



Kot Bhalwal, Jammu

Model Institute of Engineering  
& Technology (Autonomous)  
Dr. Arun K. Gupta Teaching-Learning Centre

**Department of CE**  
**Details of Lesson Plan**

S.No.	Particulars	Details
1.	Course Name	ENGINEERING CHEMISTRY
2.	Course Code	BSC-103
3.	Academic Year	2024-25
4.	Semester	1 <sup>ST</sup>
5.	Number of Lesson plans	20
6.	Faculty Assigned	Dr.Kavita Abrol

Faculty Signature



Version 1.1



Please Do Not Print Unless Necessary



<b>Lesson Plan No. 4</b>	<b>Course Name: Engineering chemistry</b>	<b>Course No.: 103</b>
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<b>Objectives</b>	At the end of the lesson the student shall be able to: a. Describe types of drugs b. Describe utility of different types of drugs
<b>Teaching Aids (if any)</b>	a. Video b. Use of Nearpod tool for online quiz
<b>Teaching Development</b>	1. Introduction (5 minutes) - Revision of Racemization - Ask questions Drug synthesis and purification What is the need for different types of drugs?  2. Development (30 minutes) a. Introduction b. Definition of antipyretics, narcotics, Tranquilizer and antibiotics and their applications c. Methods of synthesis of drugs d. Show structures of examples of different types of drugs
<b>Closure</b>	1. Summarize the Lesson Learning Outcomes and get affirmation from students on these. 2. Suggested Reading Organic Chemistry by I .L. Finar Vol-1 Organic Chemistry By Jain NPTEL LECTURE <a href="https://youtu.be/nVPLPzAfzBM">https://youtu.be/nVPLPzAfzBM</a> 3. Home work  Enlist broad spectrum and narrow spectrum antibiotics with their sources.  Spend 5 minutes to wrap up and consolidate the learnings
<b>Evaluation</b>	1. Reflective Questions (What, Why, Who?). Allow students to answer and discuss. 2. Nearpod Quiz on chirality  Spend 5 minutes to evaluate student assimilation of the lesson contents



Lesson Plan No 7	Course Name: Engineering chemistry	Course No.: 103
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<b>Objectives</b>	At the end of the lesson the student shall be able to: Describe Principle of IR spectroscopy and criteria for a molecule to be IR active Read the IR spectra of molecules a. Illustrate applications of IR spectroscopy
<b>Teaching Aids (if any)</b>	a. Video b. Use of Nearpod tool for online quiz
<b>Teaching Development</b>	1. <b>Introduction</b> (5 minutes) - Revision of UV spectroscopy - Ask questions What is dipole? What is the range of IR? What are the methods to characterize molecules and study progress of reaction? 2. <b>Development</b> (30 minutes) a. Introduction of principle of IR b. Definition of transmittance and wavenumber c. Methods of recording IR d. Reading the IR spectra for organic molecules with illustrated examples e. Show video on IR <a href="https://youtu.be/4XoVXb9kmEg">https://youtu.be/4XoVXb9kmEg</a>
<b>Closure</b>	1. Summarize the Lesson Learning Outcomes and get affirmation from students on these. 2. Suggested Reading  Organic Chemistry by I.L. Finar Vol-1 Organic Chemistry By Jain  3. Home work Draw the IR spectra of phenol Spend 5 minutes to wrap up and consolidate the learnings
<b>Evaluation</b>	1. Reflective Questions (What, Why, Who?). Allow students to answer and discuss. 2. Nearpod Quiz on chirality  Spend 5 minutes to evaluate student assimilation of the lesson contents



