



Glencoe

ARIZONA
Science Standards – High School
***Physics: Principles and Problems* © 2005**

OBJECTIVES	PAGE REFERENCES
Strand 1: Inquiry Process	
Concept 1: Observations, Questions, and Hypotheses Formulate predictions, questions, or hypotheses based on observations. Evaluate appropriate resources.	
PO 1. Evaluate scientific information for relevance to a given problem. (See R09-S3C1, R10-S3C1, R11-S3C1, R12-S3C1)	SE: 11-13, 15-18 <i>Physics Lab</i> 48-49, 136-137, 218-219, 420-421, 632-633 <i>Technology and Society</i> 220, 608, 716
PO 2. Develop questions from observations that transition into testable hypotheses.	SE: 8-10 <i>Extreme Physics</i> 50, 662 <i>Future Technology</i> 556 <i>Physics Lab</i> 218-219, 532-533, 606-607 <i>Technology and Society</i> 220, 394 TWE: HSS 8
PO 3. Formulate a testable hypothesis.	SE: 8-10 <i>Physics Lab</i> 108-109, 218-219, 302-303, 392-393, 420-421, 554-555, 686-687, 790-791 TWE: AIL 161
PO 4. Predict the outcome of an investigation based on prior evidence, probability, and/or modeling (not guessing or inferring).	SE: 19 <i>Extreme Physics</i> 50, 792 <i>How It Works</i> 276, 582, 634 <i>Launch Lab</i> 313 <i>Physics Lab</i> 186-187, 660-661 <i>Technology and Society</i> 608
Concept 2: Scientific Testing (Investigating and Modeling) Design and conduct controlled investigations.	
PO 1. Demonstrate safe and ethical procedures (e.g., use and care of technology, materials, organisms) and behavior in all science inquiry.	SE: <i>Appendix D</i> 918 <i>Applying Physics</i> 764 <i>How It Works</i> 634 <i>Physics Lab</i> 332-333, 738-739, 790-791 <i>Technology and Society</i> 220 TWE: IM 9
PO 2. Identify the resources needed to conduct an investigation.	SE: <i>Physics Lab</i> 20-21, 160-161, 218-219, 302-303, 332-333, 420-421, 580-581, 660-661, 686-687, 790-791

OBJECTIVES	PAGE REFERENCES
<p>PO 3. Design an appropriate protocol (written plan of action) for testing a hypothesis:</p> <ul style="list-style-type: none"> • Identify dependent and independent variables in a controlled investigation. • Determine an appropriate method for data collection (e.g., using balances, thermometers, microscopes, spectrophotometer, using qualitative changes). • Determine an appropriate method for recording data (e.g., notes, sketches, photographs, videos, journals (logs), charts, computers/calculators). 	<p>SE: 11-14, 15-19 <i>Physics Lab</i> 20-21, 218-219, 332-333, 580-581, 660-661, 686-687, 790-791 TWE: CB 39</p>
<p>PO 4. Conduct a scientific investigation that is based on a research design.</p>	<p>SE: 8-10 <i>Physics Lab</i> 20-21, 48-49, 76-77, 108-109, 504-505, 532-533, 580-581, 790-791 TWE: HSS 8</p>
<p>PO 5. Record observations, notes, sketches, questions, and ideas using tools such as journals, charts, graphs, and computers.</p>	<p>SE: 15-19, 38-42, 43-47, 65-67, 72-73 <i>Launch Lab</i> 57 <i>Physics Lab</i> 48-49 TWE: CB 39 CH 73 RLP 5</p>
<p>Concept 3: Analysis, Conclusions, and Refinements Evaluate experimental design, analyze data to explain results and to propose further investigations. Design models.</p>	
<p>PO 1. Interpret data that show a variety of possible relationships between variables, including:</p> <ul style="list-style-type: none"> • positive relationship • negative relationship • no relationship 	<p>SE: 15-19 <i>Launch Lab</i> 3, 57 <i>Physics Lab</i> 218-219, 606-607 <i>Problem-Solving Strategies</i> 103, 149, 550 TWE: CB 92</p>
<p>PO 2. Evaluate whether investigational data support or do not support the proposed hypothesis.</p>	<p>SE: 8-10 <i>Extreme Physics</i> 662 <i>Future Technology</i> 826 <i>Physics Lab</i> 420-421, 532-533, 580-581 <i>Technology and Society</i> 220, 716 TWE: CB 9, 39</p>
<p>PO 3. Critique reports of scientific studies (e.g., published papers, student reports).</p>	<p>SE: <i>Extreme Physics</i> 78, 506, 662, 792 <i>Future Technology</i> 22, 556 <i>Technology and Society</i> 220, 394, 608, 716</p>
<p>PO 4. Evaluate the design of an investigation to identify possible sources of procedural error, including:</p> <ul style="list-style-type: none"> • sample size • trials • controls • analyses 	<p>SE: 11-13 <i>Physics Lab</i> 302-303, 392-393, 420-421, 474-475, 532-533, 606-607, 766-767 TWE: CB 12 TPK 11</p>

