NATIONAL INSTITUTE OF TECHNOLOGY, TIRUCHIRAPPALLI

DEPARTMENT OF CHEMICAL ENGINEERING

COURSE PLAN – PART I			
Name of the programme and specialization	**B.Tech (Chemical Engineering)**		
Course Title	**CHEMICAL TECHNOLOGY**		
Course Code	**CLPC15**	**No. of Credits**	**3**
Course Code of Pre-requisite subject(s)	**-**		
Session	**July 2022**	**Section (if, applicable)**	**-**
Name of Faculty	**Dr. M. MATHESWARAN**	**Department**	**Chemical Engineering**
Official Email	**matheswaran@nitt.edu**	**Telephone No.**	
Name of Course Coordinator(s)	**Dr. P. Kalaichelvi**		
Official E-mail	**-**	**Telephone No.**	**-**
Course Type	**Theory course**		

Syllabus (approved in BoS)

Natural Products Processing: Production of pulp, paper and rayon, Manufacture of sugar, starch and starch derivatives, Gasification of coal and chemicals from coal.

Industrial Microbial Processes and Edible Oils: Fermentation processes for the production of ethyl alcohol, citric acid and antibiotics, Refining of edible oils and fats, fatty acids, Soaps and detergents.

Alkalies and Acids: Chlor -alkali Industries: Manufacture of Soda ash, Manufacture of caustic soda and chlorine -common salt. Sulphur and Sulphuric acid: Mining of sulphur and manufacture of sulphuric acid. Manufacture of hydrochloric acid.

Cement Gases, Water and Paints: Types and Manufacture of Portland cement, Glass: Industrial gases: Carbon dioxide, Nitrogen, Hydrogen, Oxygen and Acetylene -Manufacture of paints – Pigments

Fertilisers: Nitrogen Fertilisers; Synthetic ammonia, nitric acid, Urea, Phosphorous Fertilisers: Phosphate rock, phosphoric acid, super phosphate and Triple Super phosphate

REFERENCE BOOKS

1. G.T. Austin, N. Shreve's Chemical Process Industries", 5th Edn., McGraw Hill, NewYork, 1984.
2. W.V.Mark, S.C. Bhatia "Chemical Process Industries volume I and II", 2nd Edition 2007
3. R. Gopal and M. Sittig " Dryden's Outlines of Chemical Technology: For The 21st Century" Third Edition, Affiliated East-West Publishers, 1997.
4. S. D. Shukla and G. N. Pandey, "Text book of Chemical Technology" Vol 2, Vikash Publishing Company, 1984

COURSE OBJECTIVES

1. To impart the basic concepts of chemical technology.
2. To develop understanding about unit process and unit operations in various industries.
3. To learn manufacturing processes of organic and Inorganic Chemicals and its applications and major engineering problems encountered in the process
4. To learn the process flow sheet drawing for the manufacturing chemical processes.

NATIONAL INSTITUTE OF TECHNOLOGY, TIRUCHIRAPPALLI

MAPPING OF COs with POs	
Course Outcomes	**Programme Outcomes (PO)**
1. Understand the various unit operations and processes with their symbols	**1,2,3,11,12**
2. Understand the manufacturing process of natural products processing and industrial Microbial Processes and Edible Oils.	**1,2,3,5,6,11,12**
3. Understand the various chemical reactions involved in the process	**1,2,3,6,8,9,11,12**
4. Understand the manufacturing process of inorganic chemicals	**1,2,3,5,9,11,12**
5. Draw the process Flowsheet and understand the major engineering problems encountered in the processes.	**1,2,3,5,8,11,12**

COURSE PLAN – PART II

COURSE OVERVIEW

Chemical process industries has been playing important role in the development of a country in order to meet the basic needs of mankind.

There has been continuous upgradation in technologies for improving the overall economy of the process.

The purpose of the chemical technology course is to improve knowledge of the chemical processes along with emphasis on recent technological development.

The aim of the course is to study process technologies, availability of raw materials, production trends, preparation off low sheets, engineering and environmental problems of various chemical industries.

COURSE TEACHING AND LEARNING ACTIVITIES

S.No.	Week/Contact Hours	Topic	Mode of Delivery
1	Week 1	Introduction of chemical industries	Chalk & Talk
2	Week 2	Production of Pulp, Paper, Rayon	
3	Week 3	Manufacture of sugar, starch and starch derivatives	
4	Week 4	Gasification of coal, Chemicals from coal, Industrial Microbial Processes	
5	Week 5	Fermentation processes for the production of ethyl alcohol, production of citric acid and antibiotics, Refining of edible oils	
6	Week 6	Production of Fats and fatty acids, Soaps and detergents.	
7	Week 7	Manufacture of Soda ash, caustic soda and common salt	

8	Week 8	Mining of sulphur, Manufacture of sulphuric acid, hydrochloric acid	
21	Week 9	Types and Manufacture of Portland cement, Glass	
22	Week 10	Industrial gases: Carbon dioxide, Nitrogen, Hydrogen, Oxygen, Acetylene, Manufacture of paints, Pigments	
28	Week 11	Manufacture of Fertilisers, ammonia, nitric acid	
29	Week 12	Manufacture of Urea, Phosphorous Fertilisers, Phosphate rock	
33	Week 13	Manufacture of Phosphoric acid, Super phosphate, Triple Super phosphate	

COURSE ASSESSMENT METHODS (shall range from 4 to 6**)**

S.No.	Mode of Assessment	Week/Date	Duration	% Weightage
1	I cycle test	5rd week	1 hour	15%
2	Class Test - I	6th week	-	10%
3	II cycle test	10th week	1 hour	15%
4	Class Test -II	11th week	-	10%
5	Assessment	12th week	-	10%
CPA	Compensation Assessment*	13th week	1 hour	15%
6	End sem examination*	13th week	3 hour	40%

COURSE EXIT SURVEY (mention the ways in which the feedback about the course shall be assessed)

Feedback is planned to be collected twice; during class committee meetings and one at the end of course as through online questionnaire.

COURSE POLICY (including compensation assessment to be specified**)**

COMPENSATION ASSESSMENT

- Attending all the assessments are MANDATORY for every student.
- If any student is not able to attend any of the assessments (1 and 3 only) due to genuine reason, student is permitted to attend the compensation assessment (CPA).
- At any case, CPA will not be considered as an improvement test.

ATTENDANCE POLICY (A uniform attendance policy as specified below shall be followed)

- At least 75% attendance in each course is mandatory.

- A maximum of 10% shall be allowed under On Duty (OD) category.
- Students with less than 65% of attendance shall be prevented from writing the final assessment and shall be awarded 'V' grade.

ACADEMIC DISHONESTY & PLAGIARISM

- Possessing a mobile phone, carrying bits of paper, talking to other students, copying from others during an assessment will be treated as punishable dishonesty.
- Zero mark to be awarded for the offenders. For copying from another student, both students get the same penalty of zero mark.
- The departmental disciplinary committee including the course faculty member, PAC chairperson and the HoD, as members shall verify the facts of the malpractice and award the punishment if the student is found guilty. The report shall be submitted to the Academic office.
- The above policy against academic dishonesty shall be applicable for all the programmes.

ADDITIONAL INFORMATION, IF ANY

The Course Coordinator is available for consultation at times that are displayed on the coordinator's office notice board.
Queries may also be emailed to the Course Coordinator directly at **matheswaran@nitt.edu**

FOR APPROVAL

Course Faculty	CC- Chairperson	HOD
(Dr M. Matheswaran)	**(Dr. K. Sankar)**	**(Dr. P. Kalaichelvi)**