**2021-22 IBDP Subject Overview**

**Dates Subject to Change**

**Subject Area: \_\_\_Chemistry\_\_\_DP Level: \_\_Year 1\_\_**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Dates** | 09/08 – 09/30 | **09/30 – 10/29** | 11/03 – 01/25 | **01/27 – 02/28** | **03/02 – 04/01** | **04/12 – 05/12** | **05/16 – 06/16** |
| Unit Title | Measurement and Data Processing | Stoichiometry | Thermo | Kinetics | Equilibrium | Acid/Base | Redox |
| Topics | 11.1, 11.2 | 1.1, 1.2, 1.3 | 5.1, 5.2, 5.3, 15.1, 15.3 | 6.1 | 7.1 | 8.1 – 8.5 | 9.1, 9.2, 19.1 |
| Formal **TOK Connection** | Science has been described as a self-correcting and communal public endeavor. To what extent do these characteristics also apply to other areas of knowledge? | The discovery of Oxygen invalidated the phlogiston theory. This was a paradigm shift. Is this how scientific knowledge progresses? | In TOK there are eight ways of knowing. When analyzing and appraising experimental limitations and making theoretical assumptions, which of the ways of knowing are we utilizing? | The Kelvin scale gives a natural measure of the kinetic energy of a gas and is independent of physical properties. The Celsius scale has an arbitrary “0” point and is based on the properties of water. Could Anders Celsius have used another substance to base the temperature scale on? | Fritz Haber’s process for ammonia production had a significant and long-lasting effect on food production. He also worked with the German military in the manufacture of explosives and chlorine gas during WWI. Should scientists be held responsible for the way in which society utilizes their discoveries? | We use our senses to perceive the world and develop understanding. Technology allows us to extend our senses, revealing new knowledge and experiences that may challenge the boundaries of our current understanding. How does this increase in sensory perception affect our view of the world? | Chemistry has developed a systematic language that has resulted in older names becoming obsolete. What has been lost and gained in this process? |
| **IB Objectives** | Aim 7 | Aim 4  Aim 10 | Aim 2, 3  Aim 9 | Aim 4  Aim 10 | Aim 5  Aim 8 | Aim 3  Aim 6  Aim 8 | Aim 3  Aim 6 |
| **International Focus** | Science and math have a “universal” language | Scientists from different counties often work together or independently to advance scientific knowledge. | Scientists from different counties often work together or independently to advance scientific knowledge. | Science and math have a “universal” language | Science and math have a “universal” language | Some manufacturing processes have ramifications across state and country borders | Math is an integral part of chemistry. Math, as chemistry, has its own universally recognized language. |
| **Unit Question** | How do we communicate the certainty of our facts? | How important is it to know where you are going, and where you are starting? | Should we focus on finding new sources, or conserving older sources of energy? | How do we measure and report process changes? | How important is Balance in every area of life? | What is the impact humans have on the environment? | How important are alternate sources of energy for society? |
| **Assessment Task/Rubric Used** | Summative exam  Lab - measurements | Summative exam  Lab – NaHCO3 decomp | Summative exam  Lab – specific heat of an unknown metal, calorimetry lab | Summative exam  Lab | Summative exam  Lab | Summative exam  Lab - Titration | Summative exam  Lab |
| **Approaches to Learning Skill taught** | Information literacy skills: Collect and Verify Data | Critical thinking skills: Identify problems and develop aims, goals, and objectives | Critical thinking skills: Identify and define authentic  problems and significant  questions for investigation | Organization skills: Select and use applications  effectively and productively | Transfer Skills: Apply skills and knowledge in  unfamiliar situations | Critical thinking skills: Break down large concepts  and projects into component  parts and combine parts logically  as appropriate | Critical thinking skills: Troubleshoot systems and  applications |
| **Learner Profile Focus** | Principled | Thinker | Risk-Taker | Inquirer | Principled | Balanced | Reflective |
| **CAS support** | Creativity  Students will be able to explain the limitations of equipment in chemistry experiments. | Activity | Creativity  Students will have to devise their own calorimeters. | Activity | Service  Students will work together | Activity | Creativity |