<b>Lesson Plan No 8</b>	<b>Course Name: Engineering chemistry</b>	<b>Course No.: 103</b>
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<b>Objectives</b>	At the end of the lesson the student shall be able to: <ol style="list-style-type: none"> <li>Describe Principle of NMR spectroscopy and criteria for a molecule to be NMR active</li> <li>Read the NMR spectra of molecules</li> <li>Illustrate applications of NMR spectroscopy</li> </ol>
<b>Teaching Aids (if any)</b>	<ol style="list-style-type: none"> <li>Video</li> <li>Use of Nearpod tool for online quiz</li> </ol>
<b>Teaching Development</b>	<ol style="list-style-type: none"> <li>Introduction (5 minutes)           <ul style="list-style-type: none"> <li>- Revision of IR spectroscopy</li> <li>- Ask questions</li> </ul>           What is the magnetic vector associated with a nuclei?            What is the range of NMR?            What are the methods to characterize molecules and study progress of reaction?         </li> <li>Development (30 minutes)           <ol style="list-style-type: none"> <li>Introduction of principle of NMR</li> <li>Definition of chemical shift</li> <li>Methods of recording NMR</li> <li>Reading the NMR spectra for organic molecules with illustrated examples</li> </ol> </li> </ol>
<b>Closure</b>	<ol style="list-style-type: none"> <li>Summarize the Lesson Learning Outcomes and get affirmation from students on these.</li> <li>Suggested Reading           <p>Organic Chemistry by I .L. Finar Vol-1 Organic Chemistry By Jain</p> </li> <li>Home work           <ol style="list-style-type: none"> <li>Draw the spectra of ethyl alcohol</li> </ol>           Spend 5 minutes to wrap up and consolidate the learnings         </li> </ol>
<b>Evaluation</b>	<ol style="list-style-type: none"> <li>Reflective Questions (What, Why, Who?). Allow students to answer and discuss.</li> <li>Nearpod Quiz on chirality</li> </ol> <p>Spend 5 minutes to evaluate student assimilation of the lesson contents</p>



<b>Lesson Plan No9</b>	<b>Course Name: Engineering chemistry</b>	<b>Course No.: 103</b>
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<b>Objectives</b>	At the end of the lesson the student shall be able to: <ol style="list-style-type: none"> <li>Describe segments of environment</li> <li>Illustrate the importance of segments of environment</li> <li>Illustrate relation between the segments of environment</li> </ol>
<b>Teaching Aids (if any)</b>	<ol style="list-style-type: none"> <li>Video</li> <li>Use of Nearpod tool for online quiz</li> </ol>
<b>Teaching Development</b>	<ol style="list-style-type: none"> <li>Introduction (5 minutes)           <ul style="list-style-type: none"> <li>Ask questions</li> <li>What is environment?</li> <li>What is the importance of environment?</li> <li>What are realms of environment?</li> </ul> </li> <li>Development (30 minutes)           <ol style="list-style-type: none"> <li>Introduction of realms of environment</li> <li>Definition of atmosphere and its components</li> <li>Definition of hydrosphere, biosphere and lithosphere</li> <li>Relationship between realms of earth</li> </ol> </li> </ol>
<b>Closure</b>	<ol style="list-style-type: none"> <li>Summarize the Lesson Learning Outcomes and get affirmation from students on these.</li> <li>Suggested Reading           <p>Organic Chemistry by I .L. Finar Vol-1 Organic Chemistry By Jain</p> </li> <li>Home work           <ol style="list-style-type: none"> <li>Select an ecosystem and describe its components</li> </ol> </li> </ol> <p>Spend 5 minutes to wrap up and consolidate the learnings</p>
<b>Evaluation</b>	<ol style="list-style-type: none"> <li>Reflective Questions (What, Why, Who?). Allow students to answer and discuss.</li> <li>Nearpod Quiz on chirality</li> </ol> <p>Spend 5 minutes to evaluate student assimilation of the lesson contents</p>



<b>Lesson Plan No. 10</b>	<b>Course Name: Engineering chemistry</b>	<b>Course No.: 103</b>
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<b>Objectives</b>	At the end of the lesson the student shall be able to: a. Describe types of pollutants of air b. Illustrate the sources of pollution
<b>Teaching Aids (if any)</b>	a. Video b. Use of Nearpod tool for online quiz
<b>Teaching Development</b>	1. Introduction (5 minutes) - Ask questions What is a pollutant? What are the sources of pollution? 2. Development (30 minutes) a. Introduction of air pollution b. Describe sources of pollution c. Describe classification of pollutants d. Explain the effect of pollution e. Show video on air pollution <a href="https://youtu.be/Nf8cuvl62Vc">https://youtu.be/Nf8cuvl62Vc</a>
<b>Closure</b>	1. Summarize the Lesson Learning Outcomes and get affirmation from students on these. 2. Suggested Reading  Organic Chemistry by I.L. Finar Vol-1 Organic Chemistry By Jain  3. Home work Select an ecosystem and describe its components Spend 5 minutes to wrap up and consolidate the learnings
<b>Evaluation</b>	1. Reflective Questions (What, Why, Who?). Allow students to answer and discuss. 2. Nearpod Quiz on chirality  Spend 5 minutes to evaluate student assimilation of the lesson contents



