INSTITUTE	**FACULTY OF TECHNOLOGY**
PROGRAM	**MASTER OF TECHNOLOGY in CHEMICAL ENGINEERING**
SEMESTER	**2**
COURSE TITLE	**INDUSTRIAL CHEMICAL TECHNOLOGY**
COURSE CODE	**01CM0221**
COURSE CREDITS	**3**

Objective:

1 To provide students with an in-depth understanding of the processes, technologies, and environmental implications associated with key chemical industries.

Course Outcomes: After completion of this course, student will be able to:

1 Utilize the technological methods in problem solving in process plant.

2 Analyse the process flow diagrams.

3 Demostrate the knowledge on the importance of various unit processes and unit operations involved in industrial processes.

4 Build a bridge between theoretical and practical concept used in industry.

Pre-requisite of course: Basic knowledge involved in chemical industries.

Teaching and Examination Scheme

Theory Hours	Tutorial Hours	Practical Hours	ESE	IA	CSE	Viva	Term Work
3	0	0	50	30	20	0	0

Contents : Unit	Topics	Contact Hours
1	**Chlor-Alkali Industries** Indian chemical industry - An overview,, Manufacture of Soda Ash, Chlorine and Caustic Soda, Major engineering problems, Process economics	8
2	**Sulphur and Silicate Industries** Mining of Sulphur and different sources of Sulphur, of Sulphuric Acid, Glass and Cement	8
3	**Fertilizer Industries** Nitrogen Industries: Synthetic Ammonia, Nitric Acid, Urea, Nitrogenous Fertilizers, Phosphorous industries: Manufacture of phosphorous, Phosphoric Acid, Super phosphate and Triple super phosphate, Potassium industries: Potassium chloride and potassium sulphate	10

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Contents : Unit	Topics	Contact Hours
4	**Natural Products** Edible and essential oils, soaps and detergents, glycerine, pulp and paper, starch and derivatives, sugar	6
5	**Synthetic Organic Chemicals** Methane and synthesis gas, ethylene. Aromatic chemicals, Phenol, benzene, Production of thermoplastic and thermo-setting resins: polyethylene, epoxy resins, Processes for the production of natural and synthetic rubber	8
Total Hours		**40**

Textbook :

1 Handbook of industrial chemistry and biotechnology, Kent, J. A. , Springer Science & Business Media., 2013

References:

1 Handbook of industrial chemistry, Handbook of industrial chemistry, Ali, M. F., El Ali, B. M., & Speight, J. G., McGraw-Hill Companies, New York., 2005

Suggested Theory Distribution:

The suggested theory distribution as per Bloom's taxonomy is as follows. This distribution serves as guidelines for teachers and students to achieve effective teaching-learning process

Distribution of Theory for course delivery and evaluation

Remember / Knowledge	Understand	Apply	Analyze	Evaluate	Higher order Thinking / Creative
10.00	20.00	30.00	30.00	10.00	

Instructional Method:

1 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.

2 The internal evaluation will be done on the basis of continuous evaluation of students in the laboratory and class-room

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

4 Students will use supplementary resources such as online videos, NPTEL videos, ecourses, Virtual Laboratory.

Supplementary Resources:

1 https://www.cheme.engineering.cmu.edu/education/online-course.html

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