



**VIVEKANANDHA COLLEGE OF ENGINEERING FOR WOMEN**  
(Autonomous Institution, Affiliated to Anna University, Chennai)  
Elayampalayam, Tiruchengode – 637 205  
**DEPARTMENT OF BIOTECHNOLOGY**



**Course Code / Name : U13BT740 & POLLUTION CONTROL, ENVIRONMENTAL BIOTECHNOLOGY AND BIO DIVERSITY**

**Class (Year / Programme / Department / Section): IV/ B.TECH/ BT**

**UNIT-1 INTRODUCTION**

<b>S.No</b>	<b>Topics To Be Covered</b>	<b>Duration in Minutes</b>	<b>Teaching Aid</b>	<b>Books Referred</b>
1.	Sources of Pollution	45	BB	T1
2.	Air Pollution-Acid rain , Effect of Air pollution	45	BB	T2,R1
3.	Control measures of air pollution	45	BB	T2
4.	WaterPollution-waste water treatment	45	BB	T1
5.	Control measures of water pollution	45	PPT	T2,R2
6.	Dissolved oxygen-Biological oxygen Demand-Chemical Oxygen Demand.	45	BB	R2
7.	Speculation of metals	45	PPT	T1,R2
8.	Monitoring & analysis of CO	45	BB	T2
9.	NO <sub>2</sub> , CO <sub>2</sub> , SO <sub>2</sub>	45	PPT	T2
10.	Introduction to solid waste management.	45	BB	T1,R2

**UNIT-II ROLE OF MICROORGANISMS**

	<b>Topics To Be Covered</b>	<b>Duration in Minutes</b>	<b>Teaching Aid</b>	<b>Books Referred</b>
11.	Structure of prokaryotic cells	45	BB	T1
12.	Eukaryotic cells	45	PPT	T2,R1

13.	Types of microorganisms	45	BB	T2
14.	Metabolic classification of microorganisms.	45	PPT	T1
15.	Microbial metabolism	45	BB	T2,R2
16.	Microbial flora of soil	45	PPT	R2
17.	Growth, ecological adaptations	45	BB	T1,R2
18.	Interactions among soil microorganisms	45	PPT	R1
19.	Biogeochemical role	45	BB	T1

### UNIT-III ENVIRONMENTAL POLLUTION CONTROL

	Topics To Be Covered	Duration in Minutes	Teaching Aid	Books Referred
20.	Bioremediation	45	PPT	T1
21.	Bioaugmentation	45	BB	T2,R1
22.	Biostimulation	45	PPT	T2
23.	Biofilms in treatment of waste water	45	BB	T1
24.	Biofilm development	45	PPT	T2,R2
25.	Biofilm Kinetics	45	BB	R2
26.	Aerobic Biofilms	45	PPT	T1,R2
27.	Types of bioreactor for waste treatments	45	PPT	T2
28.	Bioreactors for waste water treatments	45	BB	T2
29.	Applications of bio films in industries	45	PPT	T2

### UNIT-IV BIODEGRADATION STUDIES

	Topics To Be Covered	Duration in Minutes	Teaching Aid	Books Referred
30.	Insecticides	45	BB	T1
31.	Mode of action on insecticides	45	BB	T2,R1

32.	Herbicides	45	PPT	T2
33.	Mode of action on herbicides	45	BB	T1
34.	Fungicides	45	BB	T2,R2
35.	Mode of action on fungicides	45	PPT	R2
36.	Polychlorinated biphenyls, heavy metals	45	BB	R2
37.	Case study: Petroleum waste & radioactive waste management.	45	PPT	T2 ,R2
<b>UNIT-V BIOREMEDIATION SYSTEMS AND PROCESSES</b>				
	<b>Topics To Be Covered</b>	<b>Duration in Minutes</b>	<b>Teaching Aid</b>	<b>Books Referred</b>
38.	Solid, liquid and slurry phase bioremediation	45	BB	T1
39.	Microbial cleaning of gases	45	BB	T2,R1
40.	Biofiltration and bioscrubbing	45	BB	T2
41.	In situ bioremediation	45	BB	T1
42.	Laboratory scale biotreatability	45	PPT	T2,R2
43.	Studies for bioremediation	45	BB	R2
44.	Management of bioremediation project	45	PPT	T1,R2
45.	Applications of bio remediation	45	BB	T2
46.	Disadvantages of bio remediation	45	PPT	T2
47.	Summary of bioremediation	45	BB	T2
48.	continuation	45	PPT	R1
49.	Application of biofiltration and bio scrubbing	45	PPT	T1

**TEXT BOOK:**

1.B. B. C. Banerjee, Environmental Biotechnology, Oxford University Press, 2008.

2)B. E. Rittmann, P. L. McCarty, Environmental Biotechnology- Principles and Applications, Mc Graw Hill Int. 2000.

## **REFERENCES:**

1. Scragg, Environmental Biotechnology, Oxford Univ Press, 2005
2. Bruce Rittman, Perry L. McCarty. Environmental Biotechnology: Principles and Applications, 2nd Edition, McGraw-Hill, 2000.