OBJECTIVES	PAGE REFERENCES
PO 5. Design models (conceptual or physical) of the following to represent "real world" scenarios: <ul style="list-style-type: none"> • carbon cycle • water cycle • phase change • collisions 	SE: 19 <i>Launch Lab 229</i> <i>Mini LAB 239</i> <i>Physics Lab 246-247</i> TWE: PP 232 QD 231 TT 237 UM 240
PO 6. Use descriptive statistics to analyze data, including: <ul style="list-style-type: none"> • mean • frequency • range (See MHS-S2C1-10)	SE: 11-12 <i>Physics Lab 274-275, 392-393, 420-421, 474-475, 766-767</i> <i>Share Your Data 77</i> TWE: CT 14
PO 7. Propose further investigations based on the findings of a conducted investigation.	SE: <i>Physics Lab 108-109, 136-137, 606-607, 632-633</i> TWE: AIL 137, 161, 187, 393, 581, 633
Concept 4: Communication Communicate results of investigations.	
PO 1. For a specific investigation, choose an appropriate method for communicating the results. (See W09-S3C2-01 and W10-S3C2-01)	SE: 15-19, 34-40 <i>Connecting Math to Physics 47</i> <i>Physics Lab 76-77, 186-187, 420-421, 580-581, 790-791</i> TWE: BA 15 CT 18
PO 2. Produce graphs that communicate data. (See MHS-S2C1-02)	SE: 15-19 <i>Physics Lab 20-21, 48-49, 332-333, 580-581, 606-607, 790-791</i> TWE: CT 18 EX 19 PP 16
PO 3. Communicate results clearly and logically.	SE: 8-10, 15-19, 34-37 <i>Physics Lab 20-21</i> <i>Technology and Society 220, 450, 716</i> TWE: BA 15 CD 38 CT 18
PO 4. Support conclusions with logical scientific arguments.	SE: 8-10, 172-176, 183-185, 317-318, 344-345, 407-410 <i>How It Works 334, 688</i> TWE: CB 12 CT 18

