Everest Academy

Scope & Sequence
Grade: 10 Subject: Physics

Revised:April 2024

1st Quarter (44 Days)			
Resources: **STEMScopes**			
Week	**Unit/Lesson**	**Learning Objectives**	**TEKS**
1st: Aug 8-9 *(2days)*	**Welcome to school**	TW establish class routines and procedures	N/A
2nd: Aug 12-16 *(5 days)*	**Graphing Motion**	TSW analyze different types of motion by generating and interpreting position versus time, velocity versus time, and acceleration versus time using hand graphing and real-time technology such as motion detectors, photogates, or digital applications TSW define scalar and vector quantities related to one- and two-dimensional motion and combine vectors using both graphical vector addition and the Pythagorean theorem	P.5A P.5B
3rd: Aug 19-23 *(5 days)*	**Graphing Motion**	TSW analyze different types of motion by generating and interpreting position versus time, velocity versus time, and acceleration versus time using hand graphing and real-time technology such as motion detectors, photogates, or digital applications TSW define scalar and vector quantities related to one- and two-dimensional motion and combine vectors using both graphical vector addition and the Pythagorean theorem	P.5A P.5B
4th: Aug 26- Aug 30 *(5 days)*	**Projectile Motion**	TSW describe and analyze acceleration in uniform circular and horizontal projectile motion in two dimensions using equations	P.5D
5th: Sept 2-6 *(4 days)*	Monday: Labor Day Holiday **Projectile Motion**	TSW describe and analyze acceleration in uniform circular and horizontal projectile motion in two dimensions using equations	P.5D
6th: Sept 9-13 *(5 days)*	**Newton's Three Laws**	TSW explain and apply the concepts of equilibrium and inertia as represented by Newton's first law of motion using relevant real-world examples such as rockets, satellites, and automobile safety devices TSW calculate the effect of forces on objects, including tension, friction, normal, gravity, centripetal, and applied forces, using free body diagrams and the relationship between force and acceleration as represented by Newton's second law of motion illustrate and analyze the simultaneous forces between two objects as represented in Newton's third law of motion using free body diagrams and in an experimental design scenario	P.5E P.5F P.5G

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7th: Sept 16-20 *(5 days)*	**Newton's Three Laws**	TSW explain and apply the concepts of equilibrium and inertia as represented by Newton's first law of motion using relevant real-world examples such as rockets, satellites, and automobile safety devices TSW calculate the effect of forces on objects, including tension, friction, normal, gravity, centripetal, and applied forces, using free body diagrams and the relationship between force and acceleration as represented by Newton's second law of motion illustrate and analyze the simultaneous forces between two objects as represented in Newton's third law of motion using free body diagrams and in an experimental design scenario	P.5E P.5F P.5G
8th: Sept 23-27 *(4 days)*	**Coulomb's Law** Friday: Professional Development	TSW use scientific notation and predict how the magnitude of the electric force between two objects depends on their charges and the distance between their centers using Coulomb's law	P.6A
9th:Sept 30 Oct 4 *(5 days)*	**Coulomb's Law**	TSW use scientific notation and predict how the magnitude of the electric force between two objects depends on their charges and the distance between their centers using Coulomb's law	P.6A
10th: Oct 7-11 *(5 days)*	**Real-World Electromagnetism**	TSW identify and describe examples of electric and magnetic forces and fields in everyday life such as generators, motors, and transformers	P.6B

2nd Quarter (43 Days)			
Resources: **STEMScopes**			
Week	**Unit/Lesson**	**Learning Objectives**	**TEKS**
1st: Oct 14-18 *(5 days)*	**Conservation of Charge**	TSW investigate and describe conservation of charge during the processes of induction, conduction, and polarization using different materials such as electroscopes, balloons, rods, fur, silk, and Van de Graaf generators	P.6C
2nd: Oct 21-25 *(5 days)*	**Electric Circuits**	TSW analyze, design, and construct series and parallel circuits using schematics and materials such as switches, wires, resistors, lightbulbs, batteries, voltmeters, and ammeters TSW calculate current through, potential difference across, resistance of, and power used by electric circuit elements connected in both series and parallel circuits using Ohm's law	P.6D P.6E

2nd Quarter (43 Days)			
Resources: **STEMScopes**			
Week	**Unit/Lesson**	**Learning Objectives**	**TEKS**
3rd: Oct 28- Nov 1 *(4 days)*	**Electric Circuits**	TSW analyze, design, and construct series and parallel circuits using schematics and materials such as switches, wires, resistors, lightbulbs, batteries, voltmeters, and ammeters TSW calculate current through, potential difference across, resistance of, and power used by electric circuit elements connected in both series and parallel circuits using Ohm's law	P.6D P.6E
4th: Nov 4-8 *(5 days)*	**Work and Power**	TSW calculate and explain work and power in one dimension and identify when work is and is not being done by or on a system	P.7A
5th: Nov 11-15 *(5 days)*	**Energy of a System**	TSW investigate and calculate mechanical, kinetic, and potential energy of a system TSW apply the concept of conservation of energy using the work-energy theorem, energy diagrams, and energy transformation equations, including transformations between kinetic, potential, and thermal energy	P.7B P.7C
6th : Nov 18-22 *(5 days)*	Friday: Parent/Teacher Conferences **Energy of a System**	TSW investigate and calculate mechanical, kinetic, and potential energy of a system TSW apply the concept of conservation of energy using the work-energy theorem, energy diagrams, and energy transformation equations, including transformations between kinetic, potential, and thermal energy	P.7B P.7C
7th: Nov 25-29	**Thanksgiving Holiday**		
8th: Dec 2-6 *(5 days)*	**Impulse and Momentum**	TSW calculate and describe the impulse and momentum of objects in physical systems such as automobile safety features, athletics, and rockets TSW analyze the conservation of momentum qualitatively in inelastic and elastic collisions in one dimension using models, diagrams, and simulations	P.7D P.7E
9th: Dec 9-13 *(5 days)*	**Impulse and Momentum**	TSW calculate and describe the impulse and momentum of objects in physical systems such as automobile safety features, athletics, and rockets TSW analyze the conservation of momentum qualitatively in inelastic and elastic collisions in one dimension using models, diagrams, and simulations	P.7D P.7E
10th : Dec 16-20 *(5 days)*	Review & Assessment	Review & Assessment	Review & Assessment
	Winter Break Dec 23- Jan 3		

