Honors Lab Chemistry
Course Compendium

This course differs from the non-honors course in the scope, pace and level of difficulty. Chemistry investigates matter and energy and ways in which these two quantities interact. Over a course of study in chemistry, students should be able to recognize how both matter and energy are both quantified (measured) and qualified (observed) in a variety of contexts. This course also makes connections between matter and the energy transformations in living systems and includes the connection to nuclear chemistry. Students will make connections between geoscience and human activity. This course exposes students to problem-solving situations that are developed through class discussions, demonstrations, and lab activities. Students will demonstrate understanding through performance expectations. Lab experiences complement the core concepts

UNITS OF STUDY*

Unit 1- **Measurement & Modeling, Electrons and Periodic Table**
Unit 2- **Ionic and Covalent Compounds**
Unit 3- **Metrics, Moles,Chemical Reactions, Stoichiometry**
Unit 4- **Energy, Change & States of Matter**
Unit 5- **Solutions & Acids & Bases**

INTERDISCIPLINARY CONNECTIONS -
NJSLS Companion Standards Grades 9-12
(Reading & Writing in Science & Technical Subjects)

NJSLSA.R1. Read closely to determine what the text says explicitly and to make logical inferences and relevant connections from it; cite specific textual evidence when writing or speaking to support conclusions drawn from the text.
NJSLSA.R8. Delineate and evaluate the argument and specific claims in a text, including the validity of the reasoning as well as the relevance and sufficiency of the evidence.
RST.9-10.1. Accurately cite strong and thorough evidence from the text to support analysis of science and technical texts, attending to precise details for explanations or descriptions.
RST.9-10.3. Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks, attending to special cases or exceptions defined in the text.
RST.9-10.5. Analyze the relationships among concepts in a text, including relationships among key terms (e.g., force, friction, reaction force, energy).
RST.9-10.7. Translate quantitative or technical information expressed in words in a text into visual form (e.g., a table or chart) and translate information expressed visually or mathematically (e.g., in an equation) into words.
RST.9-10.9. Compare and contrast findings presented in a text to those from other sources (including their own experiments), noting when the findings support or contradict previous explanations or accounts.

NJSLSA.W1. Write arguments to support claims in an analysis of substantive topics or texts, using valid reasoning and relevant and sufficient evidence.
NJSLSA.W2. Write informative/explanatory texts to examine and convey complex ideas and information clearly and accurately through the effective selection, organization, and analysis of content.
NJSLSA.W6. Use technology, including the Internet, to produce and publish writing and to interact and collaborate with others.

See individual units for Pacing Guide, NJSLS Standards, Transfer Skills, Enduring Understandings, Essential Questions, Learning Objectives, Key Vocabulary, Skills, Resources, & Assessments

NJSLSA.W9. Draw evidence from literary or informational texts to support analysis, reflection, and research.
WHST.9-10.1. Write arguments to support claims in an analysis of substantive topics or texts, using valid reasoning and relevant sufficient textual and non-textual evidence.
WHST.9-10.2. Write informative/explanatory texts, including the narration of historical events, scientific procedures/ experiments, or technical processes.

21st Century Life and Careers

CRP1. Act as a responsible and contributing citizen and employee.
CRP2. Apply appropriate academic and technical skills
CRP4. Communicate clearly and effectively and with reason.
CRP5. Consider the environmental, social and economic impacts of decisions.
CRP6. Demonstrate creativity and innovation.
CRP7. Employ valid and reliable research strategies.
CRP8. Utilize critical thinking to make sense of problems and persevere in solving them.
CRP11. Use technology to enhance productivity.
CRP12. Work productively in teams while using cultural global competence

9.3.ST.2 Use technology to acquire, manipulate, analyze and report data.
9.3.ST.3 Describe and follow safety, health and environmental standards related to science, technology, engineering and mathematics (STEM) workplaces.
9.3.ST.4 Understand the nature and scope of the Science, Technology, Engineering & Mathematics Career Cluster and the role of STEM in society and the economy.
9.3.ST.5 Demonstrate an understanding of the breadth of career opportunities and means to those opportunities in each of the Science, Technology, Engineering & Mathematics Career Pathways.

9.3.ST-ET.1 Use STEM concepts and processes to solve problems involving design and/or production.
9.3.ST-ET.2 Display and communicate STEM information.
9.3.ST-ET.4 Apply the elements of the design process.
9.3.ST-ET.5 Apply the knowledge learned in STEM to solve problems.