OBJECTIVES	PAGE REFERENCES
Strand 2: History and Nature of Science	
Concept 1: History of Science as a Human Endeavor Identify individual, cultural, and technological contributions to scientific knowledge.	
PO 1. Describe how human curiosity and needs have influenced science, impacting the quality of life worldwide.	SE: <i>Future Technology</i> 22, 476 <i>How It Works</i> 334, 582, 634, 740 <i>Technology and Society</i> 220, 394, 716 TWE: CB 9 RPL 36
PO 2. Describe how diverse people and/or cultures, past and present, have made important contributions to scientific innovations.	SE: 93-95, 102-103, 172-176, 184-185 <i>Extreme Physics</i> 366 TWE: CB 9, 177, 321 CH 502 PP 6 RPL 383
PO 3. Analyze how specific changes in science have affected society.	SE: 172-176, 601-605, 784-789, 811-814 <i>How It Works</i> 582 <i>Technology and Society</i> 450 TWE: CB 321, 344 PP 764 RPL 383
PO 4. Analyze how specific cultural and/or societal issues promote or hinder scientific advancements.	SE: 811-814 <i>Extreme Physics</i> 50, 792 <i>Technology and Society</i> 304, 608 TWE: CB 354 DIN 181 PP 264 RPL 36, 272
Concept 2: Nature of Scientific Knowledge Understand how science is a process for generating knowledge.	
PO 1. Specify the requirements of a valid, scientific explanation (theory), including that it be: <ul style="list-style-type: none"> • logical • subject to peer review • public • respectful of rules of evidence 	SE: 8-10, 184-185, 352, 357, 776 <i>Extreme Physics</i> 78, 188, 366, 506 TWE: CB 184, 354
PO 2. Explain the process by which accepted ideas are challenged or extended by scientific innovation.	SE: 10, 172-176, 352-358, 439-447, 737, 799-805, 811-814, 818-823 <i>Extreme Physics</i> 506, 792
PO 3. Distinguish between pure and applied science.	SE: 357-358, 601-605, 787-789 <i>How It Works</i> 534, 634 <i>Technology and Society</i> 304, 394, 450, 716 TWE: RPL 268
PO 4. Describe how scientists continue to investigate and critically analyze aspects of theories.	SE: 438, 726-731, 752-756, 760-761, 815-823 <i>Extreme Physics</i> 78, 188, 366 <i>Future Technology</i> 826 TWE: CB 671

OBJECTIVES	PAGE REFERENCES
Strand 3: Science in Personal and Social Perspectives	
Concept 1: Changes in Environments	
Describe the interactions between human populations, natural hazards, and the environment.	
PO 1. Evaluate how the processes of natural ecosystems affect, and are affected by, humans.	SE: 350-351 TWE: CD 327 CH 566 CU 351
PO 2. Describe the environmental effects of the following natural and/or human-caused hazards: <ul style="list-style-type: none"> • flooding • drought • earthquakes • fires • pollution • extreme weather 	SE: 552-553 <i>Technology and Society</i> 394 TWE: CB 564 CT 602 RLP 389
PO 3. Assess how human activities (e.g., clear cutting, water management, tree thinning) can affect the potential for hazards.	SE: <i>Technology and Society</i> 716 TWE: RE 713
PO 4. Evaluate the following factors that affect the quality of the environment: <ul style="list-style-type: none"> • urban development • smoke • volcanic dust 	SE: 552-553
PO 5. Evaluate the effectiveness of conservation practices and preservation techniques on environmental quality and biodiversity.	TWE: PP 264
Concept 2: Science and Technology in Society	
Develop viable solutions to a need or problem.	
PO 1. Analyze the costs, benefits, and risks of various ways of dealing with the following needs or problems: <ul style="list-style-type: none"> • various forms of alternative energy • storage of nuclear waste • abandoned mines • greenhouse gases • hazardous wastes 	SE: 812-813 <i>Future Technology</i> 826 <i>Technology and Society</i> 608 TWE: RLC 289
PO 2. Recognize the importance of basing arguments on a thorough understanding of the core concepts and principles of science and technology.	SE: 4-10, 11-14, 293-295, 760-761 <i>Extreme Physics</i> 78 <i>How It Works</i> 534, 634 <i>Problem-Solving Strategies</i> 521, 550, 728
PO 3. Support a position on a science or technology issue.	SE: 812-813 <i>Extreme Physics</i> 792 <i>Future Technology</i> 826 <i>Technology and Society</i> 220, 394, 608 TWE: CB 564 RE 216

