <i>Physics</i> text book Ch. 7-8, <i>Conceptual Physics</i> text book (used as needed as a supplement), scenes from <i>Mission to Mars</i> , <i>Armageddon</i> , <i>The Core</i>	same
<b>February-April</b>	Heat and Temperature	EALR 1.2.1 Analyze systems, including inputs and outputs, as well as subsystems.  EALR 1.2.2 Understand many forms of energy as they are found in common situations on Earth and in the universe.  EALR 1.2.3 Understand that total energy is conserved: analyze decreases and increases of energy during energy transfers in terms of energy conservation.	Distinguish between heat and temperature. Describe the conditions under which heat is transferred from one object to another. Understand that a transfer of heat can result in a change in temperature and/or a change of phase. Find the specific heat capacity of an unknown material. Apply the concept of conservation of energy to situations in which there is a change in internal	Holt <i>Physics</i> text book Ch. 10-11, <i>Conceptual Physics</i> text book (used as needed as a supplement), <i>Physics by Inquiry</i> activities ( <i>PBI</i> Heat and Temperature chapter).	Chapter homework assignments, Chapter tests, lab reports, Heat & Temperature Concept Inventory

		EALR 1.2.5 Analyze and explain the various factors that affect physical and chemical changes and how matter and energy are conserved in a closed system.	energy. Distinguish between isovolumetric, isothermal, and adiabatic thermodynamic processes. Calculate efficiency of thermodynamic systems.		
<b>April</b>	Periodic motion	EALR 1.1.3 Describe water waves and sound relating the ideas of frequency, wavelength, and speed; and by relating energy to amplitude.	Describe periodic motion. Describe simple harmonic motion. Describe factors that affect wave motion. Predict the results of wave interference.	Holt <i>Physics</i> text book Ch. 12, <i>Conceptual Physics</i> text book (used as needed as a supplement), <i>Physics by Inquiry</i> activities ( <i>PBI Wave Properties</i> chapter).	Chapter homework assignments, Chapter tests, lab reports, Periodic Motion Concept Inventory
<b>May</b>	Sound	EALR 1.1.3 Describe water waves and sound relating the ideas of frequency, wavelength, and speed; and by relating energy to amplitude.	Calculate the speed of sound. Describe the Doppler effect. Calculate sound intensity. Describe the relationship between sound intensity, volume, and decibel level. Describe the effects of resonance. Identify harmonic series.	Holt <i>Physics</i> text book Ch. 13, <i>Conceptual Physics</i> text book (used as needed as a supplement).	Chapter homework assignments, Chapter tests, lab reports
<b>May-June</b>	Light	EALR 1.1.3 Describe water waves and sound relating the ideas of frequency, wavelength, and speed; and by relating energy to amplitude.	Distinguish between specular and diffuse reflection. Explain the conditions necessary to be able to see an object. Describe images produced by flat mirrors. Describe additive and subtractive colors. Describe images produced by biconcave and biconvex lenses. Use index of refraction to identify unknown materials. Determine the critical angle of various materials.	Holt <i>Physics</i> text book Ch. 14-15, <i>Conceptual Physics</i> text book (used as needed as a supplement).	same