Science Planned Course: Honors General Science - Grade 9

Unit: **Physical Science Basics**

Content Standard: **Understand and demonstrate the scientific method and manipulate the metric system.**

State Curriculum Standard:
3.1.10D Apply scale as a way of relating concepts and ideas to one another by some measure.
3.2.10A Apply knowledge and understanding about the nature of scientific and technological knowledge.
3.2.10B Apply process knowledge and organize scientific and technological phenomena in varied ways.
3.2.10C Apply the elements of scientific inquiry to solve problems.

Course Content	Student Performance	Resources	Assessments
A. Define Physical Science. B. Evaluate the Difference Between Observation and Inference. C. Create an Experiment Using the Steps of the Scientific Method. D. Measure Metric. Length, Mass, Volume, and Temperature Directly. E. Calculate Derived Units. F. Recognize Uncertainties of Precision and Calculate the Accuracy of Experimental Data. G. Create a Graph Using Experimental Data and be Able to Interpret Results.	• Take notes from a variety of instructional presentations • Actively complete all reading assignments • Complete all assigned laboratory experiments • Participate in cooperative learning activities • Contribute to class discussions • Actively view and analyze all video presentations	• Physical Science, (Glencoe Science, 2005) pp. 6 -28 • Assorted laboratory manuals • Textbook supplementary materials • Teacher-developed notes and handouts • Videos/DVDs • Primary and secondary source readings • Websites • Library services • Posters/visual aides	• Laboratory report evaluation • Teacher-generated assessments • Oral questioning • Teacher observations • Evaluation of class work and homework • Quizzes • Projects and presentations

Science Planned Course: Honors General Science - Grade 9

Unit: **Motion**

Content Standard: **Identify and explain the principles of force and motion**

State Curriculum Standard: **3.2.10A Apply knowledge and understanding about the nature of scientific and technological knowledge.**
3.2.10B Apply process knowledge and organize scientific and technological phenomena in varied ways.
3.2.10C Apply the elements of scientific inquiry to solve problems.
3.4.10C Distinguish among the principles of force and motion.

Course Content	Student Performance	Resources	Assessments
A. Calculate for Speed, Distance, and Time With Conversion Factors for Different Units. B. Differentiate Between Speed, Velocity, and Acceleration. C. Predict the Position of Bodies in Motion. D. Calculate Acceleration and Deceleration for Graphing Problems. E. Differentiate Between Forces.	• Take notes from a variety of instructional presentations • Actively complete all reading assignments • Complete all assigned laboratory experiments • Participate in cooperative learning activities • Contribute to class discussions • Actively view and analyze all video presentations	• Physical Science, (Glencoe Science, 2005) pp. 38 - 58 • Assorted laboratory manuals • Textbook supplementary materials • Teacher-developed notes and handouts • Videos/DVDs • Primary and secondary source readings • Websites • Library services • Posters/visual aides	• Laboratory report evaluation • Teacher-generated assessments • Oral questioning • Teacher observations • Evaluation of class work and homework • Quizzes • Projects and Presentations

Science Planned Course: Honors General Science - Grade 9

Unit: **Forces**

Content Standard: **Compare and contrast Newton's three laws and analyze the relationship between forces**

State Curriculum Standard: **3.2.10A Apply knowledge and understanding about the nature of scientific and technological knowledge.**
3.2.10B Apply process knowledge and organize scientific and technological phenomena in varied ways.
3.2.10C Apply the elements of scientific inquiry to solve problems.
3.4.10C Distinguish among the principles of force and motion.