9.3.ST-SM.1 Apply science and mathematics to provide results, answers and algorithms for engineering and technological activities.
9.3.ST-SM.2 Apply science and mathematics concepts to the development of plans, processes and projects that address real world problems.

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9.3.ST-SM.3 Analyze the impact that science and mathematics has on society.

9.3.ST-SM.4 Apply critical thinking skills to review information, explain statistical analysis, and to translate, interpret and summarize research and statistical data.

9.3.HL‑SUP.1 Describe, differentiate and safely perform the responsibilities of healthcare support services roles.

9.3.HL.1 Determine academic subject matter, in addition to high school graduation requirements, necessary for pursuing a health science career.

9.3.HL‑HI.2 Describe the content and diverse uses of health information.

9.3.HL‑SUP.1 Describe, differentiate and safely perform the responsibilities of healthcare support services roles.

9.3.HU.1 Evaluate principles of planning, development, implementation and evaluation to accomplish long-range goals in the human services.

Technology

8.1 Educational Technology: All students will use digital tools to access, manage, evaluate, and synthesize information in order to solve problems individually and collaborate and to create and communicate knowledge.

  A. Technology Operations and Concepts: Students demonstrate a sound understanding of technology concepts, systems and operations.

   8.1.12.A.CS1 Understand and use technology systems.

   8.1.12.A.CS2 Select and use applications effectively and productively.

  C. Communication and Collaboration: Students use digital media and environments to communicate and work collaboratively, including at a distance, to support individual learning and contribute to the learning of others.

   8.1.12.C.1 Develop an innovative solution to a real world problem or issue in collaboration with peers and experts, and present ideas for feedback through social media or in an online community.

E: Research and Information Fluency: Students apply digital tools to gather, evaluate, and use information.

   8.1.12.E.1 Produce a position statement about a real world problem by developing a systematic plan of investigation with peers and experts synthesizing information from multiple sources.

8.2 Technology Education, Engineering, Design, and Computational Thinking - Programming: All students will develop an understanding of the nature and impact of technology, engineering, technological design, computational thinking and the designed world as they relate to the individual, global society, and the environment

C. Design: The design process is a systematic approach to solving problems.

8.2.12.C.4 Explain and identify interdependent systems and their functions.

  E. **Computational Thinking: Programming**: Computational thinking builds and enhances problem solving, allowing students to move beyond using knowledge to creating knowledge.

   8.2.12.E.1 Demonstrate an understanding of the problem-solving capacity of computers in our world.

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MODIFICATIONS / ACCOMMODATIONS

GENERAL CONSIDERATIONS FOR DIVERSE LEARNERS		
English Language Learners	**Students Receiving Special Education Services**	**Advanced Learners**
- Personal glossary - Text-to-speech - Extended time - Simplified / verbal instructions - Frequent breaks WIDA Can Do Descriptors for Grade 9-12 WIDA Essential Actions Handbook FABRIC Paradigm Wall Township ESL Grading Protocol *Use WIDA Can Do Descriptors in coordination with Student Language Portraits (SLPs).	- Additional time - Review of directions - Space for movement or breaks - Extra visual and verbal cues and prompts - Preferential seating - Follow a routine/schedule - Verbal and visual cues regarding directions and staying on task Students receiving Special Education programming have specific goals and objectives, as well as accommodations and modifications outlined within their Individualized Education Plans (IEP) due to an identified disability and/or diagnosis. In addition to exposure to the general education curriculum, the instruction is differentiated based upon the student's needs. The IEP acts as a supplemental curriculum guide inclusive of instructional strategies that support each learner. CRP8. Utilize critical thinking to make sense of problems and persevere in solving them. Considerations for Special Education Students 6-12 National Center on Universal Design for Learning - About UDL UDL Checklist UDL Key Terms	- Use of high level academic vocabulary/texts - Problem-based learning - Preassess to condense curriculum - Authentic problem-solving - Homogeneous grouping opportunities Knowledge and Skill Standards in Gifted Education for All Teachers Pre-K-Grade 12 Gifted Programming Standards Gifted Programming Glossary of Terms
		Students with 504 Plan
		Teachers are responsible for implementing designated services and strategies identified on a student's 504 Plan.
At Risk Learners / Differentiation Strategies		
Use of Collaboration of Various Activities Games and Tournaments Group Investigations Multiple Texts Homogeneous Groupin	Independent Research & Projects Project-Based Learning Varied Supplemental Activities Graphic Organizers Choice of Activities Think-Pair-Share by readiness or interest	Jigsaw Flexible Groupins Homework Options Open-Ended Activities Work Alone/Together

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