Course Code and Title : PGEVS3C001T Environmental Technology
Credit Hours : 04
Total Number of Lectures : 60
Course Teachers : Dr. Richa Kothari
Dr. Anita Singh

Teaching Schedule:

Week	Day	Topic	Teacher
UNIT-I: TYPES OF MICROBES AND THEIR IMPORTNACE			
Week 1	1	Environmental Microbiology: definition, concept, scope and Importance	Dr. Anita Singh
	2	Continue	Dr. Anita Singh
	3	Classification and structure of Microorganisms (Fungi, Bacteria, Virus)	Dr. Anita Singh
	4	Continue	Dr. Anita Singh
Week 2	1	Continue	Dr. Anita Singh
	2	Microbes in Agriculture : bio-fertilizers	Dr. Anita Singh
	3	Continue	Dr. Anita Singh
	4	Food Microbiology - micro-organisms of food ,microbes in food production	Dr. Anita Singh
Week 3	1	Continue	Dr. Anita Singh
	2	Food spoilage – fish and meat	Dr. Anita Singh
	3	Continue	Dr. Anita Singh
	4	Food poisoning and its prevention	Dr. Anita Singh
UNIT-II: MICROBES AND ENVIRONMENT			
Week 4	1	Microbial Methods: Types of Culture, Techniques used in Enrichment of Culture, Method of Pure Culture, Preparation, Maintenance and Preservation of Microbial Culture, Sterilization and Disinfection	Dr. Anita Singh
	2	Continue	Dr. Anita Singh
	3	Continue	Dr. Anita Singh
	4	Microbes and Environment: Role of microorganisms in natural system and artificial system	Dr. Anita Singh

Week 5	1	Microbes and nutrient cycles	Dr. Anita Singh
	2	Microbial communication system	Dr. Anita Singh
	3	Microbial fuel cells	Dr. Anita Singh
	4	Prebiotics and probiotics	Dr. Anita Singh
Week 6	1	vaccines	Dr. Anita Singh
	2	Microbiology of water, air and soil	Dr. Anita Singh
	3	Continue	Dr. Anita Singh
	4	Environmental Aspects of Infectious Diseases (Water Born Diseases)	Dr. Anita Singh
UNIT III: BASIC BIOTECHNOLOGY			
Week 7	1	Structures and function of DNA	Dr. Anita Singh
	2	Gene expression	Dr. Anita Singh
	3	Introduction to cloning and recombinant DNA technology/genetic engineering	Dr. Anita Singh
	4	Restriction enzymes, cloning vectors	Dr. Anita Singh
Week 8	1	Agarose and polyacrylamide gel electrophoresis,	Dr. Anita Singh
	2	Automated DNA sequencing, genome resources	Dr. Anita Singh
	3	PCR	Dr. Anita Singh
	4	Environmental applications of genetic engineering	Dr. Anita Singh
Week 9	1	Development of Genetically modified organisms GMOs (transgenic plants and animals)	Dr. Anita Singh
	2	GMOs for human welfare	Dr. Anita Singh
	3	Consequences of GMOs on environment	Dr. Anita Singh
	4	Issues related to Bt cotton and Btbrinjal	Dr. Anita Singh
UNIT-IV: ENVIRONMENTAL BIOTECHNOLOGY			
Week 10	1	Environmental Biotechnology in Pollution Control	Dr. Richa Kothari
	2	Continue	Dr. Richa Kothari
	3	Bioremediation: Role of microbe	Dr. Richa Kothari

	4	Bioremediation: Role of plants and GEMs	Dr. Richa Kothari
Week 11	1	Integrated System……PAHs	Dr. Richa Kothari
	2	Pesticides and Detergents	Dr. Richa Kothari
	3	Continue	Dr. Richa Kothari
	4	Biodegradable Plastics production from Microorganisms	Dr. Richa Kothari
Week 12	1	Continue	Dr. Richa Kothari
	2	Role of biotechnology in reclamation of wasteland, Bioprospecting	Dr. Richa Kothari
	3	Biopiracy	Dr. Richa Kothari
	4	Development……remediation, Biosensors	Dr. Richa Kothari
UNIT-V: NANOTECHNOLOGY AND GREEN TECHNOLOGY			
Week 13	1	Nanotechnology: Introduction, scope and Applications	Dr. Richa Kothari
	2	Continue	Dr. Richa Kothari
	3	Nanostructures and Properties	Dr. Richa Kothari
	4	Metal nanoparticles and Application of nanoproducts	Dr. Richa Kothari
Week 14	1	Green technology…..Zero waste technology	Dr. Richa Kothari
	2	Continue	Dr. Richa Kothari
	3	Continue	Dr. Richa Kothari
	4	Continue	Dr. Richa Kothari
Week 15	1	Continue	Dr. Richa Kothari
	2	Biopolymers and Bioplastics	Dr. Richa Kothari
	3	Continue	Dr. Richa Kothari
	4	Continue	Dr. Richa Kothari

REFERENCE BOOKS:

1. Scragg, A.H., Environmental Biotechnology. Oxford University Press.
2. Rittmann, B. E. and McCarty, P.L., Environmental Biotechnology: Principles and applications. McGraw Hill.
3. Evans, G.M. and J.C. Furlong. Environmental Biotechnology: Theory and application. John Wiley and Sons Publication.
4. Microbiology 6th ed: Purohit, Agrobios
5. Global environmental Biotechnology : D. L. Wise
6. Methods in Biotechnology : Hans Peter Schmauder