

**GRADE 13**  
**CHEMISTRY**  
**CHRISTMAS TERM PLAN**  
**SEPTEMBER 4 - DECEMBER 19**  
**2024-2025**

**SEPTEMBER**

<b>Dates</b>	<b>Week</b>	<b>Topic</b>	<b>Activity</b>
September 9-13		The teacher will have a welcome session where the students will share their expectations and goals. The term plan will be discussed, rules and expectations as well for classes.	
September 16-20	Week 1	<b>Structure and Formula (5 sessions)</b> <ul style="list-style-type: none"> <li>▪ Explain the occurrence of carbon compounds with straight chains and rings.</li> <li>▪ Explain the meaning of the term homologous series.</li> <li>▪ Identify homologous series of organic/carbon compounds.</li> <li>▪ Distinguish between empirical, structural, and molecular formulae.</li> <li>▪ Write structural formulae</li> </ul>	Strategies: <ul style="list-style-type: none"> <li>● ball and stick models</li> <li>● worksheets</li> </ul>
September 23-27	Week 2	<b>Structure and Formula (5 sessions)</b> <ul style="list-style-type: none"> <li>▪ Apply the IUPAC rule to naming organic compounds.</li> <li>▪ Define and explain structural isomerism.</li> </ul>	Strategies: <ul style="list-style-type: none"> <li>● ball and stick models</li> <li>● worksheets</li> </ul>

		<ul style="list-style-type: none"> <li>▪ Give examples of structural isomerism.</li> <li>▪ Explain stereoisomerism.</li> <li>▪ Determine the possible isomers from given molecular formulae.</li> <li>▪ Determine formula from experimental data.</li> </ul>	
September 30-Oct 4	Week 3	<p><b>Functional group analysis and reaction mechanisms (5 sessions)</b></p> <ul style="list-style-type: none"> <li>▪ Describe selected chemical reactions of alkanes.</li> <li>▪ Explain the steps involved in the mechanism of free radical substitution.</li> <li>▪ Describe selected chemical reactions of alkenes.</li> </ul>	<p>Strategies:</p> <ul style="list-style-type: none"> <li>● Ball and stick models</li> <li>● Worksheets</li> </ul>

## OCTOBER

Date	Week	Topics	Activity
October 7-11	Week 4	<p><b>Functional group analysis and reaction mechanisms (5 sessions)</b></p> <ul style="list-style-type: none"> <li>▪ Explain the steps involved in the mechanism of selected chemical reactions of alkenes.</li> <li>▪ Describe selected chemical reactions of alcohols.</li> </ul> <p><b>Functional group analysis and reaction mechanisms (5 sessions)</b></p> <ul style="list-style-type: none"> <li>▪ Describe selected reactions of halogenoalkanes.</li> </ul>	<p>Strategies:</p> <ul style="list-style-type: none"> <li>● Chem Sketch</li> <li>● Phet Simulation</li> <li>● Worksheets</li> <li>● Past Paper questions</li> </ul> <p><b>Lab # 1: Alkanes and Alkenes</b></p> <p><b>Lab # 2: Alcohols</b></p>

		<ul style="list-style-type: none"> <li>Explain the steps involved in the mechanism of selected reactions of halogenalkanes.</li> </ul>	
<b>Oct 14-18 MID TERM BREAK</b>			
October 21-25	Week 6	<b>Functional group analysis and reaction mechanisms (5 sessions)</b> <ul style="list-style-type: none"> <li>Describe selected chemical reactions of carbonyl compounds.</li> <li>Explain the steps involved in the mechanisms of selected chemical reactions of carbonyl compounds.</li> </ul>	Strategies: <ul style="list-style-type: none"> <li>Chem Sketch</li> <li>Phet Simulation</li> <li>Past Paper questions</li> </ul>
<b>1st Standardized Test Oct 23 - 27 Week 7</b>			

## NOVEMBER

Date	Week	Topics	Activity
October 21-25	Week 8	<b>Functional group analysis and reaction mechanisms (5 sessions)</b> <ul style="list-style-type: none"> <li>Describe selected chemical reactions of carboxylic acids.</li> <li>Describe selected chemical reactions of esters.</li> <li>Carry out suitable laboratory tests for functional groups in selected carbon compounds (to be done virtually).</li> <li>Describe the chemical reaction of primary amines (<math>\text{RNH}_2</math>) and dilute acid.</li> <li>Describe selected chemical reactions of benzene, methylbenzene, and nitrobenzene.</li> </ul>	Strategies: <ul style="list-style-type: none"> <li>Chem Sketch</li> <li>Phet Simulation</li> </ul> <b>Lab # 3: Qualitative Analysis of Organic Compounds</b>

