Ingham Intermediate School District	Science Personal Curriculum Plan Chemistry	Date:

1. STUDENT INFORMATION
   Name: DOB: Current Grade:

2. MMC CREDIT AUDIT- (*Check which credits have already been earned & enter date of completion, ___credits are required.)*
   ☐ Biology Completed: ☐ Chemistry Completed: ☐ Physics Completed: ☐ ___ Additional Science Credit Completed:

3. MMC SCIENCE CONTENT MODIFICATION OPTION
   - Modify content expectations in Science--only available to students eligible for special education with an IEP

4. CONTENT MODIFICATION REQUESTED- *(Check & date when modification was completed.)*
   ☐ Chemistry
   Completed:

5. RATIONALE FOR MODIFICATION: _____

6. PERSONAL CURRICULUM – *Complete only for students with an IEP who require modified content expectations*. Below are suggested essential learning targets in this content area for students. They are considered appropriate for most students. The Personal Curriculum allows for the use of these for students with an IEP.

#	Essential Learning Targets – Chemistry
	Inquiry, reflection, and social implications – Students will understand the nature of science and demonstrate an ability to practice scientific reasoning by applying it to the design, execution, and evaluation of scientific investigations. Students will demonstrate their understanding that scientific knowledge is gathered through various forms of direct and indirect observations and the testing of this information by methods including, but not limited to, experimentation. They will use their scientific knowledge to assess the costs, risks, and benefits of technological systems as they make personal choices and participate in public policy decisions. These insights will help them analyze the role science plays in society, technology, and potential career opportunities.
1.	Generate new questions that can be investigated in the laboratory or field.
2.	Evaluate the uncertainties or validity of scientific conclusions using an understanding of sources of measurement error, the challenges of controlling variables, accuracy of data analysis, logic of argument, logic of experimental design, and/or the dependence on underlying assumptions.
3.	Conduct scientific investigations using appropriate tools and techniques (e.g. selecting an instrument that measures the desired quantity – length, volume, weight, time interval, temperature – with the appropriate level of precision).
4.	Identify patterns in data and relate them to theoretical models.
5.	Describe a reason for a given conclusion using evidence from an investigation.
6.	Critique whether or not specific questions can be answered through scientific investigations.
7.	Identify and critique arguments about personal or societal issues based on scientific evidence.
8.	Develop an understanding of a scientific concept by accessing information from multiple sources. Evaluate the scientific accuracy and significance of the information.

Instructional methods and assessments should be matched to learner needs. These essential learning targets will be assessed using multiple methods with an aggregate proficiency level of 60% or higher.

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Student:_____ Content Area: Chemistry (Cont.)

6. PERSONAL CURRICULUM – *Complete only for students with an IEP who require modified content expectations.* List or review the essential learning targets for the student in the specified content area above.	
#	Essential Learning Targets
9.	Evaluate scientific explanations in a peer review process or discussion format.
10.	Evaluate the future career and occupational prospects of science fields.
	Forms of Energy
11.	Describe conduction in terms of molecules bumping into each other to transfer energy. Explain why there is better conduction in solids and liquids than gases.
12.	Describe the various states of matter in terms of the motion and arrangement of the molecules (atoms) making up the substance.
	Energy Transfer and Conservation
13.	Describe how heat is conducted in a solid.
14.	Describe melting on a molecular level.
15.	Use the terms endothermic and exothermic correctly to describe chemical reactions in the laboratory.
16.	Explain why chemical reactions will either release or absorb energy.
	Properties of Matter
17.	Name simple binary compounds using their formulae.
18.	Given the name, write the formula of simple binary compounds.
19.	Recognize that substances that are solid at room temperature have stronger attractive forces than liquids at room temperature, which have stronger attractive forces than gases at room temperature.
20.	Recognize that solids have a more ordered, regular arrangement of their particles than liquids and that liquids are more ordered than gases.
21.	Identify the location, relative mass, and charge for electrons, protons, and neutrons.
22..	Describe the atom as mostly empty space with an extremely small, dense nucleus consisting of the protons and neutrons and an electron cloud surrounding the nucleus.
23.	Recognize that protons repel each other and that a strong force needs to be present to keep the nucleus intact.
24.	Give the number of electrons and protons present if the fluoride ion has a -1 charge.
25.	Identify elements with similar chemical and physical properties using the periodic table.
26.	List the number of protons, neutrons, and electrons for any given ion or isotope.
27.	Recognize that an element always contains the same number of protons.

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Student:_____ Content Area: Chemistry (Cont.)

	6. PERSONAL CURRICULUM – *Complete only for students with an IEP who require modified content expectations.* List or review the essential learning targets for the student in the specified content area above.
#	Essential Learning Targets
	Changes in Matter
28.	Balance simple chemical equations applying the conservation of matter.
29.	Distinguish between chemical and physical changes in terms of the properties of the reactants and products.
30.	Draw pictures to distinguish the relationships between atoms in physical and chemical changes.
31.	Compare the energy required to raise the temperature of one gram of aluminum and one gram of water the same number of degrees.
32.	Measure, plot, and interpret the graph of the temperature versus time of an ice-water mixture, under slow heating, through melting and boiling.
33.	Predict if the bonding between two atoms of different elements will be primarily ionic or covalent.
34.	Predict the formula for binary compounds of main group elements.
35.	Recognize formulas for common inorganic acids, carboxylic acids, and bases formed from families I and II.
36.	Predict products of an acid-based neutralization.
37.	Describe tests that can be used to distinguish an acid from a base.
38.	Classify various solutions as acidic or basic, given their pH.
39.	Explain why lakes with limestone or calcium carbonate experience less adverse effects from acid rain than lakes with granite beds.
40.	Draw structural formulas for up to ten carbon chains of simple hydrocarbons.
41.	Draw isomers for simple hydrocarbons.
42.	Recognize that proteins, starches, and other large biological molecules are polymers.

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