

SREE VIDYANIKETHAN ENGINEERING COLLEGE (Autonomous)

SREE SAINATH NAGAR, A. RANGAMPET – 517 102

LESSON PLAN

Name of the Subject : Engineering Chemistry

Class & Semester : I B.Tech - I Semester

S. No.	Topic	No. of periods	Book(s) followed	Topics for self study
UNIT-I WATER TECHNOLOGY				
1.	Introduction, types of water, impurities and their consequences	1	T1	<ul style="list-style-type: none"> • Water harvesting methods. • Purification of water by using advanced methods. • Municipal water treatment
2.	Hardness of water- Temporary and permanent hardness, Units of hardness, Disadvantages of hard water	1	T1	
3.	Measurement of hardness by EDTA method	1	T1	
4.	Tutorial-1			
5.	Boiler Troubles: Scale and sludge	1	T1	
6.	Boiler corrosion, Caustic embrittlement, Priming and Foaming	1	T1	
7.	Softening methods: Ion exchange process , Zeolite process.	1	T1	
8.	Tutorial-2			
9.	Desalination of brackish water by Reverse-Osmosis Process, Numerical problems on measurement of hardness of water	1	T1	
10.	Fluoride in ground water: Introduction, effects on human health, Nalgonda method	1	T1	
11.	Merits and demerits of various defluoridation methods.	1	T1	
Total periods required:		09		
UNIT -II CHEMISTRY OF ENGINEERING MATERIALS				
12.1 2	Engineering Plastics: Definition, general characteristics. Synthesis, properties and applications of Poly Carbonates.	1	T1	<ul style="list-style-type: none"> • Nano
13.	Synthesis, properties and applications of PTFE and PMMA.	1	T1	

S. No.	Topic	No. of periods	Book(s) followed	Topics for self study
14.	Conducting Polymers - Definition, Types of conducting polymers.	1	T1, T2	Composites. • Bio-polymers
15.	Tutorial-3			
16.	Doped conducting polymers, Engineering applications of Conducting polymers.	1	T1, T2	
17.	Bio-degradable Polymers: Definition, properties, classification.	1	T1	
18.	Mechanism of degradation and applications of Bio-degradable polymers.	1	T1	
19.	Tutorial-4			
20.	Composites- Introduction, Advantages of composites, applications.	1	T1	
21.	Types of composites: Fiber reinforced composites.	1	T1	
22.	Particulate composites, layered composites.	1	T1	
Total periods required:		09		
UNIT-III NANO CHEMISTRY AND GREEN CHEMISTRY				
23.2 3	Nano Chemistry: Introduction, classification of Nano materials	1	T1, R1	• Recent trends in Nano technology. • Disadvantages of nanomaterials. • Future trends of Green chemistry.
24.	Properties of Nano materials	1	T1, R1	
25.	Methods of synthesis: Sol-gel process	1	T1, R1	
26.	Tutorial-5			
27.	Applications of Nano materials	1	T1, R1	
28.	Green Chemistry: Introduction, Tools of Green Chemistry with examples	1	T1, R2	
29.	Tools of Green Chemistry with examples	1	T1, R2	
30.	Tutorial-6			
31.	Applications of Green Chemistry in science and technology	1	T1, R2	
32.	Bio-diesel - Introduction, Synthesis (Trans-esterification method)	1	R2	
33.	Advantages and commercial applications of bio-diesel	1	R2	
Total periods required:		09		
UNIT-IV ELECTROCHEMICAL CELLS AND SENSORS				
34.	Electrochemical cells, EMF of an electrochemical cell	1	T1	• Quantum batteries. • Advances in fuel - cell Technology.
35.	Batteries: Introduction, Types of Batteries, Ni-Cd batteries	1	T1	
36.	Lithium-ion batteries, Lithium-polymer batteries	1	T1	
37.	Tutorial-7			
38.	Applications of batteries	1	T1	
39.	Fuel cells: Definition, Hydrogen-			

S. No.	Topic	No. of periods	Book(s) followed	Topics for self study
	Oxygen fuel cells	1	T1	<ul style="list-style-type: none"> Bio-Sensors.
40.	Solid-Oxide fuel cells, Bio-fuel cells	1	T1	
41.	Tutorial-8			
42.	Applications of fuel cells	1	T1	
43.	Introduction to sensors, Types of Sensors	1	T1	
44.	Electrochemical Sensors, Applications of Electrochemical Sensors	1	T1	
Total periods required:		09		
UNIT-V CORROSION AND LUBRICANTS				
45.	Introduction, definition, Types of Corrosion	1	T1	<ul style="list-style-type: none"> Advanced methods in controlling of corrosion. Selection of lubricants
46.	Galvanic corrosion, Concentration cell corrosion	1	T1	
47.	Factors influencing corrosion	1	T1	
48.	Tutorial-9			
49.	Corrosion control: cathodic protection; sacrificial anodic protection and impressed current cathodic protection;	1	T1	
50.	Protective coatings: Galvanizing and Electroplating (Nickel). Nickel electroplating for control of corrosion	1	T1, T2	
51.	Lubricants: Definition, Functions of Lubricants	1	T1, T2	
52.	Tutorial-10			
53.	Mechanism of Lubrication	1	T1, T2	
54.	Classification of Lubricants-Liquid, Semi-solid lubricants solid lubricants	1	T1, T2	
55.	Properties of Lubricants – Viscosity, Viscosity Index, Flash and fire points, Cloud and pour points, Aniline point, Neutralization number and mechanical strength	1	T1, T2	
Total periods required:		09		
Grand total periods required:		45		

TEXT BOOKS:

T1. P.C.Jain & Monika Jain, Engineering Chemistry, Dhanpat Rai Publishing Company (P) Ltd, New Delhi, 16th edition, 2013.

T2. K.N. Jayaveera, G.V. Subba Reddy & C. Ramachandraiah Engineering Chemistry, Mc. Graw-Hill Higher Education, Hyderabad, 1st edition, 2015.

REFERENCE BOOKS:

R1. A.K. Bandyopadhyay, Nano Materials, New Age international publishers, 2nd edition, 2014.

R2. Paul T. Anastas, John C Warner, Green Chemistry: Theory and practice, Oxford University Press, 2000