OBJECTIVES	PAGE REFERENCES
PO 4. Analyze the use of renewable and nonrenewable resources in Arizona: <ul style="list-style-type: none"> • water • land • soil • minerals • air 	SE: 331, 552-553, 812-813 <i>Technology and Society</i> 608 TWE: RLC 289
PO 5. Evaluate methods used to manage natural resources (e.g., reintroduction of wildlife, fire ecology).	SE: 552-553
Concept 3: Human Population Characteristics Analyze factors that affect human populations.	
PO 1. Analyze social factors that limit the growth of a human population, including: <ul style="list-style-type: none"> • affluence • education • access to health care • cultural influences 	See Glencoe's <i>Biology: The Dynamics of Life</i> © 2004 SE: 100-103
PO 2. Describe biotic (living) and abiotic (nonliving) factors that affect human populations.	See Glencoe's <i>Biology: The Dynamics of Life</i> © 2004 Point out to students that humans are affected by abiotic factors. SE: 37-38, 52-55, 56-57, 65-66, 91-93, 96-99, 100-103
PO 3. Predict the effect of a change in a specific factor on a human population.	See Glencoe's <i>Biology: The Dynamics of Life</i> © 2004 SE: <i>Section Assessment</i> 103 #5
Strand 5: Physical Science	
Concept 1: Structure and Properties of Matter Understand physical, chemical, and atomic properties of matter.	
PO 1. Describe substances based on their physical properties.	SE: 323-324, 349 <i>Appendix D</i> 913-914, 916-917 <i>Extreme Physics</i> 366 <i>Launch Lab</i> 341 TWE: CT 342 PP 350, 361
PO 2. Describe substances based on their chemical properties.	SE: <i>Appendix D</i> 916 TWE: RLP 753
PO 3. Predict properties of elements and compounds using trends of the periodic table (e.g., metals, non-metals, bonding – ionic/covalent).	SE: <i>Appendix D</i> 916
PO 4. Separate mixtures of substances based on their physical properties.	SE: 552-553 TWE: RLP 570
PO 5. Describe the properties of electric charge and the conservation of electric charge.	SE: 541-545, 549-550, 592-593 <i>Physics Lab</i> 554-555 TWE: CB 543 CD 546

OBJECTIVES	PAGE REFERENCES
PO 6. Describe the following features and components of the atom: <ul style="list-style-type: none"> • protons • neutrons • electrons • mass • number and type of particles • structure • organization 	SE: 698-704, 748-759, 760-761, 800-805, 818-820 TWE: CB 801 CD 701 CU 759 HSS 754 IM 752
PO 7. Describe the historical development of models of the atom.	SE: 748-749, 752, 754-755, 760-761, 799-800, 818-819 TWE: A 802 BA 747 CB 801 D 804
PO 8. Explain the details of atomic structure (e.g., electron configuration, energy levels, isotopes).	SE: 749-752, 753-756, 760-761, 800, 818-819 <i>Future Technology</i> 768 TWE: A 761 CB 757 UM 753
Concept 2: Motions and Forces Analyze relationships between forces and motion.	
PO 1. Determine the rate of change of a quantity (e.g., rate of erosion, rate of reaction, rate of growth, velocity).	SE: 38-42, 58-60, 65-68, 382-384 <i>Extreme Physics</i> 50 <i>Math Handbook</i> 838 <i>Physics Lab</i> 20-21, 76-77, 332-333, 392-393 TWE: UA 62
PO 2. Analyze the relationships among position, velocity, acceleration, and time: <ul style="list-style-type: none"> • graphically • mathematically 	SE: 38-40, 43-47, 59-63, 65-68 <i>Physics Lab</i> 20-21, 48-49, 76-77 TWE: BA 38 CU 42 IM 39
PO 3. Explain how Newton's 1 st Law applies to objects at rest or moving at constant velocity.	SE: 94-95, 100-101, 126-127, 131-135 TWE: AML 132 CB 92 CU 101 IM 127 QD 94, 100 RLP 134
PO 4. Using Newton's 2 nd Law of Motion, analyze the relationships among the net force acting on a body, the mass of the body, and the resulting acceleration: <ul style="list-style-type: none"> • graphically • mathematically 	SE: 93, 96-99, 154-155, 176, 182, 754-755 <i>Physics Lab</i> 108-109 TWE: HSS 98 ICE 155 PP 99