Lesson Plan No11	Course Name: Engineering chemistry	Course No.: 103
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<b>Objectives</b>	At the end of the lesson the student shall be able to: a. Describe effects of air pollution b. Illustrate the methods to control air pollution
<b>Teaching Aids (if any)</b>	a. Video b. Use of Nearpod tool for online quiz
<b>Teaching Development</b>	1. Introduction (5 minutes) - Ask questions What is acid rain? What is global warming? 2. Development (30 minutes) a. Introduction of effects of air pollution b. Describe acid rain c. Describe global warming d. Show video on air pollution <a href="https://www.youtube.com/watch?v=oONzyciDp5s">https://www.youtube.com/watch?v=oONzyciDp5s</a>
<b>Closure</b>	1. Summarize the Lesson Learning Outcomes and get affirmation from students on these. 2. Suggested Reading  Organic Chemistry by I .L. Finar Vol-1 Organic Chemistry By Jain  3 Home work Describe the case study of acid rain Spend 5 minutes to wrap up and consolidate the learnings
<b>Evaluation</b>	1. Reflective Questions (What, Why, Who?). Allow students to answer and discuss. 2. Nearpod Quiz on chirality  Spend 5 minutes to evaluate student assimilation of the lesson contents



<b>Lesson Plan No12</b>	<b>Course Name: Engineering chemistry</b>	<b>Course No.: 103</b>
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<b>Objectives</b>	Describe effects of air pollution a. Illustrate the methods to control air pollution
<b>Teaching Aids (if any)</b>	a. Video b. Use of Nearpod tool for online quiz
<b>Teaching Development</b>	1. Introduction (5 minutes) - Ask questions What is ozone depletion? What is smog? 2. Development (30 minutes)  Explain ozone depletion Explain Smog and its types Show video on air pollution <a href="https://youtu.be/6BUT16jfoKk">https://youtu.be/6BUT16jfoKk</a>
<b>Closure</b>	1. Summarize the Lesson Learning Outcomes and get affirmation from students on these. 2. Suggested Reading  Organic Chemistry by I .L. Finar Vol-1 Organic Chemistry By Jain  3 Home work Describe the case study of acid rain Spend 5 minutes to wrap up and consolidate the learnings
<b>Evaluation</b>	1. Reflective Questions (What, Why, Who?). Allow students to answer and discuss. 2. Nearpod Quiz on chirality  Spend 5 minutes to evaluate student assimilation of the lesson contents



Lesson Plan No13	Course Name: Engineering chemistry	Course No.: 103
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<b>Objectives</b>	At the end of the lesson the student shall be able to: a. Describe the purpose of making alloys b. Describe methods of making alloys
<b>Teaching Aids (if any)</b>	a. Video b. Use of Nearpod tool for online quiz
<b>Teaching Development</b>	1. Introduction (5 minutes) - Ask questions What are alloys? What are the applications of alloys? Development (30 minutes)  Definition of alloy Describe purpose of making alloy Explain the methods of making alloy-Powder metallurgy, reduction, electrodeposition Show video on alloys <a href="https://youtu.be/1ExZrAcNTyw">https://youtu.be/1ExZrAcNTyw</a>
<b>Closure</b>	1. Summarize the Lesson Learning Outcomes and get affirmation from students on these. 2. Suggested Reading  Organic Chemistry by I.L. Finar Vol-1 Organic Chemistry By Jain  3 Home work  Spend 5 minutes to wrap up and consolidate the learnings
<b>Evaluation</b>	1. Reflective Questions (What, Why, Who?). Allow students to answer and discuss. 2. Nearpod Quiz on chirality  Spend 5 minutes to evaluate student assimilation of the lesson contents