October 28-Nov 1	Week 9	<p><b>Functional group analysis and reaction mechanisms (4 sessions)</b></p> <ul style="list-style-type: none"> <li>▪ Explain the steps involved in the mechanism of selected reactions of benzene.</li> <li>▪ Describe selected chemical reactions of phenol.</li> <li>▪ Describe the formation of an azo compound.</li> <li>▪ State uses of azo compounds.</li> </ul> <p><b>Acidic and basic character of organic compounds (1 session)</b></p> <ul style="list-style-type: none"> <li>▪ Explain the difference in acidity of alcohols, phenols, and carboxylic acids.</li> </ul>	<p>Strategies:</p> <ul style="list-style-type: none"> <li>• Chem Sketch</li> <li>• Phet Simulation</li> </ul> <p><b>Worksheets:</b> Online worksheet on acid base character and/or reactions of alcohols, carbonyl compounds for asynchronous class.</p> <p><b>Lab #4: Acidity of Organic Compounds</b></p>
Nov 4-8	Week 10	<p><b>Acidic and basic character of organic compounds (3 sessions)</b></p> <ul style="list-style-type: none"> <li>▪ Explain differences in basic character of aliphatic amines, amides, and aromatic amines.</li> <li>▪ Explain the acid – base properties of amino acids.</li> </ul> <p><b>Macromolecules (2 sessions)</b></p> <ul style="list-style-type: none"> <li>▪ Describe the characteristics of addition polymerization.</li> <li>▪ Describe the characteristics of condensation polymerization.</li> <li>▪ Predict types of polymers formed from given monomers.</li> <li>▪ Deduce the repeat unit of a polymer.</li> </ul>	<p><b>Lab #5: Saponification</b></p>

		<ul style="list-style-type: none"> <li>▪ Identify proteins as naturally occurring macromolecules.</li> <li>▪ Identify carbohydrates as naturally occurring macromolecules.</li> <li>▪ Illustrate the connection between carbohydrates and their monomers.</li> </ul>	
Nov 11-15	Week 11	<p><b>Analytical chemistry (5 sessions)</b></p> <ul style="list-style-type: none"> <li>▪ Apply appropriate concepts to the analysis of scientific data.</li> <li>▪ Carry out experiments to assess the degree of uncertainty in measurements associated with the use of certain common pieces of laboratory equipment (to be done virtually).</li> <li>▪ Select appropriate pieces of equipment to make measurements, depending on the required degree of accuracy.</li> </ul>	
Nov 18-22	Week 12	<p><b>Analytical chemistry (5 sessions)</b></p> <ul style="list-style-type: none"> <li>▪ Explain the basic principles upon which titrimetric analysis is based.</li> <li>▪ Discuss the criteria used in selecting primary standards.</li> <li>▪ Use data obtained from potentiometric, thermometric and conductometric titrations methods which do not require the use of indicators.</li> </ul>	<b>Lab #6: Accuracy and Precision</b>

		<ul style="list-style-type: none"> <li>▪ Carry out experiments based on titrimetric analysis (to be done virtually).</li> <li>▪ Perform calculations based on data obtained from titrimetric analysis.</li> <li>▪ Cite examples of the use of titrimetric analysis in the quantification of various substances.</li> </ul>	
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## DECEMBER

Date	Weeks	Topics	Activity
2nd Standardized Test Dec 4-8 Week 13			
Nov 25-29	Week 14	<ul style="list-style-type: none"> <li>▪ Introduction to spectroscopy and ultraviolet visible analyses. (5 sessions)</li> <li>▪</li> </ul>	All lab sheets are due
Dec 2-6		Lab #6: Accuracy and Precision <ul style="list-style-type: none"> <li>▪ Carry out experiments based on titrimetric analysis (to be done virtually).</li> <li>▪ Perform calculations based on data obtained from titrimetric analysis.</li> <li>▪ Cite examples of the use of titrimetric analysis in the quantification of various substances.</li> </ul>	
		End of Term December 19, 2023	

**END OF TERM**