OBJECTIVES	PAGE REFERENCES
PO 5. Use Newton's 3 rd Law to explain forces as interactions between bodies (e.g., a table pushing up on a vase that is pushing down on it; an athlete pushing on a basketball as the ball pushes back on her).	SE: 102-107 <i>How It Works</i> 110 <i>Physics Lab</i> 108-109 TWE: BA 102 CD 105 HSS 104 IM 103 RE 107
PO 6. Analyze the two-dimensional motion of objects by using vectors and their components.	SE: 120-125, 131-135, 147-152, 153-156 <i>Launch Lab</i> 119 <i>Physics Lab</i> 136-137, 160-161 TWE: HSS 148 ICE 121 IM 122
PO 7. Give an example that shows the independence of the horizontal and vertical components of projectile motion.	SE: 148-152 <i>Physics Lab</i> 160-161 TWE: CD 148 CT 151 RT 152
PO 8. Analyze the general relationships among force, acceleration, and motion for an object undergoing uniform circular motion.	SE: 153-155 <i>Future Technology</i> 162 TWE: BA 153 CD 154 D 155 EX 156
PO 9. Represent the force conditions required to maintain static equilibrium.	SE: 94-95, 131-135, 211-215 <i>Physics Lab</i> 218-219 <i>Technology and Society</i> 220 TWE: AML 132 CB 92, 212 CD 211 CT 214 RLP 134
PO 10. Describe the nature and magnitude of frictional forces.	SE: 94, 126-130 <i>Physics Lab</i> 136-137 TWE: QD 128 RE 129 RT 130 UA 127
PO 11. Using the Law of Universal Gravitation, predict how the gravitational force will change when the distance between two masses changes or the mass of one of them changes.	SE: 175-176, 179-180, 182-185 TWE: CB 177 CD 176 CU 185
PO 12. Using Coulomb's Law, predict how the electrical force will change when the distance between two point charges changes or the charge of one of them changes.	SE: 549-553, 564 TWE: ICE 551, 565, 566 RE 550 RT 553

OBJECTIVES	PAGE REFERENCES
PO 13. Analyze the impulse required to produce a change in momentum.	SE: 230-232, 234-235, 236-237 TWE: A 233 CB 231 CD 230 ICE 232
PO 14. Quantify interactions between objects to show that the total momentum is conserved in both collision and recoil situations.	SE: 236-237, 243-245 TWE: CD 243 CU 245 RE 244
Concept 3: Conservation of Energy and Increase in Disorder Understand ways that energy is conserved, stored, and transferred.	
PO 1. Describe the following ways in which energy is stored in a system: <ul style="list-style-type: none"> • mechanical • electrical • chemical • nuclear 	SE: 288-295, 376, 577, 592, 811-813 TWE: AML 595 CT 592 CU 814 EX 600 ICE 290 QD 603
PO 2. Describe various ways in which energy is transferred from one system to another (e.g., mechanical contact, thermal conduction, electromagnetic radiation).	SE: 297-301, 317, 603-604, 709-712, 726-729 <i>Physics Lab</i> 332-333 TWE: CB 599 CD 706 CU 734 RLC 319
PO 3. Recognize that energy is conserved in a closed system.	SE: 293-295, 319-320 <i>Physics Lab</i> 302-303 TWE: BA 293 CD 294 QD 295 RE 731, 734
PO 4. Calculate quantitative relationships associated with the conservation of energy.	SE: 293-294, 319-321 <i>Physics Lab</i> 302-303 <i>Problem-Solving Strategies</i> 295 TWE: CD 294 RE 731, 734
PO 5. Analyze the relationship between energy transfer and disorder in the universe (2 nd Law of Thermodynamics).	SE: 328-331 TWE: CU 331 D 329
PO 6. Distinguish between heat and temperature.	SE: 314-315, 317-318 TWE: CD 314 RE 318
PO 7. Explain how molecular motion is related to temperature and phase changes.	SE: 314-315, 323-325, 342-343, 349-351 TWE: AML 330

