Subject: Chemistry Grade: 10+11

| Standard(s) | Unit/Topic | Essential Skills: What do students absolutely need for the next level? | Resources Used | Assessment |
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| MST Standard 1, 2, + 4 | Unit 1: Measurement | 1. Express numbers in scientific notation.<br>2. Perform simple operations on numbers expressed in scientific notation with a scientific calculator.<br>3. Identify the basic units of The International System of Units.<br>4. Identify the common metric units used in chemistry.<br>5. Identify the most used metric prefixes and their numerical equivalents.<br>6. Perform conversions between common units and prefixes.<br>7. Define the terms accuracy and precision.<br>8. Determine significant digits (figures) for calculations.<br>9. Apply the rules for adding, subtracting, multiplying and dividing measurements. | Prentice Hall Chemistry textbook, Density Lab, measurement demonstrations, YouTube videos | Homework, Quizzes, Lab write-ups, Exams |

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| | | 10. Define mass, volume, and density.<br>11. Perform density calculations isolating each variable.<br>12. Define and use percent error for calculations and measurements. | | |
| | Unit 2: Matter and Atomic Structure | 1. What is matter?<br>2. What are the phases of matter? How can the three phases be distinguished from one another?<br>3. What are physical properties? List several common physical properties. What are physical changes? Give examples of physical changes.<br>4. What are chemical properties? List several chemical properties. What are chemical changes? Give some examples of chemical changes.<br>5. What are the two types of mixture? How are mixtures separated?<br>6. What is an element?<br>7. What is a compound? | Prentice Hall Chemistry textbook, Physical vs. Chemical Properties Lab, Classification of Matter Lab, Average Atomic Mass Lab | Homework, Quizzes, Lab write-ups, Exams |

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| | | 8. What is an atom? What are subatomic particles?<br>9. What is Dalton's atomic theory?<br>10. What is Rutherford's Gold Foil Experiment? What conclusions did Rutherford come to?<br>11. What is the atomic number? How does the atomic number relate to subatomic particles?<br>12. What is the mass number? How do we use the mass number to determine the number of neutrons?<br>13. What are isotopes?<br>14. What is an atomic mass unit?<br>15. How is the atomic mass of an element determined? | | |
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| **Standard(s)** | **Unit/Topic** | **Essential Skills:** | **Resources Used** | **Assessment** |

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| | | What do students absolutely need for the next level? | | |
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| MST Standard 1, 2, + 4 | Unit 3: Atomic Structure | 1. Describe the Bohr model of the atom. Describe an energy level (orbital)?<br>2. Describe the wave (quantum)-mechanical model of the atom.<br>3. Differentiate between the ground state and excited state of an atom.<br>4. Explain what causes the atomic emission spectra.<br>5. Describe how Mendeleev organized his periodic table.<br>6. Describe how the modern periodic table is organized.<br>7. Identify the three broad classes (types) of elements and their properties. | Prentice Hall Chemistry textbook, Flame Test Lab, Bohr Models Lab, Graphing Periodic Trends Lab | Homework, Quizzes, Lab write-ups, Exams |

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| | | 8. Describe the type of information can be displayed in a periodic table.<br>9. Classified elements based on their electron configurations.<br>10. Identify the atomic radius of an element.<br>11. Describe periodic trends.<br>12. Explain how ions form.<br>13. Differentiate the size of an atom and the ion that it can form.<br>14. Describe first ionization energy.<br>15. Describe electronegativity.<br>16. Identify the trends among the elements for first ionization, ionic size, and electronegativity. | | |

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| | Unit 4: Nuclear Chemistry | 1. Explain how an unstable nucleus releases energy.<br>2. Describe the three main types of nuclear reaction.<br>3. Describe the type of decay a radioisotope undergoes.<br>4. Solve problems that involve half-life.<br>5. Identify the two ways transmutation can occur.<br>6. Describe what happens in a nuclear chain reaction.<br>7. Distinguish fission reactions from fusion reactions.<br>8. Describe how radioisotopes are used in medicine. | Prentice Hall Chemistry textbook, YouTube videos, Half-life lab | |