DINTHILL TECHNICAL HIGH SCHOOL

SYLLABUS OUTLINE

GRADE 10

DEPARTMENT: NATURAL SCIENCE **YEAR:** 2026 - 2027

COURSE OF STUDY: CHEMISTRY

PRE-REQUISITE: INTRODUCTORY CHEMISTRY

COURSE DESCRIPTION:

TERM ONE

DURATION	TOPIC	OBJECTIVES	ACTIVITY/ASSESSMENT
2 WEEKS (Sept 7 – 18, 2026)	**CHEMICAL BONDING:** • **Ionic bond** • **Covalent bond** • **Metallic bond**	1. Explain the formation of ionic and covalent bonds; 2. Predict the likelihood of an atom forming an ionic or a covalent bond based on atomic structure; 3. Write formulae to represent ions, molecules, and formula units; 4. Explain metallic bonding;	**SBA Activity** **Graded classwork and test (During September)**
DURATION	**TOPIC**	**OBJECTIVES**	**ACTIVITY/ASSESSMENT**
2 WEEKS (Sept 21 – Oct 2, 2026)	**STRUCTURE OF SOLIDS**	1. Describe ionic crystals, simple molecular crystals, and giant molecular crystals;	1. Make models of sodium chloride, graphite, and diamond.

		2. Distinguish between ionic and molecular solids; 3. Relate the structure of sodium chloride, diamond, and graphite to their properties and uses; 4. Explain the term allotropy.	**(Group work to be graded)** **(End of Sept)** **Graded Class work**
4 WEEKS **(Oct 5 - 30, 2026)** NB: minus days for mid-term and 6 weeks test	**ACIDS, BASES, AND SALTS**	1. Recall the definition of the following terms: acid, base, alkali, strong and weak acid/alkali; 2. Define acid anhydride, salt, oxides (acidic, basic, amphoteric, and neutral) 3. Relate acidity and alkalinity to the pH scale; 4. Distinguish between the strength of acids and alkalis based on their completeness of ionization; 5. Investigate the reactions of non-oxidizing acids (e.g., HCl, H_2SO_4); 6. Distinguish between acid salts and normal salts, citing examples; 7. Investigate the reaction of bases with ammonium salts; 8. Identify appropriate methods of salt preparation based on the solubility of the salt; 9. List the uses and dangers of selected salts.	1. Demonstrate reactions of acids with: - *metals, carbonates, hydrogen carbonates, bases.* 2. Prepare insoluble salts by ionic precipitation; 3. Prepare soluble salts by replacing the hydrogen ions of an acid directly or indirectly with a metal or ammonium radical. **(SBA Activities to be done as outlined above)** Class work Homework Unit test 6-weeks test

DURATION	TOPIC	OBJECTIVES	ACTIVITY/ASSESSMENT
2 WEEKS (Nov 2 - 13, 2026)	**TYPES OF CHEMICAL REACTIONS**	1. Explain the seven main types of chemical reactions, namely: Synthesis, Decomposition, Single displacement, Ionic precipitation, Oxidation-reduction, and Neutralization; 2. Give examples of the main types of chemical reactions; 3. Write balanced equations representing the different types of chemical reactions; 4. Investigate the action of common oxidizing and reducing substances in everyday activities.	**Class work:** 1. Students will be given five equations for them to balance and then classify as synthesis, decomposition, single displacement, ionic precipitation, or neutralization.
2 WEEKS (Nov 16 - 27, 2026)	**OXIDATION/ REDUCTION REACTIONS (Redox Reactions)**	1. Define oxidation and reduction; 2. Deduce oxidation number from formulae; 3. Identify oxidation and reduction reactions, including reactions at electrodes; 4. Distinguish between oxidizing and reducing agents; 5. Perform tests for oxidizing and reducing agents.	**SBA ACTIVITIES** Tests for Oxidizing and Reducing Agents.
	REVISION ACTIVITIES		
2 WEEKS (Dec 2026)	**END OF TERM EXAMS**		