OBJECTIVES	PAGE REFERENCES
Concept 4: Chemical Reactions Investigate relationships between reactants and products in chemical reactions.	
PO 1. Apply the law of conservation of matter to changes in a system.	See Glencoe's <i>Chemistry: Concepts and Applications</i> © 2005 SE: 41-42, 53-55, 198-199 <i>ChemLab</i> 56-57 TWE: CD 54 CM 59 D 44 DE 198-199 KC 190 QD 53
PO 2. Identify the indicators of chemical change, including formation of a precipitate, evolution of a gas, color change, absorption or release of heat energy.	See Glencoe's <i>Chemistry: Concepts and Applications</i> © 2005 SE: 190-191 <i>ChemLab</i> 206-207 TWE: CJ 191 QD 208
PO 3. Represent a chemical reaction by using a balanced equation.	See Glencoe's <i>Chemistry: Concepts and Applications</i> © 2005 SE: 198-199, 555-558, 567 TWE: D 44, 563 DE 194-195, 198-199, 558-559 VL 555
PO 4. Distinguish among the types of bonds (i.e., ionic, covalent, metallic, hydrogen bonding).	See Glencoe's <i>Chemistry: Concepts and Applications</i> © 2005 SE: 134, 140-147, 170-171, 305-314, 332-333, 438-439, 451-454 <i>ChemLab</i> 172-173 TWE: CM 308 DD 434-435 DE 140-141 VL 309
PO 5. Describe the mole concept and its relationship to Avogadro's number.	See Glencoe's <i>Chemistry: Concepts and Applications</i> © 2005 SE: 396-398, 404-409, 414-416, 419, 426-429 TWE: CB 396 CD 416 CU 412 DE 415, 426-427
PO 6. Solve problems involving such quantities as moles, mass, molecules, volume of a gas, and molarity using the mole concept and Avogadro's number.	See Glencoe's <i>Chemistry: Concepts and Applications</i> © 2005 SE: 396-398, 404-413, 414-419, 426-429 <i>Launch Lab</i> 403 <i>Mini LAB</i> 420 TWE: CB 396 CD 416 DD 402-403 DE 415, 426-427

OBJECTIVES	PAGE REFERENCES
PO 7. Predict the properties (e.g., melting point, boiling point, conductivity) of substances based upon bond type.	See Glencoe's <i>Chemistry: Concepts and Applications</i> © 2005 SE: 134, 143-147, 170-171, 313-314, 332-333 <i>ChemLab</i> 172-173 TWE: CU 332 DD 434-435 DE 140-141 VL 309
PO 8. Quantify the relationships between reactants and products in chemical reactions (e.g., stoichiometry, equilibrium, energy transfers).	See Glencoe's <i>Chemistry: Concepts and Applications</i> © 2005 SE: 195-196, 404-409, 414-419, 421, 426-429, 711-712 <i>Chemistry and Technology</i> 424-425 <i>ChemLab</i> 422-423 <i>Mini LAB</i> 420 TWE: DD 434-435
PO 9. Predict the products of a chemical reaction using types of reactions (e.g., synthesis, decomposition, replacement, combustion).	See Glencoe's <i>Chemistry: Concepts and Applications</i> © 2005 SE: 202-205, 208-209, 655-661, 713 <i>ChemLab</i> 8-9, 206-207 TWE: CD 204 CJ 202 QD 208
PO 10. Explain the energy transfers within chemical reactions using the law of conservation of energy.	SE: 319-320 TWE: QD 319 Also see Glencoe's <i>Chemistry: Concepts and Applications</i> © 2005 SE: 708-709, 711-714, 719-720, 726, 734-737 <i>ChemLab</i> 722-723 TWE: CB 708 CD 724 CM 720 DE 734-735
PO 11. Predict the effect of various factors (e.g., temperature, concentration, pressure, catalyst) on the equilibrium state and on the rates of chemical reaction.	See Glencoe's <i>Chemistry: Concepts and Applications</i> © 2005 SE: 211-215, 218-223, 356-360, 676-677 <i>Chemistry & Technology</i> 216-217, 424-425 <i>ChemLab</i> 674-675 TWE: DE 218-219 EX 223 QD 222
PO 12. Compare the nature, behavior, concentration, and strengths of acids and bases.	See Glencoe's <i>Chemistry: Concepts and Applications</i> © 2005 SE: 480-492, 497-500, 502-507, 516-523, 526-530 <i>ChemLab</i> 542-543 TWE: CD 486, 517 DE 518-519, 526-527