<b>Lesson Plan No14</b>	<b>Course Name: Engineering chemistry</b>	<b>Course No.: 103</b>
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<b>Objectives</b>	At the end of the lesson the student shall be able to: a. Describe the different types of alloy steels
<b>Teaching Aids (if any)</b>	a. Video b. Use of Nearpod tool for online quiz
<b>Teaching Development</b>	1. Introduction (5 minutes) - Ask questions - What are the different types of steel alloys? Development (30 minutes) Definition of alloy steel Discuss examples and applications of alloy steels
<b>Closure</b>	1. Summarize the Lesson Learning Outcomes and get affirmation from students on these. 2. Suggested Reading  Organic Chemistry by I.L. Finar Vol-1 Organic Chemistry By Jain  <a href="https://youtu.be/dpm_uoXzwXE">https://youtu.be/dpm_uoXzwXE</a>  3 Home work  Spend 5 minutes to wrap up and consolidate the learnings
<b>Evaluation</b>	1. Reflective Questions (What, Why, Who?). Allow students to answer and discuss. 2. Nearpod Quiz on chirality  Spend 5 minutes to evaluate student assimilation of the lesson contents



<b>Lesson Plan No15</b>	<b>Course Name: Engineering chemistry</b>	<b>Course No.: 103</b>
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<b>Objectives</b>	At the end of the lesson the student shall be able to: a. Describe the reactions involved in setting and hardening of cements
<b>Teaching Aids (if any)</b>	a. Video b. Use of Nearpod tool for online quiz
<b>Teaching Development</b>	1. Introduction (5 minutes) - Ask questions Introduce the process of setting and hardening of cement Describe the reactions involved in setting and hardening of cements 2. Development (30 minutes)  Describe the reactions involved in setting and hardening of cements
<b>Closure</b>	1. Summarize the Lesson Learning Outcomes and get affirmation from students on these. 2. Suggested Reading  Organic Chemistry by I .L. Finar Vol-1 Organic Chemistry By Jain  3 Home work Write down the steps involved in setting and hardening of cement Spend 5 minutes to wrap up and consolidate the learnings
<b>Evaluation</b>	1. Reflective Questions (What, Why, Who?). Allow students to answer and discuss. 2. Nearpod Quiz on chirality  Spend 5 minutes to evaluate student assimilation of the lesson contents



<b>Lesson Plan No16</b>	<b>Course Name: Engineering chemistry</b>	<b>Course No.: 103</b>
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<b>Objectives</b>	At the end of the lesson the student shall be able to: a. Describe treatment of hardness of water b. Describe the types of ion exchange resins and its types c. Describe the zeolite treatment of hard water
<b>Teaching Aids (if any)</b>	a. Video b. Use of Nearpod tool for online quiz
<b>Teaching Development</b>	1. Introduction (5 minutes) - Ask questions - How can water be softened? - What is the need of softening water? - What are zeolites? Development (30 minutes) Describe the treatment of hard water by zeolite softening process Introduce the process of ion exchange process Describe the types of ion exchange resins and their structure Describe the regeneration of ion exchange resins  <a href="https://youtu.be/IEzZrAcNTyw">https://youtu.be/IEzZrAcNTyw</a>
<b>Closure</b>	1. Summarize the Lesson Learning Outcomes and get affirmation from students on these. 2. Suggested Reading  Organic Chemistry by I.L. Finar Vol-1 Organic Chemistry By Jain  3 Home work Write down the difference between zeolite and ion exchange process  Spend 5 minutes to wrap up and consolidate the learnings
<b>Evaluation</b>	1. Reflective Questions (What, Why, Who?). Allow students to answer and discuss. 2. Nearpod Quiz on chirality  Spend 5 minutes to evaluate student assimilation of the lesson contents



