IMMACULATE CONCEPTION HIGH

EASTER TERM PLAN'

GRADE 12

CHEMISTRY

2021-2022

JANUARY 8 – MARCH 27

DATE	WEEKS	THEORY	LABS/COURSEWORKS/ ASSIGNMENTS
JANUARY			
January 8-12	**WEEK 1**	**ACID-BASE EQUILIBRIUM CONT'D** • Describe the changes in pH during acid/base titrations; • Explain what is meant by the pH range of indicator; and, • State the basis for the selection of acid/base indicator for use in titrations. **Use experimental information to bolster grasp of concept**	
January 15-19	**WEEK 2**	**BUFFERS and pH** • Define the term 'buffer solution'; • Explain how buffer solutions control pH • Calculate the pH of buffer solutions from appropriate data; • Calculate the pH of buffer solutions from appropriate data; and, • Discuss the importance of buffers in biological systems and in industrial processes. **SOLUBILITY PRODUCT** • Define the term solubility product, Ksp	

		• Explain the principles underlying solubility product and the common ion effect; • Perform calculations involving solubility product; • Relate the solubility product principle to the selective precipitation of substances. **Use experimental information to bolster grasp of concept**	
January 22-26	**WEEK 3**	**REDOX EQUILIBRIA** • define the terms standard electrode potential and standard cell potential • describe the standard • hydrogen electrode • describe methods used to measure the standard electrode potentials • calculate standard cell potentials from standard electrode potentials of two half cells • use standard electrode potentials of cells to determine the direction of electron flow; and,	**Lab – Acid Bases, Indicators and pH** **IP Final PD draft due**
January 28 – February 2	**WEEK 4**	**REDOX EQUILIBRIA CONT'D** • to determine the feasibility of a reaction • predict how the value of an electrode potential varies with concentration; and, apply the principles of redox processes to energy storage devices **ATOMIC STRUCTURE** • Dalton's theory - (pay special attention to postulates) • Describe the structure of the atom (relative masses, charges, etc.)	**Lab - Solubility Product**

		• Definition of terms - mass number, isotopes, relative atomic and isotopic masses. • Explain the phenomenon of radioactivity. Write equations representing nuclear reactions involving alpha, beta and gamma emissions. **(mention positrons even though not required)** • Cite the uses and disposal of radioisotopes. Calculations on the relative atomic mass of an element Atomic emission spectra ($E=h\mu$) • Describe atomic orbital • Describe s, p, d, f orbitals	
FEBRUARY			
February 5-9	**WEEK 5**	**ATOMIC STRUCTURE CONT'D** • Determine electronic configuration of atoms and ions in terms of s,p and d orbitals • factors that influence first ionization energy • Ionization energy and evidence of sub shells • electronic configuration derived from ionization energies data	
February 12-14 WEEK 6 MID TERM BREAK Students will perform IP experiments on Monday, February 12, 2024			
February 15-16 WEEK 6 STANDARDISED TEST			
February 19-23	**WEEK 7**	**FORCES OF ATTRACTION**	

		• State the various forces of attraction, • Relationship between forces of attraction and states of matter; • relate physical properties of matter to differences in strength of forces of attraction; • explain the formation of the following: (a) ionic bonds; (b) covalent bonds; and, (c) metallic bonds. (Electronegativity and polarity of bonds should be included - use Phet simulation) • describe co-ordinate bonding	
February 26 – March 1	**Week 8**	**Forces of Attraction** • Describe the origin of intermolecular forces; Refer to hydrogen bonding; Van der Waals forces, permanent dipole. • Predict the shapes of, and bond angles in simple molecules and ions; • Explain the shapes and bond angles of simple organic compounds; • predict the shapes and bond angles of molecules similar to • Explain the shapes and bond angles of simple organic compounds; • predict the shapes and bond angles of molecules similar to ethane; and, • describe qualitatively the lattice structure crystalline solids and their relation to physical properties.	**Lab – Forces of Attraction**

MARCH			
March 4-8	**Week 9**	**TRANSITIONAL METALs** *Objectives 1-10 (see cape syllabus page 32-33) Transitional metal*	
March 11-22	**WEEK 10-11**	**MOCK EXAMS – everything up to Forces of Attraction**	
March 25-27	**Week 12**	**TRANSITIONAL METALS CONT'D** **IDENTIFICATION OF CATIONS/ANIONS - 4 sessions** ● **Identify cations:** K+, Na^{+}, Ca^{2+} Ba^{2+} Cu^{2+} by their flame tests ● identify cations Mg^{2+} (aq), Al^{3+}(aq), Ca^{2+}(aq), Cr^{3+}(aq), Mn^{2+} (aq), Fe^{2+}(aq), Fe^{3+} (aq), Cu^{2+}(aq), Zn^{2+}(aq), Ba^{2+} (aq), Pb^{2+}(aq), NH_4^{+}(aq); ● explain the principles upon which the reactions of the compounds above are based and write the corresponding ionic equations ● **identify anions:** $CO3^{2}$-, $NO3^{-}$, $SO4^{2-}$, $SO3^{2}$(aq), Cl-, Br-, l-, CrO4 and write ionic equations to correspond to reactions .	
March 27 **Last days of school term** **"Mop up" outstanding topic, assignment, or labs**			