

GUJARAT TECHNOLOGICAL UNIVERSITY

ENVIRONMENTAL ENGINEERING

B. E. SEMESTER: VII

Subject Name: **Air Pollution Control and Management**

Subject Code: **171302**

Teaching Scheme				Evaluation Scheme			
Theory	Tutorial	Practical	Total	University Exam (E)		Mid Sem Exam (Theory) (M)	Practical (Internal)
				Theory	Practical		
4	2	0	6	70	30	30	20

Sr. No.	Course Contents	Total Hrs
1.	Air quality and emission standards : Air quality and emission standards, Air pollution indices, and miscellaneous current topics	06
2.	Mobile Sources: IC engine and cycle, A/F ratio, sources of air pollutants, control by process change, engine design change, Stratified change, engines, fuel change, catalytic converters, air pollution by diesel engines and turbojet engines.	10
3.	Control of Sulphur Oxides: Introduction: thermo dynamics and kinetics of sulphur dioxide formation, general control methods, flue gas, desulphurisation processes.	10
4.	Control of Nitrogen oxides	10
5.	Control of Particulates: Particulate control mechanisms, gravity settler, venturi scrubber, cyclone separator, bagfilters electrostatic precipitator.	10
6.	Control of gases and vapours: Adsorption, absorption, design of adsorption tower, design of absorption tower, condensation and combustion, use of catalysts.	10
7.	Atmospheric Photochemical Reaction: Introduction, thermodynamics of photo chemical reactions, monoatomic oxygen and ozone formation. Role of oxides of nitrogen in photo oxidation, hydro carbon in atmospheric photo chemistry, oxidants in photo chemical smog, hydro carbon reactivity.	08

List of Term work:

1. Assignment based on Air quality and emission standards, Air pollution indices
2. Tutorial based on A/F ratio and Vehicle Pollution
3. Air Pollution Control Equipments for particulate control: Working principle, Construction, applications.
4. Assignments on different techniques for control of sulphur oxides
5. Assignments on different techniques for control of Nitrogen oxides.
6. Assignments on Control of gases and vapours.
7. Assignments on Atmospheric Photochemical reactions.

Reference Books:

1. Air Pollution – by Wark & Warner
2. Air Pollution – by Rao & Rao
3. Air Pollution – by Perkins
4. Air Pollution – by Stern Vol - I