

Department of Chemistry, College of Basic Science and Humanities

Class: 1st year B. Tech (Ag. Engg.) Semester: I

Course Code: CHM111

Course Title: Engineering Chemistry

Credit: 2+1

Theory

Lesson Plan

Name of the Chapter	Topic Title	No. of Lectures	Name of the Faculty
Phase rule	Phase, component, degree of freedom & its application to one component & two component systems	4	Dr. H. S. sahuo
Fuels	Classification and calorific value and its determination by bomb calorimeter	1	Dr. P. K. Jena
Colloids	Classification and properties	2	Dr. H. S. Sahoo
Corrosion	Causes, types and methods of prevention-proper designing and its protection	2	
Water	Temporary and permanent hardness, disadvantages of hard water scale	2	
Analytical Method	Basic idea on thermo-gravimetric and polarographic analysis, nuclear radiation,	2	
	Nuclear detectors and analytical applications of radio-active material discovery carbon dating	3	
Enzymes	Basic idea on enzymes, their use in manufacturing of ethanol and acetic acid by fermentation method	1	Dr. P. K. Jena
Principles of food chemistry	Introduction to lipids, proteins, carbohydrates and vitamins	3	
	Introduction to food preservatives, colouring and flavoring reagents of Food	2	
Lubricants	Lubricants its Classifications & its properties-	3	
Polymers	Type of polymerization with example, Properties, methods of determinations of molecular weight of polymers..	3	
Introduction to IR spectroscopy	Basic principles, Different types of vibrations spectroscopy and absorbance of different functional groups	4	

Course Break Up

Topic Title: Phase rule, Colloids, Corrosion, Water, Analytical Methods

Name of the Faculty: Dr H. S. Sahoo

Lecture No.	Details of the topic to be covered
1.	Phase, component, degree of freedom
2.	Application to one component system viz. water system
3.	Application to one component system sulphur system
4.	Two component system viz Pb-Ag system, Desilverisation of Pb
5.	Classification, properties like optical activity-Tyndall effect
6.	Brownian movement, electrical properties –Electrophoresis
7.	Causes, types and methods of prevention-proper designing
8.	Cathodic protection using pure metal and metal alloys, use of inhibitors
9.	Temporary and permanent hardness, disadvantages of hard water
10.	scale and sludge formation of boilers, boiler corrosion
11.	Basic idea on thermo-gravimetric and polarographic analysis
12.	Basic idea on nuclear radiation,
13.	Detectors and analytical applications of radio-active
14.	materials Discovery of isotopes and new elements, release of atomic energy
15.	Radio-active tracer and carbon dating

Topic Title: Fuels, Enzymes, Principles of Food chemistry, Lubricants, Polymers, Introduction to IR spectroscopy

Name of the Faculty: Dr P. K. Jena

Lecture No.	Details of the topic to be covered
1.	Classification and calorific value and its determination by bomb calorimeter
2.	Basic idea on enzymes, their use in manufacturing of ethanol and acetic acid by fermentation method
3.	Basic idea on lipids, proteins
4.	Classification of carbohydrates
5.	Vitamins – types and uses
6.	Introduction to food preservatives and colour, its types & advantages
7.	flavoring reagents of Food with examples
8.	Classifications, properties-viscosity, flash point and fire point mechanism
9.	Thick film, thin film and extreme pressure; Neutralization point
10.	Saponification number and mechanical stability
11.	Type of polymerization with example, properties-chemical resistance, Crystallinity.
12.	Effect of heat on polymers, general use, basic principles of determination of molecular weight by viscosity methods
13.	Basic principles of determination of molecular weight by light scattering methods
14.	Basic principles of IR Spectroscopy
15.	Beer – Lamberts law, types of vibration
16.	Absorbances of different functional group-
17.	Identification of functional groups