TERM TWO (Easter Term)			
DURATION	**TOPIC**	**OBJECTIVES**	**ACTIVITY/ASSESSMENT**
4 WEEKS (Jan 4 - 29, 2027)	**MOLE CONCEPT** • **Definition of terms** • **Molar Conversions** • **Avogadro's Law** • **Percentage composition** • **Standard Solutions**	1. Define mole and molar mass; 2. State the Law of conservation of matter; 3. Perform calculations involving the mole; 4. State and apply Avogadro's Law; 5. Write balanced equations; 6. Apply the mole concept to equations, both ionic and molecular; 7. Define the term standard solution to include molar and mass concentration.	Questions involving conversions from moles to mass; mass to moles; percentage composition by mass; moles to number of particles; number of particles to moles. Class work Homework Unit Test SBA Activities
DURATION	**TOPIC**	**OBJECTIVES**	**ACTIVITY/ASSESSMENT**
4 WEEKS (Feb 1 – 26, 2027)	**ELECTROCHEMISTRY- Qualitative electrolysis** • **Conductors and nonconductors** • **Metallic and electrolytic conduction**	1. Conduct investigations leading to the classification of substances as conductors and non-conductors; 2. Distinguish between metallic and electrolytic conduction; 3. Classify electrolytes as strong or weak based on their conductivity; 4. Define the terms electrolysis, cathode, anode, cation, and anion;	Students will be given a list of substances to classify as conductors and non-conductors. List three differences between metallic and electrolytic conduction. Give two examples of a strong electrolytes and two weak electrolytes.

	• **Strong and weak electrolytes** • **Electrolysis** • **Factors affecting the discharge of ions during electrolysis** • **Electrolysis of certain electrolytes – molten and aqueous solutions**	5. Identify ions present in electrolytes; 6. Predict the electrodes to which ions will drift; 7. Predict chemical reactions making use of the electrochemical series; 8. Discuss the electrolysis of certain substances; 9. Describe industrial applications of electrolysis.	Describe the electrolysis of named electrolytes. Conduct practical activities on electrolysis (to be used as a School-Based Assessment). To be done as an assignment.
1 WEEK (Mar 1 - 5, 2027)	**QUANTITATIVE ELECTROLYSIS**	1. Define the Faraday constant; 2. Calculate the masses and volumes of substances liberated during electrolysis.	Students will be given examination-style questions involving the Faraday constant.
DURATION	**TOPIC**	**OBJECTIVES**	**ACTIVITY/ASSESSMENT**
3 WEEKS (Mar 8 - 26, 2027)	**RATES OF REACTIONS**	1. Define rate of reaction; 2. Identify the factors that affect the rate of reaction; 3. Predict the effect of factors on the rate of reaction from given data; 4. Interpret the graphical representation of data obtained in studying rates of reaction.	Class work, Homework Quiz SBA activities
(Mar 25 – Apr 2, 2027)	**EASTER HOLIDAY**		

3 WEEKS (Apr 5 – 23, 2027)	**ENERGETICS**	1. Distinguish between exothermic and endothermic reactions; 2. Draw energy profile diagrams to illustrate endothermic and exothermic changes; 3. Calculate energy changes from experiments or experimental data.	Class work Homework Test SBA Activities
DURATION	**TOPIC**	**OBJECTIVES**	**ACTIVITY/ASSESSMENT**
2 WEEKS (Apr 26 - May 7, 2027)	**PLANNING and DESIGN (Proposal Writing)**	1. Explain terms in the experimental process; 2. Outline the format of the investigative project; 3. Identify scenarios/ problems and design a suitable method to solve the problem.	SBA Activities Proposal Writing
3 WEEKS (May 10 – 28, 2027)			
2 WEEKS (May 31 - Jun 11, 2027)	**REVISION ACTIVITIES**		

THE END!!!