

INSTITUTE OF ENGINEERING AND MANAGEMENT

GOURAHARI VIHAR, PO: RANIPUT, JEYPORE – 764 005

LESSON PLAN

Name of the Subject: Instrumentation & Chemical Analysis Engineering

Name of the Faculty: Bijaya Kumar Maharana

Semester: 5TH Semester

Branch: CHEMICAL

Semester From: July to December

No. of Weeks: 15 Weeks

Week	Day	Theory/ Practical Topics	Classes
		Unit 1 - INSTRUMENT	5
1	1	Define Instruments	1
	2	Standards of measurement	1
	3	Functional elements of instruments	1
	4	Performance characteristics of an instrument	1
2	5	Importance of Instruments	1
		Unit 2- MEASUREMENTS OF CHARACTERISTICS	10
	6	Measurement of viscosity	1
	7	Measurement of viscosity by Red Wood Viscometer	1
	8	Falling Sphere Viscometer	1
3	9	Continuous Viscometer	1
	10	Principle of spectrophotometer	1
	11	Uses of spectrophotometer	1
	12	Principle of polarimeter	1
4	13	Uses of polarimeter	1
	14	Measurement of refractive index	1
	15	Measurement of refractive index by Refractometer	1
		Unit-3 pH & CONDUCTIVITY MEASUREMENT	5
	16	Define pH	1
5	17	Define CONDUCTIVITY MEASUREMENT	1
	18	Measurement of pH	1
	19	Define electrical conductivity	1
	20	Measurement of electrical conductivity	1

6		Unit -4 TEMPERATURE MEASUREMENT	10
	21	Define temperature measurement	1
	22	Different methods of temperature measurement	1
	23	Different temperature scales	1
	24	Temperature measurement	1
7	25	Temperature measurement by liquid	1
	26	Temperature measurement by liquid in glass thermometer	1
	27	Describe temperature measurement on electrical phenomena	1
	28	Describe temperature measurement on electrical phenomena – like thermocouple	1
8	29	Describe temperature measurement on electrical phenomena – like resistance thermometer	1
	30	Describe temperature measurement on electrical phenomena – like thermocouple, resistance thermometer, optical pyrometer, radiation pyrometer	1
		Unit 5 PRESSURE MEASUREMENT	10
	31	Define PRESSURE	1
	32	Different types of pressure	1
9	33	Different methods of measurement of pressure.	1
	34	Pressure measurement by Bourdon tube	1
	35	Explain Bellows	1
	36	Maintenance.	1
10	37	Repair of pressure measuring instruments.	1
	38	Explain Bourdon tube	1
	39	Measuring instruments.	1
	40	Measurement	1
		Unit 6 AUTOMATIC CONTROL	20
11	41	Define AUTOMATIC CONTROL	1
	42	Define AUTOMATIC & explain the application with example.	1
	43	Elementary idea about transfer functions for a first order system	1
	44	Time constant.	1
	45	Process Control system	
12	46	Block diagram of Process Control system	1
	47	Components of Process Control system	1
	48	Description of Process Control system	1
	49	Advantages of Process Control system	1
13	50	Disadvantages of Process Control system	1
	51	Types of process control system	1
			1

14	52	Elementary idea of automatic controllers	1
	53	Elementary idea about different types of automatic controllers	1
	54	Principle of PLC	1
	55	computer Aided measurement	1
15	56	computer Aided measurement and control	1
	57	Advantages & disadvantages of PLC	1
	58	Previous years Question answers solve	1
	59	Revision	1

RECOMMENDED BOOKS

1. Industrial Instrumentation by D.P. Eckman , CBS Publication
2. Industrial Instrumentation and control by S.K. Singh, Tata Mc Grawhill
3. Instrumental Approach to Chemical Analysis ,by A.K. Srivastava , S Chand