

**Science Textbook Adoption Additional Criteria**

**Chemistry Standards of Learning**

**Publisher: Glencoe/McGraw-Hill**

**Text/Instructional Material Title: Glencoe Chemistry: Matter and Change ©2002**

| <b>Science Standard</b>  | <b>Correlation By Page Numbers</b><br>Make all correlations using the teacher text. Identify only <i>significant</i> areas of correlation. Use each bullet of the standard in the context of the stem. Please consult the 2003 Science Curriculum Framework for further information about each standard. |
|--|--|
| CH.1 The student will investigate and understand that experiments in which variables are measured, analyzed, and evaluated, produce observations and verifiable data. Key concepts include |  |
| a) designated laboratory techniques;   | This objective is addressed throughout. See, for example:<br><br>10–13, 46, 108, 142, 170, 232, 300, 374, 444, 560, 580, 654, 688, 766, 832, 862   |
| b) safe use of chemicals and equipment;  | 37T–45T, 14–16   |
| c) proper response to emergency situations;  | 38T–39T, 16  |
| d) manipulation of multiple variables with repeated trials;  | This objective is addressed throughout. See, for example:<br><br>11–12, 44, 78, 108, 170, 233, 300, 374, 410, 480, 550, 629, 688, 728, 832   |
| e) accurate recording, organizing, and analysis of data through repeated trials;   | This objective is addressed throughout. See, for example:<br><br>18, 46, 73, 142, 179, 232, 374, 385, 410, 520, 550, 688, 697, 775, 819  |
| f) mathematical and procedural error analysis;   | 36–38  |
| g) mathematical manipulations (SI units, scientific notation, linear equations, graphing, ratio and proportion, significant digits, dimensional analysis);                                 | 25–27, 31–33, 34–35, 38–39, 44–45, 887–910, 913  |
| h) the use of appropriate technology including computers, graphing calculators, and probeware for gathering data and communicating results; and  | 25–27, 31–33, 34–35, 38–39, 44–45, 887–910, 913  |

**Science Textbook Adoption Additional Criteria**

**Chemistry Standards of Learning**

**Publisher: Glencoe/McGraw-Hill**

**Text/Instructional Material Title: Glencoe Chemistry: Matter and Change ©2002**

|  |   |
|--|---|
| i) construction and defense of a scientific viewpoint (the nature of science). | This objective is addressed throughout. See, for example:<br>11, 44, 60, 78, 130, 164, 260, 295, 372, 439, 505, 550, 654, 681, 728, 819 |
|--|---|

**Science Textbook Adoption Additional Criteria****Chemistry Standards of Learning****Publisher: Glencoe/McGraw-Hill****Text/Instructional Material Title: Glencoe Chemistry: Matter and Change ©2002**

| <b>Science Standard</b>  | <b>Correlation By Page Numbers</b><br>Make all correlations using the teacher text. Identify only <i>significant</i> areas of correlation. Use each bullet of the standard in the context of the stem. Please consult the 2003 Science Curriculum Framework for further information about each standard. |
|--|--|
| CH.2 The student will investigate and understand that the placement of elements on the periodic table is a function of their atomic structure. The periodic table is a tool used for the investigations of |  |
| a) average atomic mass, mass number, and atomic number;  | 98–99, 100–101, 102–104  |
| b) isotopes, half lives, and radioactive decay;  | 100–104, 106, 807, 810–814, 817–819  |
| c) characteristics of subatomic particles as to mass and charge;   | 92–97, 102   |
| d) families or groups;   | 154–155, 158, 163–164, 166–169   |
| e) series and periods;   | 70, 154, 164–169   |
| f) trends including atomic radii, electronegativity, shielding effect, and ionization energy;  | 163–165, 167–169, 263–264  |
| g) electron configurations, valence electrons, and oxidation numbers;  | 135–141, 159, 222–223, 637, 641–643, 644–646   |
| h) chemical and physical properties; and   | 56–57  |
| i) historical and quantum models.  | 89–90, 94–96, 127–128, 129–130, 131–132  |

**Science Textbook Adoption Additional Criteria****Chemistry Standards of Learning****Publisher: Glencoe/McGraw-Hill****Text/Instructional Material Title: Glencoe Chemistry: Matter and Change ©2002**

| <b>Science Standard</b>   | <b>Correlation By Page Numbers</b><br>Make all correlations using the teacher text. Identify only <i>significant</i> areas of correlation. Use each bullet of the standard in the context of the stem. Please consult the 2003 Science Curriculum Framework for further information about each standard. |
|---|--|
| CH.3 The student will investigate and understand how conservation of energy and matter is expressed in chemical formulas and balanced equations. Key concepts include |  |
| a) nomenclature;  | 225–227, 248–251, 702–705, 706–708, 712–714, 739–740, 747–748, 749–754   |
| b) balancing chemical equations;  | 280–283, 354–355   |
| c) writing chemical formulas (molecular, structural, empirical, and Lewis diagrams);  | 221–225, 243–244, 252–258, 331–334   |
| d) bonding types (ionic, covalent);   | 215–220, 232–233, 242–247, 252–258   |
| e) reaction types (synthesis, decomposition, single and double replacement, oxidation-reduction, neutralization, exothermic and endothermic); and                     | 247, 284–291, 300–301, 496–500, 501–503, 617–625, 636–653  |
| f) reaction rates and kinetics (activation energy, catalysis, degree of randomness).  | 529–531, 532–534, 539–541  |

