



Advanced Physics
Year at a Glance (YAG)
2024-2025



First Semester		Second Semester	
1 st Nine Weeks – 45 days		3 rd Nine Weeks – 41 days	
<p>TEKS</p> <p>P.5A, P.5B, P.5C, P.5D</p>	<p>1 dimensional kinematics (23 days) Students will investigate the relationship between acceleration, velocity and position. Students will derive and use the equations of motion to solve problems.</p> <p>2 dimensional kinematics (24 days) Students will use the properties of projectile motion to solve problems. Students will use vector addition to find relative velocity.</p>	<p>TEKS</p> <p>P.5D, P.5F, P.5H, P.8A, P.8B, P.8C, P.8D, P.8E, P.8F, P. 8G</p>	<p>Universal Gravitation and Electrical Forces (14 days) Students will Describe and calculate how the magnitude of the gravitational force between two objects depends on their masses and the distance between their centers.</p> <p>Waves & Sound (12 days) Students will examine and describe oscillatory motion. They will investigate and analyze wave characteristics such as amplitude and frequency, and how those relate to wavelength and other properties. Students will investigate and describe wave behavior for both mechanical and electromagnetic waves.</p>
2 nd Nine Weeks – 42 days		4 th Nine Weeks – 46 days	
<p>TEKS</p> <p>P.5E, P.5F, P.5G, P.7A, P.7B, P.7C, P.7D, P.7E</p>	<p>Dynamics (12 days) Students will investigate Newton’s 3 laws of motion. Students will draw free body diagrams to find resultant forces or find missing forces. Students will describe the concepts of gravitational, electromagnetic, weak nuclear, and strong nuclear forces.</p> <p>Work and Energy (14 days) Students will investigate and be able to calculate for missing values in problems associated with conservation of energy, work energy theorem and power.</p> <p>Conservation of Momentum (10 days) Students will investigate and be able to calculate for missing values in problems associated with conservation of momentum and impulse.</p>	<p>TEKS</p> <p>P.6A, P.6B, P.6C, P.6D, P.6E, P.9A, P.9B, P.9C, P.9D</p>	<p>Light and EM Wave Properties (18 days) Students will investigate and describe wave behavior for electromagnetic waves. Students will examine and describe properties of waves, such as reflection, refraction and diffraction. They will calculate angles of refraction and wave speed.</p> <p>Current Electricity (12 days) Investigate and calculate current, potential difference across, resistance, and power used by electric circuit elements connected in both series and parallel combinations.</p> <p>Atomic, Nuclear and Quantum Physics (4 days) Describe the photoelectric effect and the dual nature of light. Compare and explain the emission spectra produced by atoms. Calculate and describe the applications of the mass-energy equivalence.</p>

Resources

1st Nine Weeks	2nd Nine Weeks	3rd Nine Weeks	4th Nine Weeks
Texas Physics (McGraw-Hill)	Texas Physics (McGraw-Hill)	Texas Physics (McGraw-Hill)	Texas Physics (McGraw-Hill)



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<p><u>SEPs</u></p> <p>P.1A, P.1B, P.1C, P.1D, P.1E, P.1F, P.1G, P.1H, P.2A, P.2B, P.2C, P.2D, P.3A, P.3B, P.3C, P.4A, P.4B, P.4C</p>	<p>Scientific and Engineering Practices (ongoing throughout the year) The student asks questions, identifies problems, and plans and safely conducts classroom, laboratory, and field investigations to answer questions, explain phenomena, or design solutions using appropriate tools and models.</p> <p>The student analyzes and interprets data to derive meaning, identify features and patterns, and discover relationships or correlations to develop evidence based arguments or evaluate designs.</p> <p>1 dimensional kinematics</p> <p>2 dimensional kinematics</p>	<p><u>SEPs</u></p> <p>P.1A, P.1B, P.1C, P.1D, P.1E, P.1F, P.1G, P.1H, P.2A, P.2B, P.2C, P.2D, P.3A, P.3B, P.3C, P.4A, P.4B, P.4C</p>	<p>Universal Gravitation and Electrical Forces</p> <p>Waves & Sound</p>
2nd Nine Weeks – 42 days		4th Nine Weeks – 46 days	
<p><u>SEPs</u></p> <p>P.1A, P.1B, P.1C, P.1D, P.1E, P.1F, P.1G, P.1H, P.2A, P.2B, P.2C, P.2D, P.3A, P.3B, P.3C, P.4A, P.4B, P.4C</p>	<p>Dynamics</p> <p>Work and Energy</p> <p>Conservation of Momentum</p>	<p><u>SEPs</u></p> <p>P.1A, P.1B, P.1C, P.1D, P.1E, P.1F, P.1G, P.1H, P.2A, P.2B, P.2C, P.2D, P.3A, P.3B, P.3C, P.4A, P.4B, P.4C</p>	<p>Light and EM Wave Properties</p> <p>Current Electricity</p> <p>Atomic, Nuclear and Quantum Physics</p>