GUJARAT TECHNOLOGICAL UNIVERSITY

Syllabus for Diploma in Vocation (D.Voc), 1st Semester
Branch: Software Development
Subject Name: Applied Chemistry
Subject Code: 1210202

With effective from academic year 2018-19

Teaching and Examination Scheme:

Teaching Scheme			Credits	Examination Marks				Total Marks
				Theory		Tutorial/ Practical		
L	P	OJT	C	University exams (ESE)	Progressive Assessment (PA)	External Practical /viva Exam(ESE)	Internal evaluation Practical /viva Exam(PA)	
3	-	-	3	50	-	-	-	50

L- Lectures; P- Practical; OJT- On Job Training; C- Credit; ESE- End Semester Examination; PA- Progressive Assessment

Program Objectives:

- It helps to improve the understanding of Chemistry as a basic science subject among the engineering students and will further create interest towards learning it.
- Basic information will be provided by good foundation in chemical knowledge that will allow engineering students to make qualitative and quantitative inquiries in natural sciences and technology.
- The content has been distributed in such way that all branches which have "Chemistry as a subject" are covered.

Course Content: Theory

Unit No.	Content	Hours
1.	**Structure of Atom:** Rutherford model of the structure of atom, Bohr's theory of electrons, quantum numbers and their significance, de-Broglie equation and uncertainty principle, electronic configuration of 1 to 30 elements.	06
2.	**Periodic Properties of Elements:** Periodic law, periodic table, periodicity in properties like atomic radii and volume, ionic radii, ionization energy and electron affinity. Division of elements into s, p, d and f blocks.	06
3.	**Chemical Bonds:** Electrovalent, covalent and coordinate bond and their properties. Metallic bonding (electron cloud mode) and properties (like texture, conductance, luster, ductility and malleability).	06
4.	**Fuel and their Classification:** Definition, characteristics, classification into solid, liquid and gaseous fuel. Petroleum and brief idea of refining into various factions and their characteristics and uses. Calorific value of fuel, Gaseous fuels- preparation, properties, composition and use of producer gas, water and oil gas.	06
5.	**Water:** Impurities in water, methods of their removal, hardness of water, its types, causes and removal, disadvantages of hard water in boilers, pH value and its determination by calorimetric method.	06
6	**Corrosion:** Its meaning, theory of corrosion, prevention of corrosion by various methods using metallic and non-metallic coatings.	06

7	**Plastic and Polymers:** Plastic-thermo-plastic and thermo-setting. Introduction of Polythene. P.V.C. Nylon, synthetic rubber and phenol-formal-dehyde resin, their application in industry.	**06**
	Total Hours:	**42**

Suggested Specification table with Marks (Theory):

Distribution of Theory Marks				
R Level	U Level	A Level	N Level	E Level
5	20	15	5	5

Legends: R: Remembrance; U: Understanding; A: Application, N: Analyze and E: Evaluate and above Levels (Bloom's Taxonomy)

Reference Books:

1. Engineering Chemistry by Jain and Jain Publisher, DhanpatRai Publishing Co.
2. Engineering Chemistry by Dr. O.P. Agrawal, Khanna Publishers Delhi.
3. Organic Chemistry by Bahl and Bahl., S Chand & Co. Ltd.
4. Essential of Physical Chemistry by Bahl and Tuli, S Chand & Co. Ltd, New Delhi.

Course Outcomes:

After learning the course, the students should be able

- To build a basic knowledge of the structure of chemistry.
- To analyze scientific concepts and think critically.
- To review the importance and relevance of chemistry in our everyday life.
- To be able to utilize the methods of science as a logical means of problem solving.