OBJECTIVES	PAGE REFERENCES
PO 13. Determine the transfer of electrons in oxidation/reduction reactions.	See Glencoe's <i>Chemistry: Concepts and Applications</i> © 2005 SE: 556-558, 585, 602-605, 608-609 <i>ChemLab</i> 606-607 <i>Health Connection</i> 610 <i>How it Works</i> 612, 614 <i>MiniLAB</i> 587 TWE: AC 595 DIN 556, 601
Concept 5: Interactions of Energy and Matter Understand the interactions of energy and matter.	
PO 1. Describe various ways in which matter and energy interact (e.g., photosynthesis, phase change).	SE: 323-325, 726-732 <i>Biology Connection</i> 442 <i>Extreme Physics</i> 366 <i>How It Works</i> 582 <i>Technology and Society</i> 394 TWE: CB 730 QD 728 RLP 442 UA 712 UM 324
PO 2. Describe the following characteristics of waves: <ul style="list-style-type: none"> • wavelength • frequency • period • amplitude 	SE: 381-384, 406-407, 516-519, 705-708 <i>Physics Lab</i> 392-393 TWE: CT 383 CU 391 RE 386
PO 3. Quantify the relationships among the frequency, wavelength, and the speed of light.	SE: 437-438, 445-447, 518-519, 528-529, 705-706 <i>Physics Lab</i> 532-533 TWE: A 437 RE 706 TPK 705
PO 4. Describe the basic assumptions of kinetic molecular theory.	SE: 314-315, 323-324, 326-331, 342-343, 349-351 TWE: AML 330
PO 5. Apply kinetic molecular theory to the behavior of matter (e.g., gas laws).	SE: 314-315, 323-324, 326-331, 342-343, 344-347, 349-351 TWE: AML 330
PO 6. Analyze calorimetric measurements in simple systems and the energy involved in changes of state.	SE: 319-321, 323-324 TWE: CT 326 ICE 321, 325 QD 319 UA 320
PO 7. Explain the relationship between the wavelength of light absorbed or released by an atom or molecule and the transfer of a discrete amount of energy.	SE: 749-754, 756 TWE: CT 756 RE 751

OBJECTIVES	PAGE REFERENCES
PO 8. Describe the relationship among electric potential, current, and resistance in an ohmic system.	SE: 595-600, 618-620, 623-624 <i>Physics Lab</i> 606-607, 632-633 TWE: AML 598 QD 597
PO 9. Quantify the relationships among electric potential, current, and resistance in an ohmic system.	SE: 595-600, 618-620, 623-624 <i>Physics Lab</i> 606-607, 632-633 TWE: QD 597

Codes Used for TWE Pages

A	Activity
AIL	Alternative Inquiry Lab
AML	Additional Mini Lab
BA	Bellringer Activity
CB	Content Background
CH	Challenge
CD	Concept Development
CT	Critical Thinking
CU	Check for Understanding
D	Discussion
DIN	Differentiated Instruction
EX	Extension
HSS	Helping Struggling Students
ICE	In-Class Example
IM	Identifying Misconceptions
PP	Physics Project
QD	Quick Demo
RE	Reinforcement
RLC	Real-Life Careers
RLP	Real-Life Physics
RT	Reteach
TPK	Tie to Prior Knowledge
TT	Teacher to Teacher
UA	Use an Analogy
UM	Using Models