

(Proposed from A.Y 2018-2019)

NIRMA UNIVERSITY
Institute of Technology
(B. Tech. All Programmes)
(Semester I/II)

L	T	P	C
2	0	2	3

Course Code	CY102
Course Title	Chemistry

Course Learning Outcomes (CLO):

At the end of the course, students will be able to –

1. relate the fundamentals and their application in various field of engineering,
2. identify and apply the principles of green chemistry in improving the existing technology,
3. categorize the materials on the basis of their properties,
4. select appropriate method of analysis and interpret its result.

Syllabus

Teaching Hours

Unit 1 Water and its Treatment

08

Introduction, Sources of water impurities, Hardness of water, Degree of hardness, Softening of water, Water treatment processes, Problems with boiler feed water and its treatments Specifications for drinking water (BIS standards)

Unit 2 Fuel

05

Calorific Value, Types of fuel, Selection of fuels, Analysis of coal:- Proximate and ultimate analysis, Flue gases:- Orsat apparatus, Alternative fuels:- Compressed Natural Gas (CNG), Liquefied Natural Gas (LNG), Ethanol, Bio-diesel

Unit 3 Lubricants

04

Classification and functions of lubricants, Properties:- Lubricating oil and Greases, Selection of lubricants

Unit 4 Polymers and Composite materials

05

Introduction to Polymers and Polymerization, Elastomers, Classification and uses, Biopolymers:-Cellulose and Starch, Advanced polymeric materials, Composites:- Introduction, Classification and Applications

Unit 5 Green Chemistry

03

Overview, Set of Principles of Green Chemistry, Industrial applications

Unit 6 Engineering Materials

04

Adhesives:- Characteristics, Classification, and Uses, Fullerenes:- Structure, Properties and Applications, Nanorods:- Brief Introduction, Organic Electronic Materials:- Introduction, Types and Applications, Liquid Crystals:- Introduction, Classification and Applications, Explosives:- Introduction, Classification, Characteristics, Disarmament, Weapons of Mass Destruction (WMD), Peaceful uses of explosives

Unit 7 Overview of electrochemical systems

01

Self Study:

The self study contents will be declared at the commencement of semester. Around 10% of the questions will be asked from self study contents.

Laboratory Work:

Laboratory work will be based on above syllabus with minimum 12 experiments to be incorporated.

Suggested Readings

1. P.C. Jain and Monika Jain, Textbook of Engineering Chemistry, Dhanpat Rai Publishing Co.
2. Shashi Chawla, Textbook of Engineering Chemistry, Dhanpat Rai Publishing Co.
3. S.S. Dara, Textbook of Engineering Chemistry, S. Chand and Company.
4. Mike Lancaster, Green Chemistry: An Introductory Text, Royal Society of Chemistry.
5. J.C. Kuriacose and J. Rajaram, Chemistry in Engineering and Technology, Tata Mc Graw Hill.
6. Prasanta Rath, Engineering Chemistry, Cengage Learning.
7. Sunita Rattan, A Textbook of Engineering Chemistry, S.K. Kataria & Sons.

L: Lecture, T: Tutorial, P: Practical, C: Credit

w.e.f. academic year 2018 and onwards

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