

PROGRAM: Computer Science & Engineering	DEGREE: B. Tech CREDITS: 3
COURSE: Basic Environmental Engineering & Elementary Biology	Semester: Third Section: A
COURSE CODE: CH-301	Contact Hrs / Week : 3(Lecture)

COURSE OBJECTIVES

Students will learn

S. N.	<i>Course Objective</i>
1	The need to study the environmental science and to create awareness related to environmental issues like population growth, pollutant concentration, Environmental impact assessment, environmental Audit, environmental laws and protection act.
2	Structure and functions of ecology and ecosystems, significance of biogeochemical cycle and conservation of biodiversity.
3	Structure and role of atmosphere in maintaining energy balance, meteorology, global atmospheric problems and chemistry of air pollutants.
4	Classification, source and impact of various water pollutants in our life and various water treatment systems.
5	Classification of different land and noise pollution and their mathematics.

COURSE OUTCOMES

On Completion of the course the student will be able to

<i>Course Code</i>	<i>Course Outcome</i>	<i>PO& PSO MAPPING</i>	<i>B T level</i>
CH 301.1 (CO1)	Interpret the environmental problems associated with population growth, pollutant concentration; environmental impact assessment & environmental protection laws/act.	PO1, PO7, PO8, PO12	L3 (Apply)
CH 301.2 (CO2)	Classify the mechanism of energy flow, food chain, ecological balance for conservation of biodiversity.	PO7, PO8	L2 (Understand)
CH301.3 (CO3)	Identify the cause and impact of various environmental problems related to atmosphere and air pollution.	PO1, PO7, PO8	L3 (Apply)
CH301.4 (CO4)	Solve various hazardous problems related to water pollution.	PO1, PO7, PO8	L3 (Apply)
CH301.5 (CO5)	Classify land and noise pollution.	PO7, PO8	L2 (Understand)

COURSE OUTCOMES VS POs MAPPING (DETAILED; HIGH:3; MEDIUM:2; LOW:1):

Course	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	1	-	-	-	-	-	2	2	-	-	-	1
CO2	-	-	-	-	-	-	2	2	-	-	-	
CO3	1	-	-	-	-	-	2	2	-	-	-	-
CO4	1	-	-	-	-	-	2	2	-	-	-	-
CO5	-	-	-	-	-	-	2	2	-	-	-	-
CH 301	1	-	-	-	-	-	2	2	-	-	-	1

LESSON PLAN

L→ Class lecture; A1→Green glass board & Chalk; T→Reference book.

Lecture	Topic Covered	References	Teaching Aids
L1	General Environment: man, society & environmental relationship.	T1 T3	A1
L2	Population growth: importance & mathematical models of population growth.	T1, T3	A1
L3	Numerical problems related to population growth.	T2	A1
L4	Resources, sustainable development,	T2	A1
L5	Materials balance of pollutants for different systems.	T1	A1
L6	Environmental degradation & natural environmental hazards.	T3	A1
L7	Anthropogenic degradation like acid rain, photochemical smog.	T1, T3	A1
L8	Ecology: Food chain and Food web with suitable example.	T4	A1
L9	Structure & function of the some common ecosystems.	T4	A1
L10	Biogeochemical Cycle of oxygen, carbon, nitrogen, phosphate, sulphur.	T1 T4	A1
L11	Biodiversity- types, importance, Endemic species	T4	A1
L12	Biodiversity Hot-spot, Threats and Conservation.	T2, T4	A2
L13	Air pollution & Control: Global climatic change	T2	A1
L14	Global energy balance with different heat transfer	T2	A1
L15	Simple global temperature model with or without albedo	T2	A1
L16	Global warming effect: cause, effect, remedy etc.	T2	A1
L17	Depletion of ozone layer & its relation with CFC	T2	A1
L18	Atmospheric stability and different lapse rate.	T2	A1
L19	Atmospheric dispersion effect.	T5	A1
L20	Characteristic of pollutants & responsible chemicals.	T2	A1
L21	Air quality standards and controlling techniques.	T5	A1
L22	Brief descriptions of ESP, Cyclone separator, bag house, catalytic converter, scrubber.	T2 T5	A1
L23	Water pollution & Control: Hydrological cycle	T5	A1
L24	Pollutants of water, their origin and effects:	T2	A1
L25	Dissolved oxygen & Biological oxygen demand.	T2	A1
L26	River pollution: their biochemical and biological estimation.	T2	A1
L27	Various water treatments (both aerobic and anaerobic) systems.	T2, T5	A1
L28	Different water purifying parameters	T 2	A1
L29	Eutrophication of Lakes.	T 2	A1
L30	Aquifers, hydrolytic gradient, ground water flow	T 5	A1

L31	Land Pollution – importance of lithosphere, rocks.	T 1	A1
L32	Solid waste & solid waste management	T 6	A1
L33	Recovery method of land filling, Incineration & composting.	T6	A1
L34	Radioactive, Biomedical and Industrial chemical wastes, Hazardous solid wastes Management	T1 T6	A1
L35	Noise Pollution: Effects ,courses & classification.	T7	A1
L36	Noise intensity, noise threshold value	T1	A1
L37	Environmental Management: Basic concept on perspectives, Environment Impact Assessment	T8, T1	A1
L38	Relationship of Environment with Man and society, Concept on Environmental ethic.	T8 T1	A1

References:

- T1 G. Dasmohapatra, "Environment & Ecology", VIKAS Publishing, Noida, 2008.
T2 G. Master, Introduction to Environmental Engg & Science, Pearson, 2000
T3 S. K. Dhameja, Environmental Studies, S.K.Kataria& Sons, 3rd Ed., 2007
T4 T. G. Spiro, W. M. Stigliani, Chemistry of the Environment, PrenticeHall of India Pvt.Ltd., 2003
T5 A. K. De, Environmental Chemistry, New Age International (P) Ltd., 5th Ed. 2003
T6 K. Sanyal, M. Kundu, S. Rana, Ecology and Environment, Book and Allied (P) Ltd., 2009
T7 S. Srivastava, Environment and Ecology, S.K.Kataria& Sons, 2008
T8 S. Somvanshi, R. Dhupper, Fundamentals of Environmental Studies, S.K.Kataria& Sons, 2013

GAPS IN THE SYLLABUS

DESCRIPTION	CO	PO	ACTIONS TAKEN
Electronic waste: Source, Classification, Impact and Control of computer hardware waste.	CO5	PO6, PO7, PO8	Discussion based on information taken from following websites 1. https://en.wikipedia.org/wiki/Electronic_waste 2. " E-Waste Management and Recycling Programme by Lava mobiles ". www.lavamobiles.com . Retrieved 2018-01-29. " What can be recycled from e-waste? ". zerowaste.sa.gov.au . Retrieved 29 February 2016.

TOPICS BEYOND SYLLABUS/ADVANCED TOPICS- MAPPING TO PO:

DESCRIPTION	P O	ACTIONS TAKEN
Thermal and Nuclear Pollution	PO1, PO7, PSO2	Discussion based on information from the following websites: http://www.pollutionissues.com/Te-Un/Thermal-Pollution.html https://en.wikipedia.org/wiki/Thermal_pollution