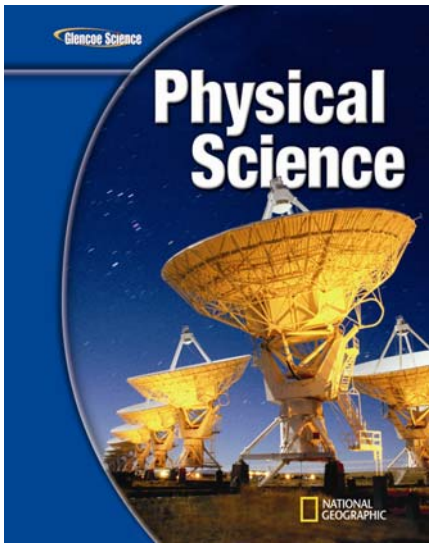
Glencoe

Physical Science Content Standards
High School

Oregon



Physical Science

2008

STANDARDS	PAGE REFERENCES
Physical Science Content Standards	
H.1 Structure and Function: **A system's characteristics, form, and function are attributed to the quantity, type, and nature of its components.**	
H.1P.1 Explain how atomic structure is related to the properties of elements and their position in the Periodic Table. Explain how the composition of the nucleus is related to isotopes and radioactivity.	**Student Edition:** 513-515, 520-521, 523, 538-539, 570-576 *Mini Lab* 539 *Periodic Table of Elements* 518-519 *Section 3 Review* 524 *Table 3* 513 **Teacher Wraparound Edition:** A 522; As 539; DI 520, 576; Di 521; IL 575; R 524; TFYI 513; VL 538
H.1P.2 Describe how different types and strengths of bonds affect the physical and chemical properties of compounds.	**Student Edition:** 608-612, 614, 726-730, 739-740 *Integrate Life Science* 609 *Lab* 622-623 *Mini Lab* 729 *National Geographic* 613 **Teacher Wraparound Edition:** A 613; As 614, 623, 729, 730; DI 611-613; Di 728; ILS 609; SJ 740; VL 727

Codes used for Teacher Wraparound Edition pages are the initial caps of headings on that page.

STANDARDS		PAGE REFERENCES
H.2 Interaction and Change: **The components in a system can interact in dynamic ways that may result in change. In systems, changes occur with a flow of energy and/or transfer of matter.**		
H.2P.1	Explain how chemical reactions result from the making and breaking of bonds in a process that absorbs or releases energy. Explain how the rate of a chemical reaction is affected by temperature, pressure, and concentration.	**Student Edition:** 646, 648-649, 703, 728-729 *Lab* 622-623 *Mini Lab* 648 **Teacher Wraparound Edition:** A 649; As 623, 648, 650; DI 611; Di 728; LD 648
H.2P.2	Explain how physical and chemical changes demonstrate the law of conservation of mass.	**Student Edition:** 465, 632-634 *Figure 20* 714 *Law of Conservation of Mass* 463 *Section 2 Review* 465 #4-#5 **Teacher Wraparound Edition:** IM 464; Re 465; QD 633; SCB 448E-448F, 630E; TS 463; VL 714
H.2P.3	Describe the interactions of energy and matter including the law of conservation of energy.	**Student Edition:** 100, 107-109, 111-115, 384 *Figure 10* 111 *Integrate Environment* 111 *Mini Lab* 112 *National Geographic* 110 **Teacher Wraparound Edition:** As 115; IM 109; LD 110; NG 110; QD 108; Re 115; SJ 111; TPK 384; VL 108
H.2P.4	Apply the laws of motion and gravitation to describe the interaction of forces acting on an object and the resultant motion.	**Student Edition:** 52-56 *Design Your Own Lab* 58-59 *Figure 16* 53 *Lab* 57 *Mini Lab* 54 *Section 3 Review* 56 **Teacher Wraparound Edition:** A 55; As 56-57, 59; D 55; DI 54-55; IM 53; MM 54; QD 53; Re 56; VL 53

