

KU1MDCCHE102: ENVIRONMENTAL STUDIES

Semester	Course Type	Course Level	Course Code	Credits	Total Hours
1	MDC	100	KU1MDCCHE102	3	45

Learning Approach (Hours/ Week)		Marks Distribution			Duration of ESE (Hours)
Lecture/ Tutorial	Practical/ Internship	CE	ESE	Total	
3	0	25	50	75	1.5

Course Description: This multidisciplinary course give insight to the learners about environmental segments, air pollution, soil pollution, water pollution, etc. The course also consists of renewable energy sources and importance of biotechnology in environmental protection.

Course Prerequisite: NIL

Course Outcomes:

CO No.	Expected Outcome	Learning Domains
1	To provide knowledge about the environmental segments, their structure and composition.	U
2	To create scientific awareness regarding the source, effects and sink of pollutants in the environment.	C
3	To study about the energy recourses, the role of fuel consumption in environmental pollution, importance of energy management and search for eco-friendly and non-conventional energy sources.	A
4	To inculcate among the student's importance of environmental protection, & environment friendly lifestyle for a better living and better future	C

***Remember (R), Understand (U), Apply (A), Analyse (An), Evaluate (E), Create (C)**

Mapping of Course Outcomes to PSOs

	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	PSO 6	PSO 7
CO 1	3	2	3	2	1	3	2
CO 2	3	2	3	2	2	3	2
CO 3	3	3	3	2	1	3	2
CO 4	3	2	3	1	2	3	2
CO 5	3	2	3	2	2	3	2

Course Contents for Classroom Transaction:

M O D U L E	U N I T	DESCRIPTION	HOURS
1		ENVIRONMENTAL SEGMENTS	6
	1	Lithosphere: soil formation – components of soils. Hydrosphere: Hydrological cycle, water and river water composition. Fresh water – surface water and ground water	
	2	Biosphere- Atmosphere-regions of Atmosphere- temperature and composition in different regions – Troposphere, stratosphere, Mesosphere, Thermosphere	

2		AIR POLLUTION	8
	1	Sources – pollutants –CO, NO _x , Sox, Hydrocarbons, Particulates. Effect on ecosystem	
	2	Ozone layer –importance, Ozone Depletion-Control measures- Acid rain-control of acid rain	
	3	Greenhouse effect-global warming, -photochemical smog- effect pollution on plants and human beings- Control of air pollution	
	4	Noise Pollution – physiological response to noise, Noise categories-effect of noise – biological effects	

3		WATER POLLUTION& SOIL POLLUTION	14
	1	Sources –Industrial effluents- agriculture discharge - oil spills-heavy metal -pesticides-biomagnifications and bioaccumulations	

	2	Experimental determination of dissolved oxygen in water, chemical oxygen demand (COD) and biochemical oxygen 76 76 demand (BOD)-control of water pollution- ISI/BIS standards of drinking water. 6hours	
	1	Sources by industrial and urban wastes, radioactive pollutants, plastics heavy metals. Poisoning by heavy metals – Mina- matha&itai-Itai diseases. Control of soil pollution - Solid waste Management.	
	2	Thermal pollution definition-sources of thermal pollution, harmful effect of thermal pollution prevention of thermal pollution	

4	ENERGY SOURCES		8
	1	fossil fuels, nuclear fission- Solar energy – use of solar energy in space heating and water heating.	
	2	Production of electricity using solar energy. Solar trough collections- solar pond solar energy for driving vehicles, Power from indirect solar energy – Hydro power- wind power- Biomass energy	

5	ENVIRONMENT AND PUBLIC HEALTH (Teacher Specific Module)		9
	1	Climate and health-Hazardous products – occupational hazards - infectious diseases- water borne diseases, vector borne diseases -Risks due to chemicals in food, cancer and environment.	
	2	Biotechnology and its application in environmental protection - biological de-odorization, biological purification of contaminated air.	

Essential Readings:

1. Textbook of Environmental Studies for undergraduate courses – Erach Bharucha

2. Essential Environmental studies- S. P. Misra – S. N. Pandey
3. Environmental chemistry and pollution control – S.S Dara
4. Environmental chemistry- Peter O’ Neill
5. Environmental chemistry – B.K. Sharma edition)
6. Fundamental concepts of environmental chemistry – G.S Sodhi
7. Environmental Chemistry. A.K D

Assessment Rubrics

Evaluation Type		Marks
End Semester Evaluation (ESE)		50
Continuous Evaluation (CCA)		25
Theory (CCA)		25
a)	Test Paper*	10
b)	Assignment	5
c)	Seminar, Viva-Voce	10
Total		75