Course Content	Student Performance	Resources	Assessments
A. Calculate Force, Mass, or Acceleration Relationship. B. Analyze Newton's Three Laws and Provide Examples of Each Law. C. Differentiate Between Gravity and Air Resistance. D. Understand the Concepts for Momentum, Projectile Motion, and Centripetal Acceleration. E. Graphing of Forces and Rates of Motion.	• Take notes from a variety of instructional presentations • Actively complete all reading assignments • Complete all assigned laboratory experiments • Participate in cooperative learning activities • Contribute to class discussions • Actively view and analyze all video presentations	• Physical Science, (Glencoe Science, 2005) pp. 68-90 • Assorted laboratory manuals • Textbook supplementary materials • Teacher-developed notes and handouts • Videos/DVDs • Primary and secondary source readings • Websites • Library services • Posters/visual aides	• Laboratory report evaluation • Teacher-generated assessments • Oral questioning • Teacher observations • Evaluation of class work and homework • Quizzes • Projects and Presentations

Science Planned Course: Honors General Science - Grade 9

Unit: **Energy**

Content Standard: **Understand the relationship between heat, thermal energy, and temperature; differentiate between the different types of energy; compare and contrast work and power.**

State Curriculum Standard: **3.2.10A Apply knowledge and understanding about the nature of scientific and technological knowledge.**
3.2.10B Apply process knowledge and organize scientific and technological phenomena in varied ways.
3.2.10C Apply the elements of scientific inquiry to solve problems.
3.4.10B Analyze energy sources and transfers of heat.
3.4.10C Distinguish among the principles of force and motion.

Course Content	Student Performance	Resources	Assessments
A. Investigate Variable for a Pendulum. B. Verbalize and Quantify Thermal Energy and Temperature. C. Measure the Specific Heat of Metals. D. Calculate Variables, Thermal Energy, Specific Metal Mass, or Change in Temperature. E. Define, Measure, and Predict Work, Power, and Horsepower. F. Account for Lost Energy.	• Take notes from a variety of instructional presentations • Actively complete all reading assignments • Complete all assigned laboratory experiments • Participate in cooperative learning activities • Contribute to class discussions • Actively view and analyze all video presentations	• Physical Science, (Glencoe Science, 2005) pp. 100 – 116 and 158 -180 • Assorted laboratory manuals • Textbook supplementary materials • Teacher-developed notes and handouts • Videos/DVDs • Primary and secondary source readings • Websites • Library services • Posters/visual aides	• Laboratory report evaluation • Teacher-generated assessments • Oral questioning • Teacher observations • Evaluation of class work and homework • Quizzes • Projects and Presentations

Science Planned Course: Honors General Science - Grade 9

Unit: **Work and Machines**

Content Standard: **Discern force and motion and their principles and explain how simple machines are used in everyday life**

State Curriculum Standard: **3.2.10A Apply knowledge and understanding about the nature of scientific and technological knowledge.**
3.2.10B Apply process knowledge and organize scientific and technological phenomena in varied ways.
3.2.10C Apply the elements of scientific inquiry to solve problems.
3.4.10C Distinguish among the principles of force and motion.

Course Content	Student Performance	Resources	Assessments
A. Identify Elements of Simple Machines in Compound Machines. B. Differentiate Between the Six Simple Machines and Give Examples of Each. C. Calculate the Efficiency of Mechanical Systems by Applying Mathematical Formulas. D. Operate and Predict Forces and/or Distance Required for Simple Machines.	• Take notes from a variety of instructional presentations • Actively complete all reading assignments • Complete all assigned laboratory experiments • Participate in cooperative learning activities • Contribute to class discussions • Actively view and analyze all video presentations	• Physical Science, (Glencoe Science, 2005) pp. 126 – 148. • Assorted laboratory manuals • Textbook supplementary materials • Teacher-developed notes and handouts • Videos/DVDs • Primary and secondary source readings • Websites • Library services • Posters/visual aides	• Laboratory report evaluation • Teacher-generated assessments • Oral questioning • Teacher observations • Evaluation of class work and homework • Quizzes • Projects and presentations

Science Planned Course: Honors General Science - Grade 9

Unit: **Classification of Matter and Separation Techniques**

Content Standard: **To classify matter by composition and to apply separation techniques to a variety of mixtures**

State Curriculum Standard: **3.2.10A Apply knowledge and understanding about the nature of scientific and technological knowledge.**
3.2.10B Apply process knowledge and organize scientific and technological phenomena in varied ways.
3.2.10C Apply the elements of scientific inquiry to solve problems.
3.4.10A Explain concepts about the structure and properties of matter.

