Department of Applied Science & Humanities-II

LESSON PLAN

Session: Jan – May 2026

Semester: 2nd

Name:_____

University Roll Number: _____

BUDDHA INSTITUTE OF TECHNOLOGY

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BUDDHA INSTITUTE OF TECHNOLOGY

DEPARTMENT OF APPLIED SCIENCE & HUMANITIES-II

ACADEMIC YEAR 2025-26 (EVEN Semester)

LESSON PLAN

Semester: 2nd	**Section: B (CSE)**	**Course Code:** BAS202(CHEMISTRY)	**Contact Hours /week:** 6+1
Course name: B. Tech			**# of credits**:4
Teacher's name: DR. SHRUTI SINGH			**Designation:** Asst. Professor
Sessional Marks:30		**End Semester Examination Marks:**70	**University Exam Hours:**3

Prerequisites if any:
Basic Knowledge of Chemistry

Content delivery methods:	Chalk &Board, Book

COURSE SYLLABUS (as prescribed by University / Board)

Module No	UNIT Contents	Hours	COs
1	**Atomic and molecular structure**: Molecular orbital diagram of diatomic molecules , Bond order& magnetic character Liquid crystal: Introduction, Types and application of liquid crystals Graphite and Fullerene: Structure and applications **Nano materials**: Introduction, preparation, characteristics of nano materials . carbon nano tube **Green chemistry** :Introduction, 12 principles and importance of green Chemicals, synthesis of typical organic compounds by conventional method and green route (Adipic acid and paracetamol) Environmental impact of green chemistry on society .	8	CO1
2	**Spectroscopic techniques and Applications.** : Elementary idea and simple applications of UV, IRand NMR. Numericals Stereo chemistry: Optical isomerism in compounds without chiral carbon, geometrical isomerism, chiral drugs.	8	CO2
3	**Electro chemistry:** Basic concept of electrochemistry. **Batteries**.: Classification and applications of primary cells (Dry cell) and secondary cells (Lead Acid Battery) **Corrosion: Introduction to corrosion. Types of corrosion, causes of corrosion, prevention and control. Corrosion issues in specific industries (Power generation, chemical processing industry, Oil gasindustry pulp& paper industries .** Chemistry of Engineeringmaterials : **Cement: Constituents ,manufacturing ,hardening and setting, deterioration of cement, plaster of paris (POP)**	8	CO3
4	**Water Technology:sources and impurities of Water, Hardness of water , Boiler trouble ,Technique for watersoftening ,(Lime –Soda Zeolite and Ion exchange resin Reverse osmosis.) .** **Fuels: Classification characteristics of good fuel. Calorific values, Gross & Net calorific value of fuels .Determination of calorific value by Bomb calorimeter. Theoretical calculation of calorific value by Dulong method. Ranking of coal, Analysis of coal by proximate and ultimate analysis method. Numerical problems. Chemistry of Biogas production from organic waste material and their environmental impact on society.**	8	CO4
5	**Polymer:Classification, polymerisation processes,,Thermostting and Thermoplastic polymers, Basic polymer, Blend and composites. Conducting and Biodegradable polymers. Preparation and application of some Industrially important polymers (Buna –S Buna –N Teflon, Nylon** **Lucite Bakelite Kelvar Dacron Thiokol and their environmental impact on society.** **Organometallic compounds** **General method of preparation and applications oforganometallic compounds.(RMgXand LiAlH4)**	8	CO5

COURSE OUTCOMES: At the end of the Course, the Student will be able to:

CO1	Describe fundamentals of Chemical bonding , , liquid crystals , Nano materials & green chemistry
CO2	Understand principles of spectroscopy and its application in chemical compounds structure analysis
CO3	Understand the principle of electro chemical cell ,Battery and electro chemical corrosion.
CO4	Understand to solve problems based on hardness of water and calorific value of fuel
CO5	Understand composite and blended materials along with Elastomers and conducting polymers and Industrial polymers

Mapping of CO v/s PO:

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
BAS202(1)	3	2	1	-			-	-	-	-	-	2
BAS202 (2)	3	2	1	-			-	-	-	-	-	2
BAS202 (3)	3	2	1	-			-	-	-	-	-	2
BAS202 (4)	3	2	1	-			-	-	-	-	-	2
BAS202 (5)	3	2	1	-			-	-	-	-	-	2
Avg. Sum	3	2	1	-			-	-	-	-	-	2

Correlation levels: 1-Slight (Low) 2-Moderate (Medium) 3-Substantial (High)

Gap in the syllabus	NA

Topics to be covered beyond syllabus	NA

LESSON PLAN

Lecture	Module	Scheduled				Conducted			
		Topic	*RBT Levels	CO Mapping	Date	Topic	Date	No. Of Students	Faculty Sign
1.	I	Basic introduction about Chemistry	L3	CO1					
2.		Introduction of Molecular orbital theory	L3						
3.		Molecular orbital's of diatomic molecules	L3						
4.		Bond order and Magnetic Character	L3						
5.		Tutorial /Assignment-1	L3						
6.		Liquid crystal Introduction and Application	L3						

