GUJARAT TECHNOLOGICAL UNIVERSITY

ENVIRONMENTAL SCIENCE AND TECHNOLOGY (35)
ENVIRONMENTAL MANAGEMENT-II
SUBJECT CODE: 2163507
B.E. 6th SEMESTER

Type of course: Environmental Science & Technology

Prerequisite: A good fundamental backup of Pollution prevention practices

Rationale: The main objective of this subject is to make students aware about the interrelation ship among various management tools and estimation techniques. It Enhance their reach at the root cause by using modern techniques. It makes them learn about some handy references and have good grip over green business decision.

Teaching and Examination Scheme:

Teaching Scheme			Credits	Examination Marks						Total Marks
L	T	P	C	Theory Marks			Practical Marks			
				ESE (E)	PA (M)		ESE (V)		PA (I)	
					PA	ALA	ESE	OEP		
3	1	0	4	70	20	10	30	0	20	150

Content:

Sr. No.	Content	Total Hrs.	% Weightage
1	**Environmental Management Software:** Short Term Area Source Model (ICST), Air Dispersion Modelling AERMOD, DHWANI for noise pollution modelling, ALOHA for risk assessment, For water modelling MIKE 21 and MOD FLOW.	10	25
2	**Life Cycle Assessment :** Framework of Life Cycle Assessment, methods and challenges involved in applying LCA to relevant industrial and social issue, process-based, input-output based, and hybrid LCA methods, strengths and weaknesses of these types of LCA models, document and publish LCA studies.	12	25
3	**Fundamentals of GIS:** GIS Definitions and Terminology, GIS Categories, Levels/Scales of Measurement, spatial data modelling,GIS data management, GIS in EIA **Hazardous Waste Management:** Biomedical Waste Management, Chemical Waste management, radioactive waste management etc. Economics of Hazardous Waste.	12	25
4	**Green Business**: Carbon Credit, Carbon footprint, carbon dioxide secretion, Bio-augmentation, Co-processing, Energy recovery. Design of Green Belt, Advantage of Green Belt Development, Water harvesting, Bio diversity. **Climate Change and Environmental Management:** general overview of climate science and impacts, carbon management options, geo-engineering management options, vulnerability and	10	25

	adaptation		

Suggested Specification table with Marks (Theory):

Distribution of Theory Marks					
R Level	U Level	A Level	N Level	E Level	C Level
20	**20**	**20**	**20**	**20**	**00**

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

Reference Books:

1) Fundamental of Geographic Information Systems –Demers 1995 Edition.
2) Textbook of Remote Sensing and GIS, M.Anji Reddy, B.S.Publications
3) Environmental Impact Assessment, Canter, L.W., 1977, McGraw Hills, New York.
4) Renewable Energy Environment and Development, Hameswar Dayal Konark Publishers, Pvt., Ltd.
5) Hazardous waste management by Prof. Anjaneyulu
6) Standard handbook of Hazardous waste treatment and disposal by Harry M. Freeman, McGraw Hill 1997.
7) The Hitch Hiker's Guide to LCA Paperback – March 12, 2004by Henrikke Bauman , Anne-Marie Tillman

Course Outcome:

After learning this course the students would have:

1) Proper understanding of Environmental Impact Assessment.
2) Knowledge about Life Cycle Assessment.
3) Proper understanding of GIS and hazardous waste management.
4) Knowledge of green businesses, Climate Change & Environmental Management.

List of Experiments:

1. To Study Characteristics of fluidize bed.
2. To perform experiment on tray dryer
3. Perform experiment of reverse osmosis filtration.
4. To study performance efficiency of fluidize dryer
5. To study Membrane separation technique by micro filtration.
6. To Perform experiment on Electrostatic Precipitator
7. To perform experiment on cyclone separator
8. To study experiment on UASB.

Design based Problems (DP)/Open Ended Problem:

1) Environmental Impact Assessment of stretch of aquifer nearby.

2) Life cycle assessment of any product.
3) Calculation of carbon foot print of urban house hold.
4) Solid waste management design and sampling.

ACTIVE LEARNING ASSIGNMENTS: Preparation of power-point slides, which include videos, animations, pictures, graphics for better understanding theory and practical work – The faculty will allocate chapters/ parts of chapters to groups of students so that the entire syllabus to be covered. The power-point slides should be put up on the web-site of the College/ Institute, along with the names of the students of the group, the name of the faculty, Department and College on the first slide. The best three works should submit to GTU.