

Wylie ISD Curriculum

Subject Area	Science	Bundle #:	1
Grade/Level	Physics	Weeks:	1-3
Overview			
TEKS - Texas Knowledge & Skills			
Knowledge & Skill Statement	Student Expectation	Student Learning Outcome Clarification	
4 The student knows the Laws governing motion	4A Generate and interpret graphs describing motion.	Use real-time technology to make measurements and construct graphs. Explain information illustrated on graphs <ul style="list-style-type: none"> • Position-time • Velocity time • Acceleration-time 	
	4B Analyze examples of uniform and accelerated motion	Evaluate linear systems, Evaluate projectile motion, Solve acceleration problems involving uniform acceleration and free-fall using kinematic equations Solve problems that include <ul style="list-style-type: none"> • Evaluate linear systems <ul style="list-style-type: none"> ▪ Describe the vector quantities of displacement and vector sum ▪ Solve displacement problems ▪ Solve velocity problems ▪ Distinguish between vectors and scalars <ul style="list-style-type: none"> ○ Speed and velocity ○ Distance and displacement • Evaluate projectile motion • Evaluate circular (uniform) motion • Solve acceleration problems involving uniform acceleration and free fall using the kinematic equations. 	
	4C Demonstrate the effects of Forces on the motion of objects	Differentiate between mass and weight Describe the relationship between mass and inertia. Solve problems from observations and measurements involving Force, Mass, and Acceleration	

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	4D Develop and interpret a free-body diagram for force analysis.	Describe the forces acting on an object on an inclined plane Interpret free-body diagrams of force analysis Describe the forces acting on an object <i>moving</i> on an inclined plane
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Subject Area	Science	Bundle #:	3
Grade/Level	Physics	Weeks:	7-9
Overview			
TEKS - Texas Knowledge & Skills			
Knowledge & Skill Statement	Student Expectation	Student Learning Outcome Clarification	
6. The student knows forces in nature	6A Identify and demonstrate understanding of Newton's Laws (gravitation is in next bundle)	<p>Demonstrate understanding and differentiate between: Force, inertia, mass, velocity, momentum, acceleration, and vector</p> <p>Describe and understand each of Newton's Laws of Motion</p> <p>Produce and explain force vector diagrams for solving problems</p> <p>Differentiate between sums of forces in a static vs. a dynamic system</p> <p>Solve and analyze problems involving all of Newton's Laws in simple static and dynamic systems</p>	

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Subject Area	Science	Bundle #:	5
Grade/Level	Physics	Weeks:	13-15
Overview			
TEKS - Texas Knowledge & Skills			
Knowledge & Skill Statement	Student Expectation	Student Learning Outcome Clarification	
6. The student knows forces in nature	Identify and understand the properties of static fluids (hydrostatics)	<p>Define and differentiate between: Force, Pressure, Stress, and Strain.</p> <p>Differentiate between: Gas, Liquid, and Fluid</p> <p>Learn measurements for pressure and when each may be used. Especially know: Pa, psi, bar, mmHg (torr), atms.</p> <p>Define: gauge pressure, total atm. Pressure, applied pressure</p> <p>Understand Archimedes' Principle and Pascal's Law. Solve problems using both of these principles</p> <p>Relate these principles to daily experiences (weather changes, atmospheric pressure, swimming, cat jacks, floating boats, sinking submarines, etc.).</p> <p>Define and use the Continuity Equation</p>	
	Identify and understand the properties of flowing fluids (hydrodynamics)	<p>Understand Bernoulli's Principle and explain how it is an "energy balance" equation.</p> <p>Define: airfoil, dynamic lift, differential pressure, deviatoric stress.</p> <p>Solve problems using Bernoulli's Principle</p> <p>Relate the principles of hydrodynamics to daily experiences. (Differential pressure effects in tornados and hurricanes; "lift" effect on roofs during tornados and hurricanes, lift effects on a variety of airfoils, etc)</p> <p>Solve problems for all variables within the Bernoulli Equation:</p>	

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		Explain the relationships between Heat, Temperature, and Work Describe the relationship between energy and entropy as it related to a system and its environment
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Subject Area	Science	Bundle #:	7
Grade/Level	Physics	Weeks:	19-21

