Pecos High School
Integrated Physics and Chemistry
1st Six Weeks Syllabus

Student Expectations: How do we describe and measure the world?

August 24 - 28: Lab:
Activity: Lab 1.1Time and Distance

**Vocabulary:**
Time
Seconds
Distance
Length
English system
Metric system
Experiment
Measurements
Scientific Evidence
Scientific method
Research question
Hypothesis
Variables

Student Expectations: How do we conduct an experiment?

August 31 – September 4:
Activity: Lab 1.2 Investigations and Experiments
Activity: Lab 1.3 Speed

**Vocabulary:**
Cause and Effect
Experimental variable
Control variables
Controlled experiment
Trial
Experimental technique
Procedure
Speed
Distance
Time

Student Expectations: What is speed?

September 8 - 11:
Activity: Lab 2.1 Using Scientific model to predict speed
**Vocabulary:**
Physical Models
Conceptual models
Graphical model
Dependant variable
Independent variable
Position
Average speed
Instantaneous speed

Student Expectations: How do you model motion?

September 14 - 18:
Activity: Lab 2.2 Position and Time
Activity: Lab 2.3 Acceleration

**Vocabulary:**
Acceleration
Deceleration
Gravity
Free fall
slope

Student Expectations: What is the relationship between force, mass, and acceleration?

September 21 - 25:
Activity: Lab 3.1 Force, mass, and Acceleration
Activity: Lab 3.2 Weight, Gravity, and Friction

**Vocabulary:**
Newton's first Law of Motion
Newton's Second Law of Motion
Newton's Third Law of Motion
Force
Pounds
Newtons
Inertia
Mass
Kilograms
Acceleration
Net force
Equilibrium
Gravity
Weight
Friction

Student Expectations: What is the relationship between force, mass, and acceleration?

September 28 – October 2:
Activity: Lab 3.3 Equilibrium, Action, and Reaction

**Vocabulary:**
Air Friction
Sliding Friction
Viscous Friction
Rolling Friction
Recoil
Momentum
Law of Conservation of Momentum

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2nd Six Weeks Syllabus

Student Expectations: How do simple machines work?

October 5 - 9: Lab:
Activity: Lab 4.1 Forces and Machines

**Vocabulary:**
Machines
Mechanical Systems
Input
Output
Simple Machines
Mechanical advantage
Engineering
Engineers
Prototype
Engineering cycle
Lever
Fulcrum
Input arm
Output arm

Student Expectations: What happens when you multiply forces in a machine?

October 12 - 16:
Activity: Lab 4.2 The Lever
Activity: Lab 5.1 Work

**Vocabulary:**
Work
Efficient
Power
Watt
horsepower

Student Expectations: What happens when you multiply forces in a machine?

October 19 - 23:
Activity: Lab 5.2 Energy Conservation
**Vocabulary:**
Energy
Potential Energy
Kinetic Energy Law of Conservation of energy
Energy transformations
Chemical potential Energy
Radiant Energy
Heat
Solar power

Electrical energy
Chemical energy
Nuclear energy

Student Expectations: What is energy and how does it behave?

October 26 - 30:
Activity: Lab 5.3 Energy Transformations
**Vocabulary:**
Electric Circuits
Natural world
Circuit diagram
Electrical symbols
Open circuit

Student Expectations: What is an electric circuit?

November 2 - 8:
Activity: Lab 6.1 What is a Circuit?
**Vocabulary:**
Electric Charge
Positive charge
Negative charge
Electrically charged
Static electricity
Electrical forces
Electrically neutral
Coulomb
electroscope

Student Expectations: What is an electric circuit?

November 9 - 13:
Activity: Lab 6.2 Charge

**Vocabulary:**
Electric Charge
Positive charge
Negative charge
Electrically charged
Static electricity
Electrical forces
Electrically neutral
Coulomb
electroscope

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Student Expectations: Why do charges move through a circuit?

November 16 – 20 and the 23:
Activity: Lab 7.1 Voltage
**Vocabulary:**
Battery
Volts
Voltage
Current
Amperes
Alternating current
Direct current

Student Expectations: How are voltage, current, and resistance related?

November 30 – December 4:
Activity: Lab 7.2 Current
**Vocabulary:**
Current
Amperes
Alternating current
Direct current

Student Expectations: What kinds of electric circuits can you build?

December 7 - 11:
Activity: Lab 7.3 Resistance
**Vocabulary:**
Electric conductor
Electrical insulators
Semiconductors
Electrical conductivity
Resistance
Ohms
Ohm's Law
Electrical Components
Resistors
potentiometer
Series Circuit
Parallel circuit

Student Expectations: How can you use Ohm's Law in a Series Circuit?

December 14 - 18:
Activity: Lab 9.1 More electric circuits
**Vocabulary:**
Series Circuit
Parallel circuit

Student Expectations: What kind of electric circuit can you build?

January 4 - 8:
Activity: Lab 9.2 Series Circuits
**Vocabulary:**
Series Circuit
Parallel circuit

Student Expectations: What kind of electric circuit can you build?

January 11 - 15:
Activity: Lab 9.3 Parallel Circuits
**Vocabulary:**
Kirchhoff's Voltage Law
Kirchhoff's Current Law

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4th Six Weeks Syllabus

Student Expectations: What effects do magnets have?

January 19 - 22:
Activity: Lab 10.1 Permanent Magnets
**Vocabulary:**
Permanent magnet
North and south
Magnetic forces
Magnetic field
Electromagnet
Electromagnetic force
Electromagnetic induction
generator

Student Expectations: How do we make and describe waves?