Lesson Plan No17	Course Name: Engineering chemistry	Course No.: 103
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<b>Objectives</b>	At the end of the lesson the student shall be able to: a. Describe priming and foaming b. Describe the reasons for priming and foaming c. Describe the methods to remove priming and foaming
<b>Teaching Aids (if any)</b>	a. Video b. Use of Nearpod tool for online quiz
<b>Teaching Development</b>	1. Introduction (5 minutes) - Ask questions - What is priming and foaming? Development (30 minutes) Describe the difference between priming and foaming Describe the reasons for foaming and priming Describe the methods for removal of priming and foaming Show video on priming and foaming  <a href="https://youtu.be/qKj8zcHtFgs">https://youtu.be/qKj8zcHtFgs</a>
<b>Closure</b>	1. Summarize the Lesson Learning Outcomes and get affirmation from students on these. 2. Suggested Reading  Organic Chemistry by I.L. Finar Vol-1 Organic Chemistry By Jain  3 Home work Differentiate between priming and foaming Spend 5 minutes to wrap up and consolidate the learnings
<b>Evaluation</b>	1. Reflective Questions (What, Why, Who?). Allow students to answer and discuss. 2. Nearpod Quiz on chirality  Spend 5 minutes to evaluate student assimilation of the lesson contents



Lesson Plan No18	Course Name: Engineering chemistry	Course No.: 103
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<b>Objectives</b>	At the end of the lesson the student shall be able to: <ol style="list-style-type: none"> <li>Describe different types of primary batteries</li> <li>Describe the structure of different primary batteries</li> <li>Describe the chemical reactions involved in primary batteries</li> </ol>
<b>Teaching Aids (if any)</b>	<ol style="list-style-type: none"> <li>Video</li> <li>Use of Nearpod tool for online quiz</li> </ol>
<b>Teaching Development</b>	<ol style="list-style-type: none"> <li>Introduction (5 minutes)           <ul style="list-style-type: none"> <li>Ask questions</li> <li>What are the different primary batteries used?</li> </ul> </li> </ol> <p>Development (30 minutes)</p> <p>Describe the structure of dry cell</p> <p>Describe the reactions involved in dry cell</p>
<b>Closure</b>	<ol style="list-style-type: none"> <li>Summarize the Lesson Learning Outcomes and get affirmation from students on these.</li> <li>Suggested Reading           <p>Organic Chemistry by I .L. Finar Vol-1</p> <p>Organic Chemistry By Jain</p> </li> <li>Home work           <p>Write the redox reactions occurring at cathode and anode in a dry cell.</p> <p>Spend 5 minutes to wrap up and consolidate the learnings</p> </li> </ol>
<b>Evaluation</b>	<ol style="list-style-type: none"> <li>Reflective Questions (What, Why, Who?). Allow students to answer and discuss.</li> <li>Nearpod Quiz on chirality</li> </ol> <p>Spend 5 minutes to evaluate student assimilation of the lesson contents</p>



<b>Lesson Plan No. 19</b>	<b>Course Name: Engineering chemistry</b>	<b>Course No.: 103</b>
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<b>Objectives</b>	At the end of the lesson the student shall be able to: a. Describe principle of electric current production in a battery b. Describe the structure of a galvanic cell c. Describe the chemical reactions involved in a galvanic cell
<b>Teaching Aids (if any)</b>	a. Video b. Use of Nearpod tool for online quiz
<b>Teaching Development</b>	Introduction (5 minutes) 1. Ask questions What is a battery composed of? What is reduction potential? What is an electrochemical cell? 2. Development (30 minutes)  Describe the structure of galvanic cell Describe the reactions involved in an electrochemical cell Describe the different kinds of batteries
<b>Closure</b>	1. Summarize the Lesson Learning Outcomes and get affirmation from students on these. 2. Suggested Reading  Organic Chemistry by I.L. Finar Vol-1 Organic Chemistry By Jain  3 Home work Write the redox reactions occurring at cathode and anode in a galvanic cell.  Spend 5 minutes to wrap up and consolidate the learnings
<b>Evaluation</b>	1. Reflective Questions (What, Why, Who?). Allow students to answer and discuss. 2. Nearpod Quiz on chirality  Spend 5 minutes to evaluate student assimilation of the lesson contents