7.		Graphite introduction structure and application	L3						
8.		Fullerene introduction structure and application	L3						
9.		Nanomaterials : CNTs Introduction and Application	L3						
10.		Tutorial /Assignment-2	L3						
11.		Green Chemistry 12 principles, synthesis of adipic acid	L3						
12.		Synthesis of Paracetamol							
13.	II	Hardness of water	L3	CO2					
14.		Lime soda and numerical	L3						
15.		Zeolite process and numerical	L3						
16.		Tutorial /Assignment-3	L3						
17.		Ion exchange process, Reverse osmosis	L3						
18.		Characteristics of good fuel	L3						
19.		CV,GCV& NCV	L3						
20.		Determination of CV Bomb Calorimeter	L3						
21.		Tutorial /Assignment-4	L3						

22.		Dulong's formula and numericals	L3						
23.		**Combustion of fuels and numericals**	L3						
24.		Analysis of coal by Proximate and ultimate method	L3						
25.		Biogas & Basic concepts of Electochemistry							
26.	III	Tutorial /Assignment-5	L3	CO3					
27.		Classification of batteries	L3						
28.		Primary cell, Secondary cell	L3						
29.		Introduction of corrosion and types	L3						
30.		Electrochemical corrosion							
31.		Prevention of corrosion inhibitors, Sacrifical anodic protection	L2						
32.		**Tutorial /Assignment-6**	L3						
33.		Contituents of Cements	L3						
34.		Manufacturing of cement, Hardening and setting of cement	L3						
35.		Deterioration of cement and POP	L3						

36.	IV	Polymer :classification	L3	CO4					
37.		Polymerization processes	L3						
38.		Thermo settings polymer , Thermoplastics polymer	L3						
39.		Polymer blends	L3						
40.		Polymer composites	L3						
41.		Conducting polymer							
42.		**Tutorial /Assignment-7**	L3						
43.		Biodegradable polymer	L3						
44.		Preparation,properties and application of Teflon	L3						
45.		Preparation,properties and application of Lucite	L3						
46.		Preparation,properties and application of Bakelite	L3						
47.		Preparation,properties and application of Kevlar	L3						
48.		Preparation,properties and application of Dacron	L3		3				

49.		Preparation ,properties and application of Thiokol	L3						
50.		Preparation ,properties and application of Nylon	L3						
51.		Preparation ,properties and application of Buna-N	L3						
52.		**Tutorial /Assignment-8**	L3						
53.		Preparation ,properties and application of **Buna-S**	L3						
54.		Environmental impact of polymer on society	L2						
55.		Organometallic compounds ;introduction	L3						
56.		General method of preparation of RMgX	L3						
57.		Application of RMgX	L3						
58.		Preparation of $LiAlH_4$	L3						
59.		Application of $LiAlH_4$	L3						
60.		Continued….	L3						
61.		Revision Test	L3						
62.		Streo Isomerism							

63.		Geometrical Isomerism	L3						
64.		Cis-trans Nomenclature	L3						
65.		EZ Nomenclature	L3						
66.		Optical Isomerism	L3						
67.		RS Nomenclature	L3						
68.		Optical Activity without Chiral Carbon	L3						
69.		Chiral Drugs							
70.		Electromagnetic Radiation	L2						
71.		**Tutorial /Assignment-9**	L2	CO5					
72.		UV-Spectro Scopy	L3						
73.		Electronic transition	L3						
74.		Absorption shift	L3						
75.		Intensity shift	L2						
76.		Effect of Solvent							
77.		IR-Spectro Scopy	L3						
78.		Molecular Vibrations	L3						
79.		1H-NMR Spectra	L3	CO5					
80.		NMR Spectra Splitting	L3						

81.		**Tutorial /Assignment-8**	L3						
82.		Chemical shifts	L3						
83.		Sheilding effect, Desheilding Effect, Tetraethyl Silane							
84.		Doubt clearing class							
85.		Doubt clearing class							

Class Test	Syllabus
CT-1	Lecture 1 to 25
PRE-AKTU	Full Syllabus

***Revised Bloom's Taxonomy (RBT) Levels:**
L1 – Remembering; L2 – Understanding; L3 – Applying; L4 – Analysing; L5 – Evaluating; L6 - Creating

Literature:

Text Books: (As prescribed by University)

T1. Computer Concepts and Programming in C, E Balaguruswami, McGraw Hill
T2. Computer Concepts and Programming in C by D.S. Yadav and Rajeev Khanna, New Age International Publication

Reference Books: (As prescribed by University)

R1. The C programming by Kernighan Brain W. and Ritchie Dennis M., Pearson Education .
R2. Let Us C By Yashwant P. Kanetkar.

Faculty Sign **HOD's sign**