

Delhi Public School Ghaziabad
Class XI
Biology
Lesson plan based on DOL
Chapter 9 – Biomolecules

Unit	Cell structure and function (Chapter 9 – Biomolecules)
Class Transaction	Total: 3 periods
Pre-requisite for the course	This lesson requires Basic knowledge of micronutrients and macronutrients, carbohydrates, proteins, lipids, nucleic acids, enzymes Knowledge of importance of biomolecules. Knowledge of enzymes and factors affecting rate of enzyme activity
Assessment of qualifying knowledge	Written test Lab activity Oral questioning
Objective	Students would be able to understand structure and function of carbohydrates, proteins, lipids, nucleic acids, enzymes and factors affecting enzyme activity.
Learning Outcomes	<u>KNOWLEDGE</u>- <i>Students will know and understand</i> 1. Carbohydrates: structure and function, classification of carbohydrates on the basis of number of carbon atoms and functional group 2. Proteins: structure and function, zwitter ion, pH sensitivity, polymerization 3. Nucleic acids: structure and function, differences between DNA and RNA, polymerization of nucleotides to form polymer 4. enzymes and catalytic activity <u>SKILLS</u>- <i>Students would be able to</i> Draw structures of carbohydrates, lipids, proteins, nucleic acids Write equations to show formation of peptide bond, glycosidic bond, phosphodiester bond and ester bonds Understand how do enzymes speed up rate of reactions Competencies developed in students: collaborative learning, critical thinking and problem solving, character building, communication, citizenship
Transaction Methodology	Transaction would proceed in the following manner-

(The teacher can use the mentioned techniques, wherever applicable, and can use any other too.)	<i>Brain Storming</i>-The class would start with a discussion on what the students have already learnt in the previous classes and hence what is it that they would learn now. They would also be told the significance of the topic that they would be studying. <i>Introduction of the topic</i>- ppt and Digital Content would be shared <i>Guided practice followed by Independent Practice</i>- NCERT questions to be discussed in the classroom. Techniques to be used: Quiz MCQ Peer Assessment Case Studies Lab Activities Any Other
Resources	Text Book: NCERT text book Reference Book CBSE Exemplar DPSG Spiral Weblinks: https://www.youtube.com/watch?v=qBRFIMcxZNM https://www.youtube.com/watch?v=o_-6JXLYS-k
Self Study, Home Work, Assignments	Independent Practice: Students would do the given questions in their spirals. It is also advised that the students come to the class with proper background knowledge of the topic under discussion. They can refer to the resources stated above.
Assessments	UNIT TESTS HALF YEARLY EXAMINATION ANNUAL EXAMINATION

	INTERNAL ASSESSMENT - Practical – 30 marks
Addressing Classroom Diversity	Due to various social backgrounds and multiple intelligences, the classroom might be a diverse arena. The following techniques can be used for various groups: <i>For high scoring students:</i> High order thinking questions to be done Encouragement for referring other resources <i>For low scoring students:</i> Spiral questions Peer education PCC classes <i>For differently abled students:</i> Call parents at regular intervals Provide grade-up classes Encourage and motivate them at every level.
Marks	The weightage of whole unit is 15 marks and is given by CBSE.

Day 1:
a. Students will be shown a ppt and will be made aware of different types of biomolecules.
b. Students will be told about the importance of these biomolecules in sustaining life.
c. Students will be told about the structure, classification and function of carbohydrates.
Guided practice: DOL 1
a. Students will be made to draw diagrams to show formation of glycosidic bond in carbohydrates.
b. Students will be asked to classify carbohydrates on the basis of number of carbon atoms and presence of functional groups.
Summarize and check for understanding: DOL 2
a. Oral questioning based on the day's teaching
b. Discussion on the topic in groups– importance of carbohydrates.
Communication and brainstorming: Students develop effective communication skills and learn to put across their views.
Collaboration, Character and citizenship: Group discussion helps to develop interpersonal skills, respecting and valuing views of others
Independent practice: DOL 3
a. Students will be asked to revise the work done in class.
c. Students will be asked to identify different biomolecules in food items.
d. Students will be asked to research on various disorders that can be caused due to excess or deficiency of carbohydrates.

Day 2:
a. Students will be shown a ppt and will be made aware of lipids and nucleic acids
b. Students will be told about the formation of ester bond in lipids.
c. Students will be made aware of formation of polynucleotide and components of a nucleotide.
d. Students will be made aware of differences between DNA and RNA.
Guided practice: DOL 1
a. Students will be made to recall components of nucleotides.
e. Students will be asked to make a diagram to show formation of polynucleotide and components of a nucleotide.
c. Students will be asked to list differences between DNA and RNA.
Summarize and check for understanding: DOL 2
a. Oral questioning based on the day's teaching
b. Discussion on the topic in groups – Importance of DNA and why is this suitable to act as genetic material.
Communication and brainstorming: Students develop effective communication skills and learn to put across their views.
Character and citizenship: Group discussion helps to develop interpersonal skills, respecting and valuing views of others
Independent practice: DOL 3
a. Students will be asked to revise the work done in class.
b. Students will be asked to describe importance of lipids and disorders caused due to deficiency and excess of lipids.
c. Students will be asked to describe formation of phosphodiester bond.

Day 3:
b. Students will be shown a ppt and will be made aware of types of enzymes.
c. Students will be told about properties of enzymes.
c. Students will be made aware of mechanism of enzyme action.
Guided practice: DOL 1
a. Students will be made to classify enzymes on the basis of enzyme activity.
b. Students will be asked to list all properties of enzymes.
c. Students will be asked to explain mechanism of enzyme action.
Summarize and check for understanding: DOL 2
a. Oral questioning based on the day's teaching
b. Discussion on the topic in groups – How do enzymes speed up rate of reaction.
Communication and brainstorming: Students develop effective communication skills and learn to put across their views.
Collaboration, Character and citizenship: Group discussion helps to develop interpersonal skills, respecting and valuing views of others

Critical thinking and problem solving: Helps students to think critically and solve the given problem

Independent practice: DOL 3

a. Students will be asked to revise the work done in class.

c. Students will be asked to explain mechanism of enzyme action.
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d. Students will be asked to make graph to show how enzymes lower energy of activation to speed up rate of reaction.
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Closure of the lesson
Summarizing the lesson by mind mapping
Giving them revision worksheets