January 25 - 29:
Activity: Lab 10.2 Electromagnets
Activity: 12.1 Waves
**Vocabulary:**
Continuous
Transverse wave
Longitudinal wave
Hertz

Student Expectations: How do we make and describe waves?

February 1 - 5:
Activity: Lab 12.2 Waves in motion
**Vocabulary:**
Crest
Trough
Wave fronts
Plane waves
Circular waves
Reflection
Refraction
diffraction

Student Expectations: What is resonance and why is it important?

February 8 - 12:
Activity: Lab 12.3 Natural Frequency and Resonance
**Vocabulary:**
Natural frequency
Resonance
Standing wave
Fundamental
Harmonics
Constructive interference
Destructive interference

Student Expectations: What is matter?

February 16 - 19:
Activity: Lab 16.1 Classifying matter
Activity: Lab 16.2 Measuring Matter
**Vocabulary:**
Mixtures
Matter
Homogeneous mixture
Heterogeneous mixture
Substances
Elements
compounds

Student Expectations: Review for 4th 6 weeks test. What is matter?

February 22 - 26:
Activity: Lab 16.3 States of Matter
**Vocabulary:**
Molecule
Atom
Boiling point

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5th Six Weeks Syllabus

Student Expectations: How can you find the density of a solid?

March 1 - 5:
Activity: Lab 17.1 Properties of Solids
**Vocabulary:**
Density
Elasticity
Brittleness
Malleability
Tensile strength
hardness

Student Expectations: How was the size of an atom's nucleus determined?

March 8 - 12:
Activity: Lab 17.2 Density of Fluids
Activity: Lab 17.3 Buoyancy of Fluids
**Vocabulary:**
Buoyancy
Archimedes' Principle
Charles' Law
Pressure
Pascal
Boyle's Law

Student Expectations: How was the size of an atom's nucleus determined?

March 22 - 26:
Activity: Lab 17.4 Viscosity of Fluids
**Vocabulary:**
Viscosity

Student Expectations: What are atoms and how are they put together?

March 29 – April 1:
Activity: Lab 18.1 Atomic Structure
Activity: Lab 18.2 Comparing Atoms

**Vocabulary:**
Protons
Neutrons
Electrons
Subatomic particles
Nucleus
Atomic theory
Atomic number
Mass number
Periodic table of elements
Strong nuclear force
Isotopes

Student Expectations: What does atomic structure have to do with the periodic table?

April 5 - 9:
Activity: Lab 18.3 The Periodic Table of Elements
Activity: Lab 19.1 Bonding and Molecules
**Vocabulary:**
Group of Elements
Valence electrons
Chemical symbol
Mass number
Isotopes
Atomic mass
Atomic mass units
React
Molecules
Chemical bonds
Energy levels
Octet
Octet rule
Covalent bond
Diatomic molecules
Electronegativity
Polymers

Student Expectations: What does atomic structure have to do with the periodic table?

April 12 - 16:
Activity: Lab 19.2 Chemical Formulas
Activity: Lab 19.3 Comparing Molecules
**Vocabulary:**
Chemical Formula
Ionic compound
Oxidation number
Monoatomic ions
Subscripts
Polyatomic ions
Covalent compounds
Binary compounds
Empirical formula
Molecular formula
Relative mass
Formula mass
Avogadro's Number
Mole

Pecos High School
Integrated Physics and Chemistry
6th Six Weeks Syllabus

Student Expectations: What is the evidence that a chemical change has occurred?

April 19 - 23:
Activity: Lab 20.1 Chemical Changes
Activity: Lab 20.2 Chemical Equations
**Vocabulary:**
Chemical changes
Physical changes
Chemical reactions
Polymer
Products
Chemical equations
Conservation of atoms
Hydrochloric acid
Coefficients

Student Expectations: What is a solution?

April 26 - 30:
Activity: Lab 20.3 Conservation of mass
Activity: Lab 20.4 Using Equations
**Vocabulary:**
Law of Conservation of Mass
Limiting reactant
Excess reactant
Percent yield

Student Expectations: What is a solution?

May 3 - 7:
Activity: Lab 23.1 What is a solution?
Activity: Lab 23.2 Dissolving Rate
**Vocabulary:**
Solution
Alloys
Solvent
Solutes
Dissolved
Colloids
Suspensions
Tyndall effect
Dissolving rate

Student Expectations: How does temperature affect solubility?

May 10 - 14:
Lab activity: 23.1 What is a solution?
Lab activity: 23.2 Dissolving rate
Lab activity: 23.3 Solubility
**Vocabulary:**
System
Hydrated
Solubility

Solubility value
Saturated
Unsaturated
Supersaturated
atmospheres
Heat transfer
Thermal conductivity
Thermal conductors
Thermal insulators

Student Expectations: How do common materials conduct heat?

May 17 - 21:
Lab activity: 27.2 How much heat is transferred through convection?
**Vocabulary:**
Convection
Natural or buoyant convection
Sea breezes
Forced convection
Radiation
Spectral diagram
Ultraviolet
Infrared
Electromagnetic radiation
Absorbers
Reflectors
emitters

Student Expectations: How do common materials conduct heat?

May 24 - 28:
Lab activity: 25.1 Acids, bases, and pH
**Vocabulary:**
Base
Acid
pH
pH scale
neutral
electrolytes
pH indictor
acid rain
acid precipitation