Lesson Plan No20	Course Name: Engineering chemistry	Course No.: 103
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<b>Objectives</b>	At the end of the lesson the student shall be able to: <ol style="list-style-type: none"> <li>Describe different types of secondary batteries</li> <li>Describe the structure of different secondary batteries</li> <li>Describe the chemical reactions involved in secondary batteries</li> </ol>
<b>Teaching Aids (if any)</b>	<ol style="list-style-type: none"> <li>Video</li> <li>Use of Nearpod tool for online quiz</li> </ol>
<b>Teaching Development</b>	<ol style="list-style-type: none"> <li>Introduction (5 minutes)           <ul style="list-style-type: none"> <li>Ask questions               <ul style="list-style-type: none"> <li>What are the different secondary batteries used?</li> </ul> </li> </ul> </li> <li>Development (30 minutes)           <ul style="list-style-type: none"> <li>Describe the structure of lead acid battery</li> <li>Describe the reactions involved in lead acid battery</li> <li>Describe the structure of lithium ion battery</li> <li>Describe the reactions involved in lithium ion battery</li> </ul> </li> </ol>
<b>Closure</b>	<ol style="list-style-type: none"> <li>Summarize the Lesson Learning Outcomes and get affirmation from students on these.</li> <li>Suggested Reading           <ul style="list-style-type: none"> <li>Organic Chemistry by I.L. Finar Vol-1</li> <li>Organic Chemistry By Jain</li> </ul> <p><a href="https://youtu.be/QWPVzHhXnQA">https://youtu.be/QWPVzHhXnQA</a></p> </li> <li>Home work           <ul style="list-style-type: none"> <li>Spend 5 minutes to wrap up and consolidate the learnings</li> </ul> </li> </ol>
<b>Evaluation</b>	<ol style="list-style-type: none"> <li>Reflective Questions (What, Why, Who?). Allow students to answer and discuss.</li> <li>Nearpod Quiz on chirality</li> </ol> <p>Spend 5 minutes to evaluate student assimilation of the lesson contents</p>



<b>Lesson Plan No. 2</b>	<b>Course Name: Engineering chemistry</b>	<b>Course No.: 103</b>
<b>Objectives</b>	At the end of the lesson the student shall be able to: Differentiate between enantiomers, diastereomers and mesomers a. Define racemic mixture	
<b>Teaching Aids (if any)</b>	a. Video b. Use of Nearpod tool for online quiz	
<b>Teaching Development</b>	<ol style="list-style-type: none"> <li><b>Introduction</b> (5 minutes)</li> <li>Revision of optical isomerism</li> <li>Ask questions Can physical and properties of optical isomers be the basis to separate optical isomers and resolution? What is the need of resolution and asymmetric synthesis?</li> <li><b>Development</b> (30 minutes)</li> <li>Introduction               <ol style="list-style-type: none"> <li>Definition of Resolution and asymmetric synthesis</li> <li>Methods of resolution- Adsorption, formation of diastereomer salts, biochemical separation</li> <li>Exercise (5 minutes) –</li> <li>Show structures of examples of diastereomer salt formation</li> </ol> </li> </ol>	
<b>Closure</b>	<ol style="list-style-type: none"> <li>Summarize the Lesson Learning Outcomes and get affirmation from students on these.</li> <li>Suggested Reading Organic Chemistry by I .L. Finar Vol-1 Organic Chemistry By Jain</li> <li>Home work How would you differentiate between d/l enantiomers of alanine Spend 5 minutes to wrap up and consolidate the learnings</li> </ol>	
<b>Evaluation</b>	<ol style="list-style-type: none"> <li>Reflective Questions (What, Why, Who?). Allow students to answer and discuss.</li> <li>Nearpod Quiz on chirality</li> </ol> <p>Spend 5 minutes to evaluate student assimilation of the lesson contents</p>	



