Course Code	Course Title	Credit Hours
ENS-826	Environmental Biotechnology	3 (3+0)

Course Description

This course will provide a sound technical foundation for using biotechnology in solving environmental issues and cleanup of polluted environments. After completion of this course, students will be able to understand the significance, and application of biotechnology in the environment.

Course Outline

Introduction to Biotechnology, Fundamentals of Biological Interventions, Recombinant DNA Technology, Genetic manipulations, GMOs and their Environmental Applications, Biosafety Concerns of GMOs, Tracking of genes in the environment, Geno-toxicity Assessment & Implications, Bio-strategies for Pollution Control, Bioremediation, Bioremediation by the Heap Technique, Biodegradation of Toxic Chemicals, Genetics, Phyto-technology, Biosorbents & their applications, Bacterial Metabolism in Wastewater Treatment Systems, Activated Sludge Process, Bioreactors, Biosensors: Development & Pollution Monitoring, Integrated Environmental Biotechnology.

Recommended Books

1. Environmental Biotechnology: Concepts and Applications. 2005. Edited by H.-J. Jördening and J. Winter. WILEY-VCH Verlag GmbH & Co. KGaA, Weinheim, Germany
2. Environmental Biotechnology: Theory and Application. 2010. Gareth M. Evans and Judith C. Furlong. 2nd edition. John Wiley & Sons Ltd, The Atrium, Southern Gate, Chichester, West Sussex PO19 8SQ, England
3. Environmental Microbiology. 2nd Edition. 2010. Edited by Ralph Mitchell and Ji-Dong Gu. John Wiley & Sons, Inc., Hoboken, New Jersey
4. Genetically Engineered Organisms: Assessing Environmental and Human Health Effects. Latest edition. 2019. Edited by Deborah K. Letourneau and Beth Elpern Burrows. CRC Press, USA