



SILVER OAK UNIVERSITY

Silver Oak Institute of Science

Bachelor of Science Physics

Course Name: Industrial Chemicals and Environment

Course Code: 2050263137

Semester: 2nd

Prerequisite:

1. Basic knowledge of Chemistry.

Course Objectives:

1. To understand the concept of Industrial Metallurgy, Energy and Biocatalysts.
2. To gain the knowledge regarding Water Pollution, Purification and treatment.

Teaching Scheme:

Teaching Scheme				
L	T	P	Contact Hours	Credit
2	0	4	6	4

Contents:

Unit	Topics	Teaching Hours	% Weightage
1	Industrial Metallurgy, Energy and Biocatalysts: Energy & Biocatalysts: Sources of energy: Coal, petrol and natural gas. Nuclear Fusion / Fission, Solar energy, Hydrogen, geothermal, Tidal and Hydel, etc. Introduction to bio-catalysis: Importance in "Green Chemistry" and "Chemical Industry".	15	50
2	Water Pollution, Treatment and Purification: Hydrological cycle, water resources, aquatic ecosystems, Sources and nature of water pollutants, Techniques for measuring water pollution, Impacts of water pollution on hydrological and ecosystems. Water purification methods. Effluent treatment plants (primary, secondary and tertiary treatment). Industrial effluents from the following industries and their treatment: electroplating, textile, tannery, dairy, petroleum and petrochemicals, agro, fertilizer, etc. Sludge disposal. Industrial waste management, incineration of waste. Water treatment and purification (reverse osmosis, electro dialysis, ion exchange). Water quality parameters for waste water, industrial water and domestic water.	15	50

Course Outcomes:

Sr. No.	CO Statement	Unit
CO-1	Understand the basic concepts of Industrial Metallurgy and Energy & Biocatalysts.	1
CO-2	Explore different world life acts such as forest conversion act, water control pollution act and air prevention and control act.	2
CO-3	Explore the importance of Green Chemistry.	1
CO-4	Gain the basic Knowledge of Water Pollution, treatment and Purification.	2

Teaching & Learning Methodology:

1. Problem based Learning
2. Cooperative based Learning
3. Competency based Learning
4. Experiment centric teaching methods
5. Case studies
6. Interactive Lectures

List of Experiments:**Total Hours: 56**

Sr.No	Practical Name
1	Preparations of standard solutions.
2	Qualitative analysis for identification of one cation and one anion in a given inorganic compound having CuSO ₄ .
3	Qualitative analysis for identification of one cation and one anion in a given inorganic compound having NaCl.
4	Qualitative analysis for identification of one cation and one anion in a given inorganic compound having BaCl ₂ .
5	Qualitative analysis for identification of one cation and one anion in a given inorganic compound having CaCO ₃ .
6	Qualitative analysis for identification of one cation and one anion in a given inorganic compound having CaCl ₂ .

Books Recommended: -

1. Felder RM, Rousseau RW, Bullard LG. "Elementary principles of chemical processes". John 2020 Aug 11
2. Kent JA, Riegel's, "handbook of industrial chemistry". Springer Science & Business Media; 2012 Dec 6. 3.
3. Chauhan BS," Environmental studies", Firewall Media; 2008.
4. De Anil K, "Environmental chemistry". New Age International; 2003.

List of Open-Source Software/learning website:

1. <http://silveroakuni.ac.in/video-lecture>

CO-PO-PSO Matrix:

CO. No.	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2
CO-1	3	2	3	2	2	3	3	2			2	3	3
CO-2	3	2	3	2	2	3	3	2			2	3	3
CO-3	3	2	2	2	2	2	3	2			2	3	3
CO-4	3	3	2	2	2	3	3	3			3	3	3