<b>Lesson Plan No. 5</b>	<b>Course Name: Engineering chemistry</b>	<b>Course No.: 103</b>
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<b>Objectives</b>	At the end of the lesson the student shall be able to: <ol style="list-style-type: none"> <li>a. Understand the concept of polymers, plastics and rubbers</li> <li>b. Explain the concept of vulcanization of rubbers</li> <li>a. Understand the treatment of latex</li> </ol>
<b>Teaching Aids (if any)</b>	<ol style="list-style-type: none"> <li>a. Video</li> <li>b. Use of Nearpod tool for online quiz</li> </ol>
<b>Teaching Development</b>	<ol style="list-style-type: none"> <li>1. <b>Introduction</b> (5 minutes)           <ul style="list-style-type: none"> <li>- Ask questions</li> <li>- What is the need of polymers?</li> <li>- What are the advantages of polymers?</li> </ul> </li> <li>2. <b>Development</b> (30 minutes)           <ol style="list-style-type: none"> <li>a. Introduction</li> <li>b. Explain the properties of polymers</li> <li>c. Illustrate the applications of polymers</li> <li>d. Explain the methods of polymerization</li> <li>e. Discuss monomers for polymers</li> <li>f. Explain types of polymers-thermoplastic and themosetting</li> </ol> </li> <li>1. <b>Introduction</b> (5 minutes)</li> <li>2. Revision of optical isomerism</li> <li>3. Ask questions           <ul style="list-style-type: none"> <li>Can physical and properties of optical isomers be the basis to separate optical isomers and resolution?</li> <li>What is the need of resolution and asymmetric synthesis? of diastereomer salt formation</li> </ul> </li> </ol>
<b>Closure</b>	<ol style="list-style-type: none"> <li>1. Summarize the Lesson Learning Outcomes and get affirmation from students on these.</li> <li>2. Suggested Reading           <p>Organic Chemistry by I .L. Finar Vol-1 Organic Chemistry By Jain</p> </li> <li>3 Home work           <ul style="list-style-type: none"> <li>- write down structure of monomers for any two thermoplastics and thermosetting polymers</li> </ul> </li> </ol> <p>Spend 5 minutes to wrap up and consolidate the learnings</p>
<b>Evaluation</b>	<ol style="list-style-type: none"> <li>1. Reflective Questions (What, Why, Who?). Allow students to answer and discuss.</li> <li>2. Nearpod Quiz on chirality</li> </ol>



# Model Institute of Engineering & Technology (Autonomous) Lesson Plan

Kot, Bhalwal, Jammu



Spend 5 minutes to evaluate student assimilation of the lesson contents
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<b>Lesson Plan No. 1</b>	<b>Course Name: Engineering chemistry</b>	<b>Course No.: 103</b>
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<b>Objectives</b>	At the end of the lesson the student shall be able to: a. Understand the concept of plane polarized light, optical activity b. Understand the symmetry elements present in a molecule
<b>Teaching Aids (if any)</b>	a. Video b. Use of Nearpod tool for online quiz
<b>Teaching Development</b>	<ol style="list-style-type: none"> <li><b>Introduction</b> (5 minutes) <ul style="list-style-type: none"> <li>- Ask questions.</li> <li>- Does white light has electromagnetic nature?</li> <li>- What are the different types of isomerism(structural and optical)</li> </ul> </li> <li><b>Development</b> (30 minutes) <ol style="list-style-type: none"> <li>Introduction</li> <li>Explain plane polarized light</li> <li>Illustrate methods for production of plane polarized light and polarimeter</li> <li>Give examples of structure and examples of chiral molecules</li> <li>Discuss importance of Chiral molecules in chemistry and everyday life</li> <li>Explain different types of symmetry elements present in a molecule</li> <li>Analyse the application of symmetry elements to detect presence of optical isomerism</li> <li>Show video on optical isomerism <a href="https://www.youtube.com/watch?v=vu3xc146r">https://www.youtube.com/watch?v=vu3xc146r</a></li> </ol> </li> <li>Exercise (5 minutes) – Give different use-cases and make students select appropriate cloud deployment models. <ul style="list-style-type: none"> <li>- National Security Data (Private Cloud)</li> <li>- Health Data of Patients (Hybrid Cloud)</li> <li>- Credit card Details/Bank Details (Private Cloud)</li> <li>- Student Academic Data (Hybrid Cloud)</li> <li>- Learning Resources for Students (Public Cloud)</li> </ul> <p>Use Nearpod to collect responses and discuss the answers.</p> </li> </ol>
<b>Closure</b>	<ol style="list-style-type: none"> <li>Summarize the Lesson Learning Outcomes and get affirmation from students on these.</li> <li>Suggested Reading Organic Chemistry by I .L. Finar Vol-1 Organic Chemistry By Jain</li> </ol>