**Science Textbook Adoption Additional Criteria****Chemistry Standards of Learning****Publisher: Glencoe/McGraw-Hill****Text/Instructional Material Title: Glencoe Chemistry: Matter and Change ©2002**

| <b>Science Standard</b>   | <b>Correlation By Page Numbers</b><br>Make all correlations using the teacher text. Identify only <i>significant</i> areas of correlation. Use each bullet of the standard in the context of the stem. Please consult the 2003 Science Curriculum Framework for further information about each standard. |
|---|--|
| CH.4 The student will investigate and understand that quantities in a chemical reaction are based on molar relationships. Key concepts include        |  |
| a) Avogadro's principle and molar volume;   | 430–433  |
| b) stoichiometric relationships;  | 354–356, 357–359, 360–369, 370–373   |
| c) partial pressure;  | 391–392  |
| d) gas laws;  | 391–392, 421–422, 423–425, 426–427   |
| e) solution concentrations;   | 462, 607   |
| f) chemical equilibrium; and  | 559–563, 565–568, 569–574, 575–577, 578–585  |
| g) acid/base theory: strong electrolytes, weak electrolytes, and nonelectrolytes; dissociation and ionization; pH and pOH; and the titration process. | 218, 471–473, 595–599, 610–616, 618–621, 626–627   |

**Science Textbook Adoption Additional Criteria****Chemistry Standards of Learning****Publisher: Glencoe/McGraw-Hill****Text/Instructional Material Title: Glencoe Chemistry: Matter and Change ©2002**

| <b>Science Standard</b>   | <b>Correlation By Page Numbers</b><br>Make all correlations using the teacher text. Identify only <i>significant</i> areas of correlation. Use each bullet of the standard in the context of the stem. Please consult the 2003 Science Curriculum Framework for further information about each standard. |
|---|--|
| CH.5 The student will investigate and understand that the phases of matter are explained by kinetic theory and forces of attraction between particles. Key concepts include |  |
| a) pressure, temperature, and volume;   | 386, 388–390, 440–443  |
| b) vapor pressure;  | 406  |
| c) phase changes;   | 61–62, 404–409, 410–411  |
| d) molar heats of fusion and vaporization;  | 502–503  |
| e) specific heat capacity; and  | 492–495, 496–498   |
| f) colligative properties.  | 471–475  |

**Science Textbook Adoption Additional Criteria**

**Chemistry Standards of Learning**

**Publisher: Glencoe/McGraw-Hill**

**Text/Instructional Material Title: Glencoe Chemistry: Matter and Change ©2002**

| <b>Additional Criteria</b>   | <b>Evidence</b><br>Please provide information that will assist the reviewers in identifying support for the following criterion indicators.  |
|--|--|
| 1. Safe use of materials and equipment is encouraged.  | Each ChemLab includes Safety Precautions which include safety icons. A chart of the safety symbols with hazards, examples, precautions and remedies is included in the front of the text. A chart Safety in the Laboratory is provided on page 16.   |
| 2. Materials emphasize the use of effective instructional practices and learning theories. <ul style="list-style-type: none"><li>• Students are guided through different approaches such as the learning cycle.</li><li>• Students are provided the opportunity to conduct scientific inquiry appropriate for their age, grade, and maturity.</li><li>• Concepts are introduced through concrete experiences.</li><li>• Students are required to use manipulative materials during investigations and activities.</li><li>• Multiple opportunities are provided for students to apply concepts.</li><li>• Learning activities offer opportunities for students to revise their prior knowledge and create new knowledge.</li><li>• Students are encouraged to pose questions and to identify problems, as well as propose multiple solutions and design and conduct tests of inference.</li><li>• Students collect and interpret data through a variety of technologies and draw conclusions based on that data.</li></ul> | <ul style="list-style-type: none"><li>• This is included in Chapter 1, pages 2-23. The chapter contains coverage of the scientific method, scientific research and developing observation skills.</li><li>• The text has been correlated to meet the National Science Education Standards, ex. TWE pages 4T and 5T. The Discovery Labs, ex. page 529 provide an inquiry approach.</li><li>• Covered throughout the text. The How It Works features, ex. page 144, provide examples.</li><li>• These are included in the 26 ChemLabs, ex. page 232.</li><li>• These are evidenced in the Problem-Solving Labs, ex. page 219 and The Discovery Labs, ex. page 663.</li><li>• This is provided in Identifying Misconceptions, which are included in the TWE, ex. page 538.</li><li>• Covered throughout the text. Examples can be found in the Discovery Labs, ex. page 529.</li><li>• Examples of this are included in the ChemLabs, ex. page 232, the MiniLabs, ex. page 539, and the Discovery Labs, ex. page 353.</li></ul> |

