

GANPAT UNIVERSITY

FACULTY OF ENGINEERING & TECHNOLOGY

Programme	Diploma Programme				Branch/Spec.	Petrochemical Technology				
Semester	I				Version					
Effective from Academic Year				2018-19		Effective for the batch Admitted in				
Subject code	1BS124			Subject Name	CHEMISTRY-I					
Teaching scheme						Examination scheme (Marks)				
(per week)	Lecture(DT)		Practical(Lab.)		Total		CE	SEE		Total
	L	TU	P	TW						
Credit	2	0	1	-	3	Theory	40	60		100
Hours	2	0	2	-	4	Practical	30	20		50

The course content should be taught and implemented with the aim to develop different types of skills leading to the achievement of the following competencies.....

- To Develop the habits of identifying the problems related to the engineering materials.
- Ability to establish the cause and effects of Chemical phenomenon.
- To help students to cope up with continues flow of Development in Engineering Chemistry.

Theory Syllabus

Unit	Content		Hrs.
1	<p><u>Fundamental Chemistry:</u></p> <p>Symbols, Formula, Chemical equations, Mole ,Molecular weight, Equivalent weight ,concentration of solution, Types of chemical equation & calculation on basis of chemical equations.</p>	<p>1.1 Students will aware Mole ,Molecular weight, Equivalent weight</p> <p>1.2 Students will perform Types of chemical equation</p>	04
2	<p><u>Atomic structure and classification of elements:</u></p> <p>Arrangement of electron, proton and eutron in atom, atomic number, Distribution of electrons in shell and sub shell, Concept of atomic orbitals ,Auf-bau principle and electron configuration of atom of elements, Ionization energy (IE),Electron affinity (Ea)</p>	<p>2.1 Students will aware Concept of atomic orbital</p> <p>2.2 Students will aware Auf-bau principle and electron configuration</p>	05

3	Chemical Bondings: Introduction, Ionic bond, covalent bond, Bond capacity of C, H, N, O, Cl, S & Si, Bond polarity valence bond theory, Hydrogen bond, Vander Walls forces of attraction, Molecular arrangement in solid, liquid and gases, unit cell BCC, FCC and HCP.	3.1 Students will understand Ionic bond, covalent bond 3.2 To well aware about Bond capacity, bond theory 3.2	05
4	Periodic table & periodic properties: The long form of periodic table, periodic properties of elements, Types of elements, Electron negativity, Lanthanides and actinides.	4.1 Students will know about The long form of periodic table 4.2 To know about periodic properties of elements	05
5	Catalyst & Catalysis: Definition and Types of catalysis, Types of Catalyst (positive, negative, auto, Catalytic promoter and inhibitor), Theories of catalysis, Intermediate compound formation, Adsorption theory, Use of catalysis in different industrial products.	5.1 To know about catalyst and their types. 5.2 To know about Types of catalysis	05
6	Water Treatment: Hard water and soft water, Types of hardness, Salt producing hardness. Method express the hardness, Examples to calculate the hardness, Effect of hard water in Boiler operation (Scale and sludge formation and its prevention, Priming and foaming and its prevention) Treatment of Drinking water (screening, sedimentation, Coagulation, Filtration, chlorination)	6.1 To well aware about treatment of hard water in industry purpose. 6.2 To be aware of treatment of drinking water	06
			30

SUGGESTED LIST OF EXPERIMENTS

The experiments should be properly designed and implemented with an attempt to develop

different types of skills leading to the achievement of the competency -

Sr.No.	Unit no.	Experiment
1	1	General Laboratory Rules and Safety Measurement & Equipments.

2	2	Experiment on Volumetric Analysis any ten (Strong Acid-Strong Base Titration) (Strong Acid-Weak Base Titration) Student should perform minimum 5 experiments
3	3	Redox titration $\text{KMnO}_4 - \text{FeSO}_4$.
4	4	Acid value of Lubricating Oil.
5	5	Saponification value of Oil.
6	6	To determine total alkalinity of water sample.
7	7	Water Hardness Measurement.

SUGGESTED LEARNING RESOURCES

List of Books

Sr.No	Title of Books	Author	Publication
1	Engineering Chemistry	JAIN & JAIN	Dhanpat Rai and Sons
2	A Text Book of Polytechnic Chemistry	V.P. Mehta	Jain Brothers
3	A Text Book of Applied Chemistry	J. Rajaram	Tata McGraw Hill Co. New Delhi
4	Engineering Chemistry	S.S.Dara	S.Chand Publication
5.	A text book of Engineering chemistry by	M.M.Uppal	
6.	Inorganic chemistry	P.L.SONI	

<https://chemistry.tutorvista.com/inorganic-chemistry/types-of-chemical-reactions.html>
<http://www.chemistrynote.com/valency-symbol-and-molecular-formula/>
<http://www.sparknotes.com/testprep/books/sat2/chemistry/chapter4section6.rhtml>
<http://www.dummies.com/education/science/anatomy/4-types-of-chemical-bonds/>

List of Major Equipment/ Instrument

· Glass wares

SUGGESTED LIST OF PROPOSED STUDENT ACTIVITIES

Following is the list of proposed student activities like:

- Teacher guided self learning activities.
- Course/topic based internet based assignments.
- Library survey regarding Engineering Material used in different industries.
- Industrial Visits of one or Two Industries.
- Sampling & Testing of water collected from different places.
- These could be individual or group-based.