	<p>3. Home work</p> <ol style="list-style-type: none"><li>1. write down structure of two biomolecules showing chirality</li><li>2. Spend 5 minutes to wrap up and consolidate the learnings</li></ol>
<b>Evaluation</b>	<ol style="list-style-type: none"><li>1. Reflective Questions (What, Why, Who?). Allow students to answer and discuss.</li><li>2. Nearpod Quiz on chirality</li></ol> <p>Spend 5 minutes to evaluate student assimilation of the lesson contents</p>



<b>Lesson Plan No. 2</b>	<b>Course Name: Engineering chemistry</b>	<b>Course No.: 103</b>
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<b>Objectives</b>	At the end of the lesson the student shall be able to: Differentiate between enantiomers, diastereomers and mesomers a. Define racemic mixture
<b>Teaching Aids (if any)</b>	a. Video b. Use of Nearpod tool for online quiz
<b>Teaching Development</b>	1. <b>Introduction</b> (5 minutes) - Revision of optical isomerism - Ask questions - What is the importance of enantiomers and diastereomers in chemistry in everyday life  2. <b>Development</b> (30 minutes) a. Introduction  b. Types of optical isomers Enantiomers, diastereomers and mesomers Physical and chemical properties of optical isomers Show video on stereochemistry <a href="https://youtu.be/bk3Hz61GAA0">https://youtu.be/bk3Hz61GAA0</a>  Show structures of examples of enantiomers, diastereomers and mesomers of various organic compounds
<b>Closure</b>	1. Summarize the Lesson Learning Outcomes and get affirmation from students on these. 2. Suggested Reading  Organic Chemistry by I .L. Finar Vol-1 Organic Chemistry By Jain  3 Home work How would you differentiate between d/l enantiomers of glucose  Spend 5 minutes to wrap up and consolidate the learnings
<b>Evaluation</b>	1. Reflective Questions (What, Why, Who?). Allow students to answer and discuss. 2. Nearpod Quiz on chirality  Spend 5 minutes to evaluate student assimilation of the lesson contents



<b>Lesson Plan No. 6</b>	<b>Course Name: Engineering chemistry</b>	<b>Course No.: 103</b>
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<b>Objectives</b>	At the end of the lesson the student shall be able to: a.
<b>Teaching Aids (if any)</b>	a. Video b. Use of Nearpod tool for online quiz
<b>Teaching Development</b>	<ol style="list-style-type: none"> <li>1. <b>Introduction</b> (5 minutes) <ul style="list-style-type: none"> <li>- Ask questions</li> <li>- What is the range of frequencies of the spectrum of white light?</li> <li>- What is the effect of absorption of light on molecules?</li> </ul> </li> <li>2. <b>Development</b> (30 minutes) <ol style="list-style-type: none"> <li>a. Introduction</li> <li>b. Explain the spectrum of light</li> <li>c. Illustrate the interaction of light with matter</li> <li>d. Explain the absorption laws, red, blue shift, hyperchromic and bathochromic shift.</li> <li>e. Discuss principle of uv spectroscopy</li> <li>f. Explain allowed electronic transition in quantized HOMO and LUMO orbitals in molecules with examples</li> <li>g. Analyse the application of uv spectroscopy</li> <li>h. Show video on spectroscopy <a href="https://youtu.be/Vl3BYsoif-c">https://youtu.be/Vl3BYsoif-c</a></li> </ol> </li> </ol>
<b>Closure</b>	<ol style="list-style-type: none"> <li>1. Summarize the Lesson Learning Outcomes and get affirmation from students on these.</li> <li>2. Suggested Reading  Organic Chemistry by I .L. Finar Vol-1 Organic Chemistry By Jain</li> <li>3 Home work write down the structure of two molecules showing UV spectroscopy and mention the transitions possible in them Spend 5 minutes to wrap up and consolidate the learnings</li> </ol>
<b>Evaluation</b>	<ol style="list-style-type: none"> <li>1. Reflective Questions (What, Why, Who?). Allow students to answer and discuss.</li> <li>2. Nearpod Quiz on chirality</li> </ol> <p>Spend 5 minutes to evaluate student assimilation of the lesson contents</p>