Overview

TEKS - Texas Knowledge & Skills		
Knowledge & Skill Statement	Student Expectation	Student Learning Outcome Clarification
8. The student know the characteristics and behavior of waves	8A. Examine and describe a variety of waves propagated in a variety of media and describe the observed wave characteristics	Understand key vocabulary and use governing equations. Define: wave velocity, frequency, wavelength, amplitude, crest, trough, reflection , refraction, diffraction Differentiate between: longitudinal waves, and transverse waves Understand and explain: interference types, periods, pulses, periodic waves, standing waves Recognize and define Nodes and Antinodes Explain: wave phase, energy Solve problems involving: frequency, velocity, wavelength Describe the relationship between wavelength and diffraction Describe SHM and oscillation Understand and explain: Resonance as a "forced vibration" Describe the behavior of waves at media boundaries:

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Subject Area	Science	Bundle #:	9
Grade/Level	Physics	Weeks:	25-27
Overview			
TEKS - Texas Knowledge & Skills			
Knowledge & Skill Statement	Student Expectation	Student Learning Outcome Clarification	
6 The student understands forces in nature	<p>6 B. Research and describe the historical development of the concepts of electrical and magnetic forces</p> <p>6 C. Identify and analyze the influences of charge and distance on electrical forces</p> <p>6 D. Demonstrate the relationship between electricity and magnetism</p>	<p>Trace the history of our understanding of electricity and magnetism through the investigations of: Franklin, Milliken, Coulomb, Faraday, Michelson, and Maxwell. (Also, later, Ohm, Volta, Ampere...)</p> <p>Explore and explain Coulomb’s Law Solve problems involving Coulomb’s Law</p> <p>Describe how a Van de Graff generator works</p> <p>Explore and explain Faraday’s Electric Field principle</p> <p>Solve electric field intensity problems</p> <p>Describe charging by induction</p> <p>Understand elementary charges (electron, proton) in Coulombs – solve related problems</p> <p>Explain the effects of electric fields on test charges</p> <p>Describe electrical Potential difference</p> <p>Define capacitance</p> <p>Explain Faraday’s Law of Induction Explain Lenz’s Law Explain why a rotating loop in a magnetic field produces</p>	

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Subject Area	Science	Bundle #:	11
Grade/Level	Physics	Weeks:	31-33
Overview			
TEKS - Texas Knowledge & Skills			
Knowledge & Skill Statement	Student Expectation	Student Learning Outcome Clarification	
<p>9. The student knows simple examples of quantum Physics</p>	<p>9 A. Describe the photoelectric effect</p> <p>9 B. Explain the line spectra from different gas-discharge tubes</p>	<p>Describe the photoelectric effect</p> <p>Identify gasses by their spectra</p> <p>Illustrate and explain the line spectra from different gas-discharge tubes</p> <p>Explain quantum leaps</p> <p>Explain nuclear reactions, the three types of decay radiation, and their sources</p> <p>Explain half-life dating, and other uses for radioisotopes including nuclear energy</p> <p>Learn and understand the Standard Model of subatomic particles</p> <p>Understand the weaknesses of the Standard Model</p> <p>Define String Theory, M-Theory, and Grand Unified theory (TOE)</p> <p>Explain the possible benefits to humanity of discovering the governing equations for a theory of quantum gravity.</p>	

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Subject Area	Science	Bundle #:	12
Grade/Level	Physics	Weeks:	34-36
Overview			
TEKS - Texas Knowledge & Skills			
Knowledge & Skill Statement	Student Expectation	Student Learning Outcome Clarification	
9 The student knows simple examples of quantum Physics	Understand the basics of Modern Physics	<p>Explore and understand the basic concepts of Einstein's General and Special theories of relativity</p> <p>Revisit Einstein's formulation of Gravity</p> <p>Define and explain "wormhole"</p> <p>Explain the need for quantum mechanics</p> <p>Define Dark Energy and Dark Matter</p> <p>Define Cosmology and Big Bang. Explore recent ideas about the ultimate fate of the universe</p>	