

CURRICULUM FOR COURSE ON
ANALYSIS OF INDUSTRIAL CHEMICALS

Theory Classes

S. No.	Topic	No. of Lectures (Hrs)
1.	Basic Principles of Thermodynamics	02
2.	Chemical Kinetics	02
3.	Types of Organic Reactions	03
4.	Reaction Mechanism	03
5.	Process Engineering and Designing	03
6.	Instrumentation and Process Control	02
7.	Unit Operation and Maintenance	02
8.	Mass and Heat transfer calculation	02
9.	Analysis of Industrial chemicals by Classical methods	05
10.	Analysis of industrial chemicals by Chromatographic techniques – HPLC, GC	05
11.	Analysis of Industrial chemicals by Spectroscopy	02
12.	Safety of Hazardous chemicals	02
Total		33

Practical Classess

S. No.	Topic	No. of Hours
1.	Types of Organic Reactions	05
2.	Reaction Mechanism	05
3.	Process Engineering and Designing	05
4.	Unit Operation and Maintenance	04
5.	Mass and Heat transfer calculation	02
6.	Analysis of Industrial chemicals by Classical methods	12
7.	Analysis of industrial chemicals by Chromatographic techniques – HPLC, GC	12
8.	Analysis of Industrial chemicals by Spectroscopy	10
9.	Safety of Hazardous chemicals	05
Total		60

CURRICULUM FOR COURSE ON
QA/QC OF PESTICIDES AND THEIR FORMULATIONS

Theory Classes

S. No.	Topic	No. of Lectures
1.	Analytical chemistry – General Perspective	01
2.	Introduction of Analytical instruments	01
3.	Acid Base Equilibria	01
4.	Neutralisation Titration	01
5.	Complexometric Titration	01
6.	Gravimetric analysis	01
7.	Precipitation Titration	01
8.	Basic aspects of separation methods	02
9.	General principles of chromatography	02
10.	Liquid column chromatography	02
11.	Gas chromatography	02
12.	HPLC	02
13.	Ultraviolet - Visible Spectroscopy	01
14.	Mass Spectrometry	04
Total		22

Practical Classes

S. No.	Topic	No. of Lectures
3.	Acid Base Equilibria	02
4.	Neutralisation Titration	02
5.	Complexometric Titration	02
6.	Gravimetric analysis	02
7.	Precipitation Titration	02
8.	Basic aspects of separation methods	04
9.	General principles of chromatography	02
10.	Liquid column chromatography	04
11.	Gas chromatography	04
12.	HPLC	04
13.	Ultraviolet - Visible Spectroscopy	04
14.	Mass Spectrometry	06
Total		38

CURRICULUM FOR COURSE ON
HANDLING OF HAZARDOUS CHEMICALS

S. No.	Topic	No. of Lectures (Hrs)
1	Physical and Chemical Properties of Materials	02
2.	Toxicology and Risk Assessment	02
3.	Environmental Fate of Hazardous Materials	03
4.	Worker Health and Safety	03
5.	Personal Protection and Safety	03
6.	Handling and Storage of Hazardous Materials	02
7.	Emergency Management	02
8.	On-site Waste Management	02
9.	Pollution Prevention	05
10.	Hazardous Waste Recycling, Treatment and Disposal	05
11.	Air & water Quality	02
12.	Transportation of Hazardous Materials	02
Total		33

Practical Classess

S. No.	Topic	No. of Hours
1.		
2.		
3.		
4.		
5.		
6.		
7.		
8.		
9.		
Total		

CURRICULUM FOR COURSE ON
INDUSTRIAL & CHEMICAL SAFETY

S. No.	Topic	No. of Lectures (Hrs)
1.	Hazardous chemical safety	02
2.	Equipment safety	02
3.	Accident Safety	03
4.	Chemical Safety	03
5.	Construction Safety	03
6.	Demolition Safety	02
7.	Eye Safety	02
8.	First Aid	02
9.	Healthcare Safety	02
10.	Laboratory Safety	02
11.	Poison Safety	02
12.	Tool And Equipment Safety	02
13.	Workplace Safety	
Total		25

Practical Classess

S. No.	Topic	No. of Hours
1.		
2.		
3.		
4.		
5.		
6.		
7.		
8.		
9.		
Total		

CURRICULUM FOR COURSE ON
PROCESS AND PLANT OPERATIONS

S. No.	Topic	No. of Lectures (Hrs)
1.	The plant and its products, raw materials used capacity of production etc.	
2.	Different sections of the plant including process, maintenance and their activities.	
3.	Study of the process and operations carried out in the establishment	
4.	Familiarizations with utilities and service lines such as steam water, vacuum, compressed air, refrigeration, air conditioning units etc.	
5.	Cause and prevention of accidents first aid to the injured.	
6.	Personal safety and use of personal protective equipments.	
7.	House keeping	
8.	Fire prevention and fire fighting.	
9.	Isolation of equipments and ancillaries prior to handing over to the maintenance	
10.	Familiarization with sample quality control tests and reading of quality reports	
Total		

Practical Classess

S. No.	Topic	No. of Hours
1.	Attachment to Chemical Industry	1 month

CURRICULUM FOR COURSE ON
CHEMICAL PACKAGING & LABELING

S. No.	Topic	No. of Lectures (Hrs)
1.	Review of basics of Physical, Inorganic, Organic & Analytical Chemistry	02
2.	Packaging & productivity	02
3.	Package components	03
4.	Transit hazards- Road, rail, sea & air	03
5.	Physical & environmental protection against handling	03
6.	Detailed study of Traditional Materials of Packaging: Paper& Paper-based, Glass, Metals, Jute, Cellulose & Wood-based materials.	02
7.	Test procedure for packaging material & packaged products	02
8.	Manufacture & properties of packaging material	02
9.	Types of packaging	05
10.	Properties and applications of packaging	05
11.	Machineries used in packaging	
12.	Packaging of chemicals	
13.	Labeling of chemicals	
Total		