**Science Textbook Adoption Additional Criteria**

**Chemistry Standards of Learning**

**Publisher: Glencoe/McGraw-Hill**

**Text/Instructional Material Title: Glencoe Chemistry: Matter and Change ©2002**

| <b>Additional Criteria</b>  | <b>Evidence</b><br>Please provide information that will assist the reviewers in identifying support for the following criterion indicators.  |
|---|--|
| <p>3. Materials present content in an accurate, unbiased manner, and are based on sound science.</p> <ul style="list-style-type: none"><li>• Materials do not contain content errors (omissions of current content, out-of-date content, overgeneralizations, etc.).</li><li>• Materials do not contain production errors (misspelled words, word omissions, incorrect answers).</li><li>• Diverse groups (racial, ethnic, cultural, linguistic), males and females, people with disabilities, and people of all ages are represented appropriately.</li><br/><li>• The materials are free of non-scientific explanation.</li></ul> | <ul style="list-style-type: none"><li>• The materials were reviewed by consultants, teachers and Editors and found to be free of content errors.</li><li>• Page proofs were thoroughly checked by the Editors to correct production errors.</li><li>• As a matter of policy, all photos were checked to assure that diverse groups, males and females, people with disabilities and people of all ages were represented appropriately.</li><li>• The materials were checked by consultants, teachers and Editors to assure that non-scientific explanation was not included.</li></ul> |

**Science Textbook Adoption Additional Criteria**

**Chemistry Standards of Learning**

**Publisher: Glencoe/McGraw-Hill**

**Text/Instructional Material Title: Glencoe Chemistry: Matter and Change ©2002**

| <b>Additional Criteria</b>   | <b>Evidence</b><br>Please provide information that will assist the reviewers in identifying support for the following criterion indicators.  |
|--|--|
| <p>4. Materials promote student assessment as an integral part of the instructional process.</p> <ul style="list-style-type: none"><li>• Assessment suggestions and scoring criteria for student performances on work such as lab practicals or tasks, concept maps, research projects, observation checklists, etc., are provided.</li><li>• Assessment items include multiple-choice, short answer, essay and open-ended questions with charts, graphs, and diagrams imbedded within the items.</li><li>• Options include techniques for assessing students' prior knowledge.</li><li>• Assessment items reflect the rigor and the intent of the standards. For example, they require students to use higher order thinking skills to apply, analyze, synthesize, evaluate, and make judgments or recommendations.</li></ul> | <ul style="list-style-type: none"><li>• Assessment strategies are included in the TWE on pages 30T-33T.</li><li>• These are included in every chapter, ex. Chapter 3 Assessment-pages 82-85.</li><li>• These are found in the Cumulative Review questions at the end of the Chapter, ex. page 84.</li><li>• There skills are assessed in the end of chapter questions, ex. Thinking Critically page 84. The skills are also assessed in the ChemLabs, MiniLabs and Problem-Solving Labs.</li></ul> |

**Science Textbook Adoption Additional Criteria**

**Chemistry Standards of Learning**

**Publisher: Glencoe/McGraw-Hill**

**Text/Instructional Material Title: Glencoe Chemistry: Matter and Change ©2002**

| <b>Additional Criteria</b>  | <b>Evidence</b><br>Please provide information that will assist the reviewers in identifying support for the following criterion indicators.   |
|---|---|
| <p>5. Materials are presented in an organized, logical manner and are appropriate for the age, grade, and maturity of the students.</p> <ul style="list-style-type: none"><li>• Materials are organized appropriately within and among units of study.</li><li>• Format design includes titles, subheadings, and appropriate cross-referencing for ease of use.</li><li>• Writing style, length of sentences, and vocabulary are appropriate.</li><li>• Graphics and illustrations are appropriate</li><li>• Level of abstraction is appropriate, and real life examples, including careers are provided.</li><li>• Sufficient applications are provided to promote depth of understanding.</li></ul> | <ul style="list-style-type: none"><li>• Materials were reviewed by consultants, teachers and Editors and found to be organized appropriately.</li><li>• The design includes titles, subheadings and cross referencing, ex. pages 66-67.</li><li>• The writing style, length of sentences and vocabulary were reviewed by consultants, teachers and Editors and were found to be appropriate.</li><li>• The graphics and illustrations were reviewed by consultants, teachers and Editors and were found to be appropriate.</li><li>• Careers Using Chemistry, ex. page 250, How It Works, ex. page 522, and Chemistry and Technology, ex. page 344 are examples.</li><li>• Each section of every chapter includes applications. Additionally at the end of each chapter there are various types of questions provided to promote depth of understanding, ex. pages 50-53.</li></ul> |