

Course contents for Environmental Biotechnology

1. Faculty: FLSB

2. Course Code:

3. Course Title: Environmental Biotechnology

4. Number of Credits: Two

5. Course objectives:

Environmental biotechnology is a fundamental component of the science needed to address environmental problems. This course includes several topics pertaining with solutions to certain difficult environmental problems such as gene-environment interaction, detection of pollutants, elimination and treatment of toxic wastes, development of environment friendly products and improved energy sources. Application of biotechnology in environmental management, Concepts and strategies of Metagenomics and Biofuel production will be discussed with an emphasis to cleaner and sustainable environment. This course also includes a short experimental assignment on the latest topics in the field of environmental biotechnology.

6. Minimum prerequisites for taking this course, if any:

Basic knowledge of Microbiology, Biochemistry and Molecular biology would be anticipated.

7. Course structure with units, if applicable:

- a. Gene-Environment Interaction: Carcinogens, Pesticides, Endocrine disruptors etc.
- b. Environmental Monitoring: concepts, strategies and applications of Biosensors
- c. Bioremediation: Biodegradation and bioconversion of natural and xenobiotic compounds
- d. Phytoremediation: Bioremediation by genetically modified plants
- e. Metagenomics: concept, strategies and applications in environmental biotechnology
- f. Biotechnology for the protection of Environment: Bio-pesticides, Bio-fertilizers and Bio-plastics
- g. Energy and Environment: Microbial fuel cell and Biofuel Production

8. Reading suggestions:

- a. Environmental Biotechnology: Concepts and Applications By Hans-Joachim Jördening, Josef Winter; publisher: Wiley-VCH.
- b. Environmental Biotechnology (volume 10), By Wang, L.K.; Tay, J.-H.; Tay, S.T.L.; Hung, Y.-T.; publisher: Humana Press.
- c. Environmental Biotechnology: A biosystems approach By Daniel A. Vallero; publisher: Academic Press, Elsevier.

9. Evaluation:

Theory:	Mid-semester Written Examination	: 40% Marks
	End-semester Written Examination	: 40% Marks
	Quiz / Assignment/Presentation (oral / poster)/other	: 20% Marks