3rd Quarter (44 Days)			
Resources: **STEMScopes**			
Week	**Unit/Lesson**	**Learning Objectives**	**TEKS**
1st : Jan 6-10 *(5 days)*	Monday: Professional Development **Simple Harmonic Motion**	TSW examine and describe simple harmonic motion such as springs and pendulums and wave energy propagation in various types of media such as surface waves on a body of water and ropes	P.8A
2nd: Jan 13-17 *(5 days)*	**Characteristics of Waves**	TSW compare the characteristics of transverse and longitudinal waves, including electromagnetic and sound waves TSW investigate and analyze characteristics of waves, including velocity, frequency, amplitude, and wavelength, and calculate using the relationships between wave speed, frequency, and wavelength	P.8B P.8C
3rd : Jan 20-24 *(4 days)*	Monday: MLK Holiday **Characteristics of Waves**	TSW compare the characteristics of transverse and longitudinal waves, including electromagnetic and sound waves TSW investigate and analyze characteristics of waves, including velocity, frequency, amplitude, and wavelength, and calculate using the relationships between wave speed, frequency, and wavelength	P.8B P.8C
4th : Jan 27-31 *(5 days)*	**Behavior of Waves**	TSW investigate behaviors of waves, including reflection, refraction, diffraction, interference, standing wave, the Doppler effect and polarization and superposition	P.8D
5th: Feb 3-7 *(5 days)*	**Behavior of Waves**	TSW investigate behaviors of waves, including reflection, refraction, diffraction, interference, standing wave, the Doppler effect and polarization and superposition	P.8D
6th: Feb 10-14 *(5 days)*	Friday: District Professional Development **Image Formation**	TSW describe and predict image formation as a consequence of reflection from a plane mirror and refraction through a thin convex lens	P.8G
7th: Feb 17-21 *(4 days)*	**Photoelectric Effect**	TSW investigate the emission spectra produced by various atoms and explain the relationship to the electromagnetic spectrum TSW describe the photoelectric effect and emission spectra produced by various atoms and how both are explained by the photon model for light	P.8F P.9A
8th : Feb 24-28 *(5 days)*	**Photoelectric Effect**	TSW investigate the emission spectra produced by various atoms and explain the relationship to the electromagnetic spectrum TSW describe the photoelectric effect and emission spectra produced by various atoms and how both are explained by the photon model for light	P.8F P.9A
9th: Mar 3-7 *(5 days)*	**Malus's Law**	TSW investigate Malus's law and describe examples of applications of wave polarization, including 3-D movie glasses and LCD computer screens	P.9B
10th :March 10-14	**Spring Break March 10-14**		

4th Quarter (46 Days)			
Resources: **StemScopes**			
Week	**Unit/Lesson**	**Learning Objectives**	**TEKS**
1st: Mar 17- 21 *(5 days)*	**Malus's Law**	TSW investigate Malus's law and describe examples of applications of wave polarization, including 3-D movie glasses and LCD computer screens	P.9B
Ramadan break Mar 24 - 31			
2nd: Apr 1-4 *(4 days)*	**Application of Quantum Physics**	TSW compare and explain how superposition of quantum states is related to the wave-particle duality nature of light TSW give examples of applications of quantum phenomena, including the Heisenberg uncertainty principle, quantum computing, and cybersecurity	P.9C P.9D
3rd: April 7-11 *(5 days)*	**Application of Quantum Physics**	TSW compare and explain how superposition of quantum states is related to the wave-particle duality nature of light TSW give examples of applications of quantum phenomena, including the Heisenberg uncertainty principle, quantum computing, and cybersecurity	P.9C P.9D
4th: April 14- 18 *(5 days)*	**STAAR REVIEW**	STAAR REVIEW	STAAR REVIEW
5th: Apr 21-25 *(5 days)*	**STAAR REVIEW**	STAAR REVIEW	STAAR REVIEW
6th: Apr 28 -May 2 *(5 days)*	**STAAR Testing**	STAAR TESTING	STAAR TESTING
7th: May 5- 9 *(5 days)*	**STAAR Testing**	STAAR TESTING	STAAR TESTING
8th:May 12- 16 *(5 days)*	**Review**	Review	Review
9th:May 19- 23 *(5 days)*	Award Ceremonies / Graduation Ceremonies		
10th:May 26-28	**Graduation ceremonies & staff working days**	N/A	N/A