Year at a Glance 2015-2016

Physics

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Unit Name	**Unit 1** **Graphing Motion** **8/25- 9/11** *(3 Weeks)*	**Unit 2** **Kinematics** **9/14- 10/2** *(3 Weeks)*	**Unit 3** **Vectors and 2D Kinematics** **10/5- 10/16** *(2 Weeks)*	**Unit 4** **Forces** **10/19- 11/6** *(3 Weeks)*	**Unit 5** **Circular Motion** **11/9- 11/20** *(2 Weeks)*	**Unit 6** **Energy** **11/30- 12/18** *(3 Weeks)*
TEKS	**New** 1A, 2J, 2K, 2L, 4A, 4F **Health** 2B ***Health-Based Performance Assessment***	**Spiraled** 4A, 2J, 2K, 2L, **New** 4B, 3F	**Spiraled** 4A, 4B, 4F **New** 4C	**Spiraled** 4A, 4B, 4C **New** 4D, 4E	**Spiraled** 4B, 4D, 4C, 4D, 4E **New** 5A, 5B	**Spiraled** 4B, 4D, 4C **New** 6A, 6B, 6C, 6D
Big Ideas	1. Using a common frame of reference can helps to describe the motion of the object. 2. Motion graphs indicate an object's displacement, velocity, or acceleration. 3. Displacement is a change of position in a certain direction, whereas distance is the total path traveled; Velocity is the change in displacement over time, and acceleration is the rate in change of velocity over time.	1. Motion can be described, predicted, or calculated through the use of graphs or equations. 2. Kinematic equations can be utilized to predict unknown information about an object's motion. 3. When an object is dropped, it undergoes a constant acceleration of -9.8 m/s^2.	1. Projectile motion can be analyzed by separating the motion into independent components. 2. Neglecting air resistance, the vertical component of projectile motion is affected by gravity and the initial vertical velocity; the horizontal component of projectile motion is affected by the initial horizontal velocity of the object. 3. The path of a projectile is represented by the vector sum of the components of motion.	1. A net force causes acceleration 2. For every action-force on an object there is an equal and opposite reaction-force applied to the corresponding object. 3. A free-body diagram shows all of the forces that act on one object and provides a means to calculate the net force.	1. Any object moving in a circular path must have a net centripetal force acting on it. 2. Every object in the universe attracts every other object with an equal and opposite gravitational force.	1. In order for a net force to do work on an object, the net force must cause the displacement. 2. Work is transformed into the kinetic energy of the object. 3. The mechanical energy of a system is the sum of its potential and kinetic energy; if all forces are conserved, the total mechanical energy of a system is conserved. 4. Power is the rate at which is done.

Unit Name	**Unit 7** **Momentum and Collisions** **1/5- 1/29** *(4 Weeks)*	**Unit 8** **Heat and Thermodynamics** **2/1-2/19** *(3 Weeks)*	**Unit 9** **Waves** **2/22-3/11** *(3 Weeks)*	**Unit 10** **Photo-Electric Effect &** **Emission Spectrum** **3/21- 4/15** *(4 Weeks)*	**Unit 11** **Electricity & Magnetism** **4/18-5/6** *(3 Weeks)*	**Unit 12** **Atomic& Nuclear Phenomenon** **5/9-6/2** *(4 Weeks)*
TEKS	**Spiraled** 4D **New** 6C, 6D **Health** 7C	**New** 6E, 6F, 6G	**New** 7A, 7B, 7C, 7D, 7F, 7E, 7F **Health** 8A, 8B, 8C, 12C ***Health-Based Performance Assessment***	**Spiraled** 7C **New** 8A, 8B, 8C	**Spiraled** 5A **New** 5C, 5D, 5E, 5F	**New** 5H, 8C, 8D **Health** 12C
Big Ideas	1. Momentum is mass in motion; Momentum is equal to the product of mass and velocity. 2. In order to change the momentum in a physical system, a force must be applied; the impulse applied to the system is equal to the change in momentum the system experiences. 3. Momentum is conserved in both types inelastic and elastic collisions. In inelastic collisions kinetic energy is lost. In elastic collisions, both momentum and kinetic energy are conserved.	1. Heat is energy that is transferred from objects of higher temperatures to objects at lower temperatures. 2. Energy is transferred by thermal conduction, convection, and radiation. 3. Energy is transferred to or from a thermodynamic system to do work by changing its volume, and energy is conserved in the process. 4. Entropy is a measure of the disorder within a system. The more disordered the system is, the less energy that is available to do work.	1. Waves interact with other waves and with matter. 2. Waves have specific characteristics, which can be modeled and measured. 3. Light obeys the law of reflection; 4. The mirror equation can be used to calculate image distance, object distance, and focal length of a spherical mirror or thin lens. 5. Waves have medical and industrial applications.	1. When light strikes a metal surface, the surface gives off electrons. 2. Sometimes light behaves like a particle, sometimes it behaves like a wave. 3. Each element has a unique emission and absorption spectrum.	1. The magnitude of the electrical force between two objects depends on charge and distance between the centers. 2. In a conductor, electricity can move freely, in an insulator it does not. 3. In a series circuit resistors are arranged in a chain, so the current has only one path to take and voltage is dropped at each resistor; while is a parallel circuit, the arrangement of resistors allows the current to break up while the voltage stays the same across each resistor. 4. Moving charges produce a magnetic field; 5. Electric and magnetic fields are interconnected forces.	1. The strong nuclear force is responsible for the binding of neutrons; the weak nuclear force is involved in beta decay. 2. Nuclear reactions involve the change in the nucleus- in fission a heavy nucleus splits into two light nuclei; in fusion two light nuclei combine to form a heavier nucleus. 3. The mass energy equivalence is often used in subatomic physics because mass is not conserved in many nuclear processes.