Course: Chemistry I
Teacher: Brad Cast, Pam Diaz, Katie Sloan
Year: IB MYP Year 5 (Grade 10)

Course Description: Chemistry is an entry level, laboratory-oriented course. It is designed to prepare students to take IB Chemistry, IB Physics and to take advanced life science courses in the junior and senior years. Chemistry I stresses the following concepts: science as inquiry, chemical nomenclature, moles concepts, reaction types, stoichmentry, kinetics, periodic law, and acid base chemistry.

Chemistry MYP emphasizes the role of inquiry and encourages the development of scientific inquiry skills. It provides students with opportunities to explore the role of science in historical and contemporary contexts. Throughout the course, the five areas of interaction are used as a means to broaden the student experience. The areas of interaction form the basis of the MYP and contribute to an education resulting in global awareness, international understanding and an appreciation of cultural diversity.

Our aims are: The aims of the teaching and study of sciences are to encourage and enable students to:
• develop inquiring minds and curiosity about science and the natural world
• acquire knowledge, conceptual understanding and skills to solve problems and make informed decisions in scientific and other contexts
• develop skills of scientific inquiry to design and carry out scientific investigations and evaluate scientific evidence to draw conclusions
• communicate scientific ideas, arguments and practical experiences accurately in a variety of ways
• think analytically, critically and creatively to solve problems, judge arguments and make decisions in scientific and other contexts
• appreciate the benefits and limitations of science and its application in technological developments
• understand the international nature of science and the interdependence of science, technology and society, including the benefits, limitations and implications imposed by social, economic, political, environmental, cultural and ethical factors
• demonstrate attitudes and develop values of honesty and respect for themselves, others, and their shared environment

You will begin to embody the IB Learner Profile as you display the following qualities: inquirer, knowledgeable, thinker, communicator, principled, open-minded, caring, risk-taker, balanced and reflective.

Chemistry is divided into five key units. The units represent a key concept or theme in chemistry; each unit has one or more guiding questions and presents one of the Areas of Interaction (AOI). There is also an MYP assessment associated with each unit. The following is a summary of each of the units:

Unit Title	AOI	Question	Topic	Assessment
What is Chemistry?	Approaches to learning	What is Chemistry? It is used by almost every other branch of science. Why Chemistry? To gain an understanding of the chemical composition and nature of matter is essential to the scientific study of the universe and its life.	Students are engaged in a variety of problem solving activities both in the laboratory setting and in the classroom setting. Students are teamed with other students to perform laboratory exercises. This cooperative learning model is expanded when data collected in small groups is examined collectively by the entire class. Students learn study skills as they master the material covered.	Self designed lab with a focus on particular elements such as research
Chemistry and human interaction	Health and social	Why use a variety of atomic models from Democritus through the modern concept to show how man's ideas about the atom have developed? How will the disposal of waste chemicals affect human health? How does the examination of a variety of nuclear reactions and the energy that is released in nuclear decay and in fusion and fission reactions affect human health?	Students become aware of responsible disposal of chemicals when concern for proper disposal is modeled during chemical laboratory activities. Connections are made between the chemicals they are using at school and the chemicals they have in their homes. Conservation of energy and resources begins on an individual and community level.	Self designed lab with formal lab report- MgO Lab Questions - Final
The Mole	Human Ingenuity	How will students benefit from man's creativity and problem solving in science as projected in their study of theories and models developed over the years by scientists such as Mendeleev, Dalton, LeChatelier, Boyle, Charles, Bohr, and others?	Study and use the tools chemists use to communicate the results of chemical reactions. Use the different classification systems for naming inorganic and organic compounds. Express the different types or chemical reactions in balanced equations meeting the requirements of the Law of Conservation of Matter and Energy. Use stoichiometry to derive the quantitative information that is represented in balanced chemical formulas and equations.	Students learn of their own creativity when they complete labs of their own design. Students are given the opportunity to be creative in projects such as the stoichiometric torpedo project and the element and atom projects.

