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| AICE Chemistry 1 | | **Standards-Based Education Priority Standards** |
| **11th Grade** | | |
| *Introductory Physical Chemistry* | | |
| PS1 | Stoichiometry: Demonstrate an understanding of stoichiometry by carrying out stoichiometric calculations | |
| PS2 | Atomic Structure: Using the type, number, and distribution of the fundamental particles which make up an atom, determine their impact on atomic properties | |
| PS3 | Chemical Bonding: Using the different ways by which chemical bonding occurs, explain the effect this can have on physical properties | |
| PS4 | States of Matter: Carry out quantitative calculations on volumes of gases using PV=nRt. Describe, using the kinetic-molecular model, liquids and solids. | |
| *Advanced Physical Chemistry* | | |
| PS5 | Chemical Energetics: Enthalpy changes and entropy changes accompany chemical reactions. | |
| PS6 | Redox Reactions: Calculate oxidation numbers in compounds and ions, describe redox processes in terms of electron transfer and oxidation number, and use changes in oxidation numbers to help balance equations | |
| PS7 | Equilibria: Explain that chemical reactions are reversible, and involve an equilibrium process. Identify and explain changes in factors that can affect an equilibrium. | |
| PS8 | Reaction Kinetics: Explain qualitatively in terms of concentration, changes on the rate of reaction as affected by temperature and concentration, using the term activation energy | |
| *Inorganic Chemistry* | | |
| PS9 | Chemical Periodicity: Describe the periodicity of chemical and physical properties of elements in period 3 | |
| PS10 | Group 2: Describe the similarities and trends in the properties of the group 2 metals and their compounds | |
| PS11 | Group 17: Describe the physical and chemical properties of the elements in group 17 along with their hydrides, and the reactions of chlorine with aqueous sodium hydroxde | |
| PS12 | Nitrogen and Sulfur: Describe the uses of nitrogen and sulfur in the Haber and Contact processes, and describe the structure of nitrogen and explain it’s reactivity | |
| *Introductory Organic Chemistry* | | |
| PS13 | Introduction to Organic Chemistry: apply naming conventions of organic molecules, organic reaction terminology, and be able to draw organic molecules | |
| PS14 | Hydrocarbons: name and draw structures of saturated and unsaturated hydrocarbons, explain how they can be synthesized and also what substances that can be synthesized using them. | |
| PS15 | Halogen derivatives of hydrocarbons: Explain the reactivity of halogenoalkanes using bond length and strength, and write mechanisms for SN1 and SN2 using curly arrows. | |
| *Advanced Organic Chemistry* | | |
| PS16 | Hydroxy Compounds: Explain reactions that can be used to synthesize alcohols, as well as what alcohols can be used to synthesize. Identify methods of identifying alcohols qualitatively. | |
| PS17 | Carbonyl Compounds: Explain reactions that can be used to synthesize carbonyl compounds, as well as what they can be used to synthesize. Identify methods of identifying carbonyl compounds qualitatively. | |
| PS18 | Carboxylic Acids and Derivatives: Explain reactions that can be used to synthesize carboxylic acids and esters, as well as what they each can be used to synthesize. | |
| *Analytical Techniques and Scientific Literacy* | | |
| PS19 | Analytical Techniques: Analyze an infrared spectrum of a simple molecule to identify functional groups using the Data Booklet. | |
| PS20 | Advanced Practical Skills: Carry out lab experiments to collect, record, and analyze data in a safe manner. | |
| PS21 | 11-12.RST.1 Cite specific textual evidence to support analysis of science and technical texts, attending to important distinctions the author makes and to any gaps or inconsistencies in the account. | |
| PS22 | 11-12.RST.2 Determine the central ideas or conclusions of a text; summarize complex concepts, processes, or information presented in a text by paraphrasing them in simpler but still accurate terms. | |
| PS23 | 11-12.RST.3: Follow precisely a complex multistep procedure when carrying out experiments, taking measurements, or performing technical tasks; analyze the specific results based on explanations in the text. | |
| PS24 | 11-12.WHST.1 Write arguments focused on discipline-specific content. a. Introduce precise, knowledgeable claim(s), establish the significance of the claim(s), distinguish the claim(s) from alternate or opposing claims, and create an organization that logically sequences the claim(s), counterclaims, reasons, and evidence. b. Develop claim(s) and counterclaims fairly and thoroughly, supplying the most relevant data and Revised 08/25/2014 Page 4 evidence for each while pointing out the strengths and limitations of both claim(s) and counterclaims in a discipline-appropriate form that anticipates the audience’s knowledge level, concerns, values, and possible biases. c. Use words, phrases, and clauses as well as varied syntax to link the major sections of the text, create cohesion, and clarify the relationships between claim(s) and reasons, between reasons and evidence, and between claim(s) and counterclaims. d. Establish and maintain a formal style and objective tone while attending to the norms and conventions of the discipline in which they are writing. e. Provide a concluding statement or section that follows from or supports the argument presented. | |
| PS25 | 11-12.WHST.4 Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience. | |
| PS26 | 11-12.WHST.8 Gather relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assess the strengths and limitations of each source in terms of the specific task, purpose, and audience; integrate information into the text selectively to maintain the flow of ideas, avoiding plagiarism and overreliance on any one source and following a standard format for citation. | |