STANDARDS		PAGE REFERENCES
H.3 **Scientific inquiry is the investigation of the natural world by a systematic process that includes proposing a testable question or hypothesis and developing procedures for questioning, collecting, analyzing, and interpreting multiple forms of accurate and relevant data to produce justifiable evidence-based explanations and new explorations.**		
H.3S.1	Based on observations and science principles formulate a question or hypothesis that can be investigated through the collection and analysis of relevant information.	**Student Edition:** *Form a Hypothesis* 28, 58, 116, 246, 344, 406, 466, 592, 622, 716 **Teacher Wraparound Edition:** AIL 214, 246; FH 28, 58, 116, 246, 344, 406, 466, 592, 622, 716-717
H.3S.2	Design and conduct a controlled experiment, field study, or other investigation to make systematic observations about the natural world, including the collection of sufficient and appropriate data.	**Student Edition:** *Design Your Own Lab* 28-29, 58-59, 116-117, 214-215, 246-247, 344-345, 406-407, 592-593, 622-623, 716-717 **Teacher Wraparound Edition:** AIL 28, 58, 214, 246, 406, 716; As 117
H.3S.3	Analyze data and identify uncertainties. Draw a valid conclusion, explain how it is supported by the evidence, and communicate the findings of a scientific investigation.	**Student Edition:** *Design Your Own Lab* 29, 59, 117, 215, 247, 345, 407, 593, 623, 717 **Teacher Wraparound Edition:** AIL 116, 214, 344; As 215, 406, 623; CYD 59, 215, 717; EA 247, 407
H.3S.4	Identify examples from the history of science that illustrate modification of scientific knowledge in light of challenges to prevailing explanations.	**Student Edition:** 507-508, 516-517 *Integrate History* 540 *National Geographic* 510, 769 *Time Science and History* 560 *Time Science and Society* 280 **Teacher Wraparound Edition:** A 510, 540; CB 280, 560; CU 511; Di 507; IM 519; NG 510, 769; SJ 523

STANDARDS		PAGE REFERENCES
H.3S.5	Explain how technological problems and advances create a demand for new scientific knowledge and how new knowledge enables the creation of new technologies	**Student Edition:** 551-554, 556 *Design Your Own Lab* 344-345 *Integrate Health* 554 *National Geographic* 555, 769 *Time Science and Society* 150, 280 **Teacher Wraparound Edition:** A 769; AIL 344; CB 280; DI 554; Di 150; NG 555, 769; SJ 176; TFYI 553; VL 554
	H.4 **Engineering design is a process of formulating problem statements, identifying criteria and constraints, proposing and testing possible solutions, incorporating modifications based on test data, and communicating the recommendations.**	
H.4D.1	Define a problem and specify criteria for a solution within specific constraints or limits based on science principles. Generate several possible solutions to a problem and use the concept of trade-offs to compare them in terms of criteria and constraints.	**Student Edition:** *Design Your Own Lab* 28, 58-59, 344-345 *Model and Invent Lab* 148 **Teacher Wraparound Edition:** AIL 58, 278, 344, 778; D 195; FH 58, 344; IL 174
H.4D.2	Create and test or otherwise analyze at least one of the more promising solutions. Collect and process relevant data. Incorporate modifications based on data from testing or other analysis.	**Student Edition:** *Design Your Own Lab* 28-29, 344-345 *Model and Invent Lab* 149 **Teacher Wraparound Edition:** AIL 278, 344, 778; IL 174; TH 28-29; TM 149
H.4D.3	Analyze data, identify uncertainties, and display data so that the implications for the solution being tested are clear.	**Student Edition:** *Analyze Your Data* 149, 345 *Design Your Own Lab* 29 **Teacher Wraparound Edition:** As 29, 149, 345; IL 174
H.4D.4	Recommend a proposed solution, identify its strengths and weaknesses, and describe how it is better than alternative designs. Identify further engineering that might be done to refine the recommendations.	**Student Edition:** *Communicating Your Data* 149, 345 *Conclude and Apply* 345 **Teacher Wraparound Edition:** AIL 278; As 29, 344; CYD 149; IL 174

STANDARDS		PAGE REFERENCES
H.4D.5	Describe how new technologies enable new lines of scientific inquiry and are largely responsible for changes in how people live and work.	**Student Edition:** 396, 398-399 *National Geographic* 369, 555, 769 *Oops! Accidents in Science* 624, 750 *Time Science and History* 248 *Time Science and Society* 150, 440, 780 **Teacher Wraparound Edition:** AE 750; CB 314, 440; Di 150; II 280; HS 92, 248; NG 369, 769; SJ 398
H.4D.6	Evaluate ways that ethics, public opinion, and government policy influence the work of engineers and scientists, and how the results of their work impact human society and the environment.	**Student Edition:** *Debate* 280 *Integrate Environment* 364 *Investigate* 92 *Oops! Accidents in Science* 654 *Time Science and History* 314 *Time Science and Society* 280, 718 **Teacher Wraparound Edition:** A 769; AE 624, 654; C 376, 560, 654; CC 364; De 280; DI 369; HS 92, 314, 560; II 280, 718; L 718; Rep 314; SJ 552