Faculty of Engineering and Technology

DEPARTMENT OF ICE

Course Code	:	IC0452
Course Title	:	INSTRUMENTATION & CONTROL IN PETROCHEMICAL INDUSTRIES
Year& Semester	:	VIII semester
Course duration	:	Even semester (Jan-May 2014)
Location	:	TECH Park

Faculty Details:

Name of the staff	Section	Office	Office Hours	Mail ID
Mrs.P.Anitha Saraswathi	ICE A	Tech park	8.30 a.m-4.30 pm	anitha.p@ktr.srmuniv.ac.in
V.S.Krushnasamy	ICE B	Tech park	8.30am-4.30 pm	krushnasamy.v@ktr.srmuniv.ac.in

Required Text Books:

- Dr. Ram Prasad, *Petroleum Refining Technology*, Khanna Publisher, 1st Edition, 2000
- Liptak B.G., *Instrumentation in Process Industries*, Chilton Book Company, 1973
- Considine M. and Ross S.D., *Handbook of Applied Instrumentation*, McGraw Hill, 1962

Web Resource:

- www.en.wikipedia.org/wiki/Petrochemical_engineering

Objective:

The students will be able to

- It deals with various equipments involved in the Petrochemical Industries
- It deals Distillation Column, Reactor, Heat exchangers, Evaporators
- It deals with performance of the pumps also

Tentative test details and portions:

Cycle Test – I :	05.02.2014	Unit I & II
Cycle Test –II :	05.03.2014	Unit III & IV
Model Exam :	15.04.2014	All five units

Assessment details

Cycle test I	10 marks
Cycle test II	10 marks
Model test	20 marks
Surprise test	5 marks
Attendance	5 marks
TOTAL	50 marks

Outcomes

Students who have successfully completed this course

Course outcome	Program outcome
❖ Will know the complete operation of Petrochemical Industries ❖ Will acquire basic understanding of reaction & control of this Industries	❖ The students will be able to understand the basis of petrochemical industries. ❖ The Students will be able to understand the working of chemical Reactors, Control Heat Exchangers and Evaporators, ❖ The students will have a broad knowledge in working of various instruments that are used in petrochemical industries. ❖ The Students will be able to acquire knowledge about Control of pumps, Effluent and Water Treatment Control

Detailed Session Plan

Day	Name of the topics	Reference
	UNIT-I	1. Dr. Ram Prasad, *Petroleum Refining Technology*, Khanna Publisher, 1st Edition, 2000 2. Dr. Ram Prasad, *Petroleum Refining Technology*, Khanna Publisher, 1st Edition, 2000 3. Liptak B.G., *Instrumentation in Process Industries*, Chilton Book Company, 1973 4. Liptak B.G., *Instrumentation in Process Industries*, Chilton Book Company, 1973
1	Introduction: Petroleum Exploration	
2	Petroleum production	
3	Petroleum Refining	
4	Refining Methods	
5	Refining Capacity in India	
6	Consumption of Petroleum products in India	
7	Constituents of Crude Oil	
8	Light distillates	
9	Heavy distillates	
	UNIT-II	
10	P & I diagram of petroleum refinery	
11	Atmospheric Distillation of Crude oil	
12	Vacuum Distillation process	
13	Thermal Conversion process	
14	Control of Distillation Column	
15	Temperature Control	
16	Process control	
17	Feed control	
18	Reboiler Control, Reflux Control	
	UNIT-III	
19	Controls of chemical Reactors	
20	Temperature Control	
21	Pressure Control	
22	Control of Dryers	
23	Batch Dryers	
24	Atmospheric Dryers	
25	Vacuum Dryers	
26	Continuous Dryers.	
	UNIT- IV	
27	Control Heat Exchangers and Evaporators	
28	variables and Degrees of freedom	
29	Liquid to Liquid Heat Exchangers	
30	Steam Heaters	
31	Condensers	
32	Reboilers and Vaporizers	
33	Cascade Control	
34	Feed forward Control.	
35	Evaporators: Types of Evaporators.	

	UNIT-V	5. Liptak B.G., *Instrumentation in Process Industries,* Chilton Book Company, 1973
36	Centrifugal pump:	
37	On-Off level control	
38	Pressure control -	
39	Flow control	
40	Throttling control.	
41	Rotary pumps: On-Off pressure control.	
42	Reciprocating Pumps: On-Off control	
43	Throttling control.	
44	Effluent and Water Treatment Control: Chemical Oxidation	
45	chemical Reduction	
46	Naturalization - Precipitation - Biological control.	