Course Code	18CYM101T	Course Name	ENVIRONMENTAL SCIENCE	Course Category	M	Mandatory	L	T	P	C
							1	0	0	0

Pre-requisite Courses	Nil	Co-requisite Courses	Nil	Progressive Courses	Nil
Course Offering Department	Chemistry	Data Book / Codes/Standards	Nil		

Course Learning Rationale (CLR): *The purpose of learning this course is to:*

		Learning		
		1	2	3
		Level of Thinking (Bloom)	Expected Proficiency (%)	Expected Attainment (%)
CLR-1 :	*Acquire knowledge on various causes, effects and control measures of environmental air and water pollution*			
CLR-2 :	*To understand various causes, effects and control measures of soil, thermal and radiation pollution*			
CLR-3 :	*To understand the processes involved in waste water treatment and study the cause of a local polluted site*			
CLR-4 :	*To understand the impacts, disposal methods and treatments involved in solid waste management*			
CLR-5 :	*To understand the impacts, disposal methods and treatments involved in biomedical waste management and monitor the process involved in a local site*			
CLR-6 :	*Understand the environmental issues and identify appropriate solutions*			

Course Learning Outcomes (CLO): *At the end of this course, learners will be able to:*

		Learning			Program Learning Outcomes (PLO)														
		1	2	3	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
		Level of Thinking (Bloom)	Expected Proficiency (%)	Expected Attainment (%)	Engineering Knowledge	Problem Analysis	Design & Development	Analysis, Design, Research	Modern Tool Usage	Society & Culture	Environment & Sustainability	Ethics	Individual & Team Work	Communication	Project Mgt. & Finance	Life Long Learning	PSO - 1	PSO - 2	PSO – 3
CLO-1 :	*Know the sources, effects and control measures of environmental air pollution.*	*1*	*80*	*70*	*x*	*x*	*x*	*x*			*x*								
CLO-2 :	*Acquire knowledge on the treatment of soil, thermal and radiation management.*	*1*	*75*	*65*	*x*	*x*	*x*	*x*			*x*								
CLO-3 :	*Acquire knowledge on various process involved in the treatment of wastewater*	*1*	*80*	*70*	*x*	*x*	*x*	*x*			*x*		*x*						
CLO-4 :	*Know the sources, disposal and treatment methods of solid waste management*	*1*	*80*	*75*	*x*	*x*	*x*	*x*			*x*		*x*						
CLO-5 :	*Know the sources, disposal and treatment methods of biomedical waste management*	*1*	*75*	*65*	*x*	*x*	*x*	*x*			*x*		*x*						
CLO-6 :	*Utilize the concepts learnt in protecting the environment towards sustainable development*	*1*	*80*	*70*															

Duration (hour)		3	3	3	3	3
S-1	SLO-1	Environmental segments Structure of atmosphere	Determination of BOD, COD	Waste water treatment- Introduction	Solid waste management: Types	Biomedical waste Management Definition and Effects
	SLO-2	Composition of atmosphere	Determination of TDS and trace metals	Primary treatment	Effects Process of waste management	Categories of biomedical waste
S-2	SLO-1	Air Pollution Sources	Sources, effects and control measures of Soil pollution	Secondary treatment	Disposal methods Open dumping Engineered land filling	Process of biomedical waste management
	SLO-2	Effects – acid rain, ozone layer depletion and greenhouse effect	Sources, effects and control measures of Thermal pollution	Tertiary treatment	Composting Incineration	Treatment and disposal methods
S-3	SLO-1	Control measures of air pollution	Sources and effects of: Radiation pollution	Activity: Visit to a local polluted site-	Activity: Monitoring solid waste management in local areas	

	SLO-2	Sources, effects and control measures of Water pollution	Control measures of Radiation pollution	Urban/Rural/Industrial/Agricultural		Activity: Visit a hospital to understand the biomedical waste management

Learning Resources	1. *Textbook of Environmental Studies for Undergraduate Courses, Erach Bharucha, 2nd Edition, UGC*	2. *Environmental Science–Challenges and Changes, Kamaraj. P & Arthanareeswari. M, 6th Edition, 2013, Sudhandhira Publications*

Learning Assessment

	Bloom's Level of Thinking	Continuous Learning Assessment (100% weightage)								Final Examination	
		CLA – 1 (20%)		CLA – 2 (30%)		CLA – 3 (30%)		CLA – 4 (20%)#			
		Theory	Practice	Theory	Practice	Theory	Practice	Theory	Practice	Theory	Practice
Level 1	Remember Understand	*40%*	-	*30%*	-	*30%*	-	*30%*	-	-	-
Level 2	Apply Analyze	*40%*	-	*40%*	-	*40%*	-	*40%*	-	-	-
Level 3	Evaluate Create	*20%*	-	*30%*	-	*30%*	-	*30%*	-	-	-
	Total	100 %		100 %		100 %		100 %		-	

CLA – 4 can be from any combination of these: Assignments, Seminars, Tech Talks, Mini-Projects, Case-Studies, Self-Study, MOOCs, Certifications, Conf. Paper etc.,

Course Designers

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