Change Through Time	Environment	As students learn about the effects of various chemicals and their disposal they are made aware of man's obligation to preserving the environment. During the nuclear unit, students are confronted with the aspects of nuclear waste disposal. In the unit on acids and bases students become aware of the production of acid rain. The unit on gases presents an opportunity to address greenhouse gases and global warming.	Use the different classification systems for naming inorganic and organic compounds. Express the different types or chemical reactions in balanced equations meeting the requirements of the Law of Conservation of Matter and Energy. Use stoichiometry to derive the quantitative information that is represented in balanced chemical formulas and equations.	Written assignments from the text Laboratory with lab report Notebook
Ecology	Health and social; Community Service; Environment	The course helps students connect the chemical reactions they are studying to the presence of those reactions in their bodies. For example the maintenance of homeostasis through the bicarbonate buffer system is addressed during the study of acids and bases.	Analyze the composition and properties of aqueous solutions. Solve problems concerning the concentration of aqueous solutions. Study the reactions of acids and bases as aqueous solutions. Explain the formation of acid rain and its affect on the environment.	Essay (full)

At the end of the year, the following IB MYP specific objectives will be covered:

A One world

- describe and discuss ways in which science is applied and used to solve local and global problems
- describe and evaluate the benefits and limitations of science and scientific applications as well as their effect on life and society
- discuss how science and technology are interdependent and assist each other in the development of knowledge and technological applications
- discuss how science and its applications interact with social, economic, political, environmental, cultural and ethical factors.

B Communication in science

- communicate scientific information using a range of scientific language
- communicate scientific information using appropriate modes of communication
- present scientific information in a variety of formats, acknowledging sources as appropriate
- demonstrate honesty when handling data and information, acknowledging sources as appropriate
- use where appropriate a range of information and communication technology applications to access, process and communicate scientific information.

C Knowledge and understanding of science

- recognize and recall scientific information

- explain and apply scientific information to solve problems in familiar and unfamiliar situations
- analyze scientific information by identifying components, relationships and patterns, both in experimental data and ideas
- discuss and evaluate scientific information from different sources (Internet, newspaper articles, television, scientific texts and publications) and assess its credibility.

D Scientific inquiry

- define the problem or research question to be tested by a scientific investigation
- formulate a hypothesis and explain it using logical scientific reasoning
- design scientific investigations that include variables and controls, material/equipment needed, a method to be followed, data to be collected and suggestions for its analysis evaluate the method, commenting on its reliability and/or validity
- suggest improvements to the method.

E Processing data

- collect and record data using appropriate units of measurement
- organize and transform data into numerical and diagrammatic forms, including mathematical calculations and visual representation (tables, graphs and charts)
- present data in a variety of ways using appropriate communication modes and conventions (units of measurement)
- analyze and interpret data by identifying trends, patterns and relationships
- draw conclusions supported by scientific explanations and a reasoned interpretation of the analysis of the data.

F Attitudes in science

- carry out scientific investigations using materials and techniques safely and skillfully
- work effectively as members of a team, collaborating, acknowledging and supporting others as well as ensuring a safe working environment
- show respect for themselves and others, and deal responsibly with the living and non-living environment.

Assessment is the term used to measure the students' demonstrations of learning:
There will be summative assessment projects and tests to show what they have learned. These will be assessed using the IB MYP criteria. During the year each of these criteria will be measured at least twice, not necessarily at the same time. Because this is criterion based assessment you are not measured against others – it is not normative. All work will be compiled in a **portfolio**.

Internal Grading Policy: BTW uses a four point grading scale except in the case of weighted classes.

Unweighted	**Weighted**
A= 4 points	A=5 points status. The class is denoted on the transcript
B=3 points	B=4 points with an asterisk (*) preceding the class title.
C=2 points	C=3 points Rank is determined on the weighted grade
D=1 point	D= 1 point average at the end of the seventh
F=0 points	F= 0 points