Course Content	Student Performance	Resources	Assessments
A. Differentiate Between Elements, Compounds, and Mixtures. B. Distinguish Between Physical and Chemical Properties. C. Distinguish Between Physical and Chemical Changes. D. List the Different Types of Mixtures and Explain Ways to Separate Them.	• Take notes from a variety of instructional presentations • Actively complete all reading assignments • Complete all assigned laboratory experiments • Participate in cooperative learning activities • Contribute to class discussions • Actively view and analyze all video presentations	• Physical Science, (Glencoe Science, 2005) • Assorted laboratory manuals • Textbook supplementary materials • Teacher-developed notes and handouts • Videos/DVDs • Primary and secondary source readings • Websites • Library services • Posters/visual aides	• Laboratory report evaluation • Teacher-generated assessments • Oral questioning • Teacher observations • Evaluation of class work and homework • Quizzes • Projects and presentations

Science Planned Course: Honors General Science - Grade 9

Unit: **Phases of Matter**

Content Standard: **Understand structures and apply properties of matter; differentiate the four phases using the kinetic molecular theory of matter.**

State Curriculum Standard: **3.2.10A Apply knowledge and understanding about the nature of scientific and technological knowledge.**
3.2.10B Apply process knowledge and organize scientific and technological phenomena in varied ways.
3.2.10C Apply the elements of scientific inquiry to solve problems.
3.4.10A Explain concepts about the structure and properties of matter.

Course Content	Student Performance	Resources	Assessments
A. Differentiate Between the Four States of Matter Based on the Kinetic Theory of Matter. B. Distinguish Between the Changes in State and Give Examples of Each. C. Graph Various Phase Changes. D. Predict Behavior of Gases Through the Use of Boyle's and Charles's Laws. E. Understand the Uses of Fluids in Real-World Situations.	• Take notes from a variety of instructional presentations • Actively complete all reading assignments • Complete all assigned laboratory experiments • Participate in cooperative learning activities • Contribute to class discussions • Actively view and analyze all video presentations	• Physical Science, (Glencoe Science, 2005) pp. 476 - 496 • Assorted laboratory manuals • Textbook supplementary materials • Teacher-developed notes and handouts • Videos/DVDs • Primary and secondary source readings • Websites • Library services • Posters/visual aides	• Laboratory report evaluation • Teacher-generated assessments • Oral questioning • Teacher observations • Evaluation of class work and homework • Quizzes • Projects and presentations

Science Planned Course: Honors General Science - Grade 9

Unit: **Atomic Theory and the Periodic Table**

Content Standard: **Discern concepts about the structure and properties of matter**

State Curriculum Standard: **3.1.10B Describe concepts of models as a way to predict and understand science and technology.**
3.2.10A Apply knowledge and understanding about the nature of scientific and technological knowledge.
3.2.10B Apply process knowledge and organize scientific and technological phenomena in varied ways.
3.2.10C Apply the elements of scientific inquiry to solve problems.
3.4.10A Explain concepts about the structure and properties of matter.

Course Content	Student Performance	Resources	Assessments
A. Understand the Atomic Model and be Able to Construct Models Using the Various Parts. B. Use the Periodic Table to Calculate the Amount of Protons, Neutrons, and Electrons in a Certain Element. C. Be Able to Identify Isotopes, Atomic Number, and Atomic Weight. D. Identify Elements Based on Properties, Chemical Families, and Periods.	• Take notes from a variety of instructional presentations • Actively complete all reading assignments • Complete all assigned laboratory experiments • Participate in cooperative learning activities • Contribute to class discussions • Actively view and analyze all video presentations	• Physical Science, (Glencoe Science, 2005) pp. 506 - 526 and 570 - 592 • Assorted laboratory manuals • Textbook supplementary materials • Teacher-developed notes and handouts • Videos/DVDs • Primary and secondary source readings • Websites • Library services • Posters/visual aides	• Laboratory report evaluation • Teacher-generated assessments • Oral questioning • Teacher observations • Evaluation of class work and homework • Quizzes • Projects and presentations

Science Planned Course: Honors General Science - Grade 9

Unit: **Chemical Bonding**

Content Standard: **Discern concepts about the structure and properties of matter**

State Curriculum Standard: **3.2.10A Apply knowledge and understanding about the nature of scientific and technological knowledge.**
3.2.10B Apply process knowledge and organize scientific and technological phenomena in varied ways.
3.2.10C Apply the elements of scientific inquiry to solve problems.
3.4.10A Explain concepts about the structure and properties of matter.

