

Course Objectives:

The objectives of the course are:-

1. To make the students understand what environment and ecosystem
2. To illustrate the intrinsic role of microorganisms in a clean environment
3. To emphasize the active role of microorganisms in relation to biotechnology

Course Learning Outcomes:

Upon successful completion of the course, the student will be able to:

1. **ACHIEVE** the foremost know-how about environment and ecosystem in connection with biotechnology
2. **BE ACQUAINTED WITH** the imperative role of microbes in relation to contamination-free environment
3. **DIGOUT** the vivacious capability of microbes in various technologies like bio- and phyto-remediation
4. **CONFIRM** the rational link of microbes with pure environment through biotechnology
5. **APPLY** the methodical information in the right direction.

Course Contents:

Concept of bioremediation; Degradation of natural substances; Biodegradation of xenobiotics; Low grade ores and microorganisms; Waste-water and sewage treatment; Environmental stability; Biological fuel generation; Bioremediation of industrial effluents.

Teaching-Learning Strategies

Teaching will be a combination of class lectures, class discussions, and group work. Short videos /films will be shown on occasion.

Assignments

The sessional work will be a combination of written assignments, class quizzes, presentation, and class participation/attendance.

Assessments and Examination

Sessional Work: 25 marks

Midterm Exam: 35 marks

Final term Exam: 40 marks

Books Recommended:

1. Practical Environmental Bioremediation the field guide. 1997. R. Barry King, Gilbert M. Long, John K. Sheldon, Lewis publishers.
2. General Microbiology, 1995. Schlegel, H.G., Cambridge University Press.
3. Biotechnology, 1996., Smith, J.E., Cambridge University Press.
4. Environmental Biotechnology Principles and applications, 2000. Bruce R. Hmann, Perry McCarty, McGraw Hills.
5. Biodegradation and bioremediation 1999. Martin Alexander academic press Inc.

UZO-422 Bioremediation and Environmental Biotechnology(Lab.)

Cr. (1)

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Course Contents:

Isolation and studies of heavy metals tolerant/resistant microorganisms; Studies on bacterial capable of degrading xenobiotics; production of ethanol form decaying fruits.

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