GUJARAT TECHNOLOGICAL UNIVERSITY

CHEMICAL ENGINEERING (COMPUTER AIDED PROCESS DESIGN) (16)

PROCESS PLANT SIMULATION LAB

SUBJECT CODE: 2721611

SEMESTER: II

Type of course: Open Elective (M.E.CAPD)

Prerequisite: Knowledge of fundamentals of environment studies

Rationale: Know about role of C.P. in development in Chemical Industries.

Teaching and Examination Scheme:

Teaching Scheme			Credits	Examination Marks						Total Marks
L	T	P	C	Theory Marks		Practical Marks				
				ESE (E)	PA (M)	ESE (V)		PA (I)		
						ESE	OEP	PA	RP	
0	0	4	2	0	0	50	30	20	0	100

Content:

Sr. No.	Topics	Teaching Hrs.	Module Weightage
1	Experiment to be performed on process plant simulation software like Chemcad, Hysis, Aspun, Design-II, Enviropro design for steady state & dynamic simulation.	7	10
2	Steady State Simulation:		
3	Simulation of Stream mixing & splitting.	6	10
4	Simulation of decanter, Pump, Valve.	6	8
5	Simulation of Distillation, Adsorption, Heat exchanger, Liquid-Liquid Extraction, Reactors, Dryer.	6	8
6	Flash Calculation	6	8
7	Material & Energy balance for manufacturing process flow sheet.	6	10
8	Debottlenecking & Set point Optimization study for process plant.	7	8
9	Dynamic Simulation :		
10	Batch Distillation Simulation.	7	8
11	Batch Reactor Simulation	7	10
12	Batch Dryer Simulation.	7	10
13	Pressure Level & Flow Controller	7	10

Course Outcome:

After learning the course the students should be able to:

- Study about Debottlenecking & Set point Optimization for process plant .
- Learn the use of simulation software like Chemcad, Hysis, Aspun.
- Understand the use of Enviropro design for steady state & dynamic simulation.
- Learn the Flash Calculation
- Learn about Simulation of decanter, Pump, Valve.

- Study about Batch Reactor Dynamic Simulation.
- Learn about Dynamic Simulation of Pressure Level & Flow Controller

List of Experiments:

Practical's based on above topics.

Open Ended Problems:

1. Steady-State Performance Measures.
2. Types of Simulation and its usage in Chemical Engineering..
3. The Steady State Modeling and Simulation of the Chemical Multivariable Systems.
4. Steady state and Dynamic simulation of molten carbonate fuel cells

Major Equipment:

Different Software Like Chem Cad, Aspun, Design-II etc

List of Open Source Software/learning website:

- www.scielo.br/scielo.php?pid=S0104-66321998000400004&script.
- www.aidic.it/escape20/webpapers/281Patrascioiu.pdf
- dwb.unl.edu › About › Science › Chemical Engineering
- www.mose.units.it/doc/p0253.pdf
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