GUJARAT TECHNOLOGICAL UNIVERSITY
Master of Engineering, Chemical (Computer Aided Process Design)
Subject Code - 3721614
Semester II
Subject Name: Green Technologies for Process Industries

Type of course: Program Elective – III

Prerequisite: Knowledge of fundamentals of environment studies and chemical engineering

Rationale: Develop understanding about green technologies and its application for sustainable growth of process industries.

Teaching and Examination Scheme:

Teaching Scheme			Credits	Examination Marks				Total Marks
				Theory Marks		Practical Marks		
L	T	P	C	ESE (E)	PA (M)	ESE (V)	PA (I)	
3	0	0	3	70	30	0	0	100

Syllabus Content:

Sr. No.	Content	Total Hrs
1	Introduction to green technology, Role of green technology in survival and sustainable growth of chemical industries in India	4
2	Green Technologies : The basis, necessity and potential, green technology tools, methodology and applications	6
3	Process Modification / Changes, Process Technology Innovations, Equipment Modification, for implementation of green technologies in process industries.	6
4	Principle and concepts of green chemistry, use of unit operations implementation of green technologies in process industries, role of thermodynamics, reaction engineering, bio technology in development of green technology.	7
5	Use of energy audit, energy and utility integration, energy conservation for green technology	6
6	Clean and green fuel, Renewable energy sources, cleaner production technology concept and methodology	6
7	Role of green technology and process industries in climate change and mitigation.	7
8	Role of green technology with special reference to small and medium scale process industries.	3
9	Case studies pertaining to Role of green technology in process industries.	3

Suggested Specification table with Marks (Theory):

Distribution of Theory Marks					
R Level	U Level	A Level	N Level	E Level	C Level
10	**15**	**25**	**10**	**10**	**-**

Legends: R: Remembrance; U: Understanding; A: Application, N: Analyze and E: Evaluate C: Create and above Levels (Revised Bloom's Taxonomy)

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.

Reference Books:

1. Green chemistry and sustainable technologies by Roger R. D. , Springr Publications.
2. Green Technology byDustin M. an Paul R. SAGE Publication
3. Green Process Engineering From concept to Application, by Martiean Poux , CRC press

Course Outcomes: After successful completion of the course, students will be able to

Sr. No.	CO statement	Marks % weightage
CO-1	To Understand concept of green technology	20 %
CO-2	To understand use green technology for sustainable growth of process industries	30 %
CO-3	To develop proficiency in the applications of green technologies	30 %
CO-4	To develop and apply green technology for specific industry(Case Study mehtod)	20 %

List of Open Source Software/learning website:

- Students can refer to video lectures available on NPTEL.