

Lesson Plan

Name of the Faculty : Er. Ritika Gera

Discipline : Biotechnology

Semester : 6th

Subject : Environmental Biotechnology and Engineering (BTE-310A)

Lesson Plan Duration: 15 Weeks (From Feb, 2021 to Jun, 2021)

Work Load (Lecture/Practical) per week (in hours): Lecture- 03, Tut-00; Practical- 03

Week	Theory		Practical	
	Lecture Day	Topic(including assignment /test)	Practical Day	Topic
1 st	1 st	Role of Biotechnology in Environment Protection: Introduction, scope and overview of current status of biotechnology in environment protection	1	Food Biotechnology: yoghurt preparation and quality analysis.
	2 nd	-do-		
	3 rd	Role of biotechnology in Pollution control.		
2 nd	4 th	Classification and Characterization of Waste: Waste and its effects	2	Testing of milk and milk products.
	5 th	Physicochemical characteristics of waste material,		
	6 th	Revision		
3 rd	7 th	Waste Material suitable for biological treatment	3	Analysis of protein in various food products
	8 th	Estimation of COD		
	9 th	-do-		
4 th	10 th	Estimation of BOD.	4	Analysis of carbohydrates in various food products
	11 th	-do-		
	12 th	Revision		
5 th	13 th	Biological Treatment of Waste: Impact of pollutants on biotreatment,	5	Environmental biotechnology: Qualitative analysis of waste/waste water (Determination of hardness)
	14 th	Recommended Effluent treatment methods.		
	15 th	Use of packaged microorganisms and genetically engineered organisms.		
6 th	16 th	Bioreactors for Liquid Waste Treatment: Biological processes for industrial effluent treatment,	6	Environmental biotechnology: Qualitative analysis of waste/waste water.(alkalinity,pH)
	17 th	Aerobic biological treatment, anaerobic biological treatment.		
	18 th	Revision		

7 th	19 th	Removal of Pollutants using plants and microbes: Phytoaccumulation, Phytovolatilization,	7	Environmental biotechnology: Qualitative analysis of waste/waste water.(BOD determination)
	20 th	Phytoabsorbtion, Rhizofiltration,		
	21 st	Microbial systems for heavy metal accumulation, Biosorption		
8 th	22 nd	Bioremediation: Definition, Types of bioremediation.	8	-do-
	23 rd	Bioaugmentation and its application		
	24 th	Biostimulation . Applications of bioremediation,		
9 th	25 th	Revision	9	Environmental biotechnology: Qualitative analysis of waste/waste water. (COD determination)
	26 th	Biomarkers		
	27 th	Biosensors.		
10 th	28 th	Biotechnology for Hazardous Waste Management: Xenobiotic compounds and their effects	10	-do-
	29 th	Recalcitrant and hazardous waste,		
	30 th	Biodegradation of xenobiotics		
11 th	31 st	-do-	11	Isolation and identification of resistant bacteria from soil containing pollutants
	32 nd	Solid Waste Management: Incineration, Composting, Biogas Plant.		
	33 rd	Restoration of degraded lands: degraded lands, cause and methods to revive them.		
12 th	34 th	Development of stress tolerant plants for restoration.	12	Decolourization of industrially important dyes by microbes.
	35 th	Revision		
	36 th	Use of mycorrhizae and microbes for improving soil fertility.		
13 th	37 th	-do-	13	Visit to vermicomposting plant.
	38 th	Organic farming		
	39 th	Vermitechnology		
14 th	40 th	Novel Methods for Pollution Control:	14	Revision
	41 st	Aiming for biodegradable and ecofriendly products.		
	42 nd	-d0-		
15 th	43 rd	Revision	15	Revision
	44 th	Revision		
	45 th	Revision		