



**Gyanmanjari**  
Innovative University

Course Syllabus  
Gyanmanjari Diploma Engineering College  
Semester-3(Diploma)

**Subject:** Chemical Process Technology-DETC13203

**Type of course:** Major

**Prerequisite:** Basic knowledge of Science

**Rationale:** This course mainly encompasses the major and general area of industries includes chemical process.

**Teaching and Examination Scheme:**

Teaching Scheme			Credits	Examination Marks					Total Marks
CI	T	P		C	Theory Marks		Practical Marks		
			ESE		MSE	V	P	ALA	
04	00	02	5	60	30	10	20	30	150

*Legends: CI-Class Room Instructions; T – Tutorial; P - Practical; C – Credit; ESE - End Semester Examination; MSE- Mid Semester Examination; V – Viva; CA - Continuous Assessment; ALA- Active Learning Activities.*

**Course Content:**

SR. NO	Course content	Hrs	% Weight age
1	<p><b>Introduction:</b> Introduction of Chemical process industries with reference to Indian resources, trade and export potential. Process symbols used for various equipment. Uses of different process equipment. Introduction to Good Manufacturing practices (GMP) and Good Laboratory Practices (GLP).</p> <p><b>Sugar Industry:</b> Manufacturer of cane sugar, Various engineering problems encountered in sugar industry, Pollution abatement in sugar industry.</p>	15	25%



2	<b>Pulp and Paper Industry:</b> Different pulping process Manufacturing of paper Role of additives Various engineering problems encountered in paper industry. Pollution abatement in pulp and paper industry. Petroleum Refining Industry Constituents of petroleum, crude oil distillation- atmospheric and vacuum distillation. Pollution abatement in petroleum refining plant.	15	25%
3	<b>Fermentation Industry:</b> Introduction of fermentation industry types of fermentation processes. Production of ethyl alcohol by fermentation. Industrial alcohol, manufacture of industrial alcohol-beers, wines and liquors, Various engineering problems encountered in fermentation industry Pollution abatement in fermentation industry.	15	25%
4.	<b>Soaps and Detergent Industry:</b> Manufacturing of soap, glycerin as by products from soap. Manufacturing of detergents (including raw material and manufacturing process) Manufacturing of House disinfectants. Various engineering problems encountered in soaps and detergent industry. Polymer Industry Types of polymer. polymerization process. manufacture of polyethylene, styrene nylon 6. nylon 66. rayon. Manufacturing of rubber.	15	25%
		60	100%

**Continuous Assessment:**

Sr. No	Active Learning Activities	Marks
1.	<b>Environmental Impact and Sustainability:</b> Student need to understand Environmental issues associated with paper production. Sustainable practices and certifications (FSC, PEFC, etc.). Recycling and waste management. Prepare a report and submit it to GMIU Web Portal.	10
2.	<b>Industry Exposure:</b> Students need to visit one Soap Industry in Chitra GIDC Bhavnagar. Prepare a report on their manufacturing process with photographs. Submit on GMIU Web Portal.	10
3.	<b>Fermentation at Home:</b> Students need to list out at least 10 Fermentation process taking place in your home or restaurant. Submit details in GMIU Web portal.	10
<b>Total</b>		30



**Suggested Specification table with Marks (Theory):60**

Distribution of Theory Marks (Revised Bloom's Taxonomy)						
Level	Remembrance (R)	Understanding (U)	Application (A)	Analyze (N)	Evaluate (E)	Create (C)
Weight age	35%	35%	30%	00	00	00

Note: This specification table shall be treated as a general guideline for students and teachers. The actual distribution of marks in the question paper may vary slightly from above table.

**Course Outcome:**

After learning the course the students should be able to:	
CO1	Learn the basic concepts of chemical process.
CO2	Knowledge of how Pulp and Paper Industry works
CO3	Clear the concepts of Fermentation Industry
CO4	Achieve the understanding about Soaps and Detergent Industry

**List of Practical:**

Sr. No	Descriptions	Unit No.	Hrs
1.	Inorganic Quantitative Analysis (Minimum 10) (1+1 compound)	All	30
	<b>Total</b>		30



**Instructional Method:**

The course delivery method will depend upon the requirement of content and need of students. The teacher in addition to conventional teaching method by black board, may also use any of tools such as demonstration, role play, Quiz, brainstorming, MOOCs etc.

From the content 10% topics are suggested for flipped mode instruction.

Students will use supplementary resources such as online videos, NPTEL/SWAYAM videos, e-courses, Virtual Laboratory

The internal evaluation will be done on the basis of Active Learning Assignment

Practical/Viva examination will be conducted at the end of semester for evaluation of performance of students in laboratory.

**Reference Books:**

- [1] Elements of Chemical Process Technology, O.P. Gupta, Khanna Publishing
- [2] Shreve's Chemical Process Industries, George T. Austin, Tata-McgrawHill Publication
- [3] Chemical Process Technology, Indra Deo Mall, CBS Publishers and Distributors Pvt. Ltd.
- [4] Chemical Process Technology and Simulation by Koyikkal Srikumarpublisher PHI Learning