Course Content	Student Performance	Resources	Assessments
A. Compare and Contrast Ionic and Covalent Bonding. B. Differentiate Between Polar and Non-Polar Bonding. C. Write Formulas for a Variety of Compounds.	• Take notes from a variety of instructional presentations • Actively complete all reading assignments • Complete all assigned laboratory experiments • Participate in cooperative learning activities • Contribute to class discussions • Actively view and analyze all video presentations	• Physical Science, (Glencoe Science, 2005) pp. 602 - 622 • Assorted laboratory manuals • Textbook supplementary materials • Teacher-developed notes and handouts • Videos/DVDs • Primary and secondary source readings • Websites • Library services • Posters/visual aides	• Laboratory report evaluation • Teacher-generated assessments • Oral questioning • Teacher observations • Evaluation of class work and homework • Quizzes • Projects and presentations

Science Planned Course: Honors General Science - Grade 9

Unit: **Chemical Changes**

Content Standard: **Understand, analyze, and evaluate chemical reactions.**

State Curriculum Standard:
3.2.10 A Apply knowledge and understanding about the nature of scientific and technological knowledge.
3.2.10 B Apply process knowledge and organize scientific and technological phenomena in varied ways.
3.2.10 C Apply the elements of scientific inquiry to solve problems.
3.4.10 A Explain concepts about the structure and properties of matter.

Course Content	Student Performance	Resources	Assessments
A. Describe Various Types of Chemical Reactions in Terms of the Law of Conservation of Energy and Mass. B. Measure the Concentration of Saturated Solutions. C. Explain How the Addition of Soluble Particles Affects the Freezing and Melting Points. D. Interpret Chemical Equations. E. Balance a Chemical Equation. F. Use Molecular Mass to Explain Leftovers. G. Analyze Reactions into one of the Four Types. H. Evaluate Chemical Changes in a Chemical Reaction.	• Take notes from a variety of instructional presentations • Actively complete all reading assignments • Complete all assigned laboratory experiments • Participate in cooperative learning activities • Contribute to class discussions • Actively view and analyze all video presentations	• Physical Science, (Glencoe Science, 2005) pp. 450 –466 • Assorted laboratory manuals • Textbook supplementary materials • Teacher-developed notes and handouts • Videos/DVDs • Primary and secondary source readings • Websites • Library services • Posters/visual aides	• Laboratory report evaluation • Teacher-generated assessments • Oral questioning • Teacher observations • Evaluation of class work and homework • Quizzes • Projects and Presentations

Science Planned Course: Honors General Science - Grade 9

Unit: **Acids, Bases, and Salts**

Content Standard: **Explain concepts about acids, bases, and salts**

State Curriculum Standard: **3.2.10A Apply knowledge and understanding about the nature of scientific and technological knowledge.**
3.2.10B Apply process knowledge and organize scientific and technological phenomena in varied ways.
3.2.10C Apply the elements of scientific inquiry to solve problems.
3.4.10A Explain concepts about the structure and properties of matter.

Course Content	Student Performance	Resources	Assessments
A. Describe and Differentiate Strengths of Acids and Bases. B. Describe and Measure a Neutralization Reaction.	• Take notes from a variety of instructional presentations • Actively complete all reading assignments • Complete all assigned laboratory experiments • Participate in cooperative learning activities • Contribute to class discussions • Actively view and analyze all video presentations	• Physical Science, (Glencoe Science, 2005) pp. 696 - 716 • Assorted laboratory manuals • Textbook supplementary materials • Teacher-developed notes and handouts • Videos/DVDs • Primary and secondary source readings • Websites • Library services • Posters/visual aides	• Laboratory report evaluation • Teacher-generated assessments • Oral questioning • Teacher observations • Evaluation of class work and homework • Quizzes • Projects and Presentations