

CORE 17- BT5CRT13- ENVIRONMENTAL BIOTECHNOLOGY AND HUMAN RIGHTS

Total hours of instruction: 72

Hours/ week: 4

Credit: 3

Module I: 12Hrs

Concept, structure, components and function of ecosystem - producer, consumer, decomposer, abiotic components. Ecological succession, Food chains, food webs, energy flow in ecosystem. Biogeochemical cycles - nitrogen cycle, carbon cycle. Energy resources: Renewable and non renewable energy resources, use of alternate energy resources.

Module II: 15Hrs

Environmental pollution- air, soil and water pollution with suitable case studies, global warming, green house effect, acid rain, smog, hazards of nuclear fallout. Ozone layer depletion, depletion of natural resources, Pesticide pollution

Module III: 20Hrs

Characteristics of waste water –COD, BOD, TOC, Suspended solids, Total dissolved solids, chlorides, acidity, alkalinity. Bacteriological analysis of drinking water, presumptive, completed and confirmed tests, Coagulation, Disinfection by chlorination, Biodegradation of organic compounds. Types of reactions in biodegradation. Biodegradation of hydrocarbons, cellulose and lignin. Molecular biology of biodegradation,

Module IV: 15Hrs

Treatment of waste water, primary, secondary and tertiary treatment. Biological treatment of waste water- aerobic methods, floc and film based processes Activated sludge process, Trickling filter process, Aerobic pond. Anaerobic process- Methanogenesis, Single and double stage reactors. Solid waste management- anaerobic treatment and land filling. Composting. Environmental laws: Environment protection act, Air and Water (Prevention and control of Pollution) Act, Wild life protection Act, Forest conservation Act.

Module V: 10Hrs

Unit 1 - Human Rights

An Introduction to Human Rights, Meaning, concept and development –History of Human Rights-Different Generations of Human Rights- Universality of Human Rights- Basic International Human Rights Documents - UDHR ,ICCPR,ICESCR.-Value dimensions of Human Rights

Unit 2 - Human Rights and United Nations

Human Rights co-ordination within UN system- Role of UN secretariat- The Economic and Social Council- The Commission Human Rights-The Security Council and Human rights- The Committee on the Elimination of Racial Discrimination- The Committee on the Elimination of Discrimination Against Women- the Committee on Economic, Social and Cultural Rights- The Human Rights Committee- Critical Appraisal of UN Human Rights Regime.

Unit 3- Human Rights National Perspective

Human Rights in Indian Constitution – Fundamental Rights- The Constitutional Context of Human Rights-directive Principles of State Policy and Human Rights- Human Rights of Women-children –minorities- Prisoners- Science Technology and Human Rights- National Human Rights Commission- State Human Rights Commission- Human Rights Awareness in Education.

References:

1. Biocatalysts and biodegradation - Lawrence P Wackett and Douglas Hersherberger. ASM Press, Washington
2. Environmental Chemistry - Anil Kumar. De Wiley Eastern Ltd. New Delhi
3. Microbial ecology: Fundamentals and Applications - Atlas and Bartha, Pearson Education
4. Biotechnology: The Science and Business - V. Mopses and R.E. Capes
5. Environmental Science: Earth as living planet - Daniel B Bottein and Edward. A. Keller, John Wiley Sons.
6. Essential Environmental Studies - S. P. Misra, S. N. Pande, Ane Books Pvt.Ltd.
7. Ecology and environment - Sharma P.D
8. Basic documents in Human rights- Ian Brownly
9. Universal human rights in theory and practice- Jack Donlie.
10. Future of Human Rights- Upendra Baxi
11. Understanding Human Rights: An Overview- Dhiman O P
12. Reforming Human rights- D P Khanna
13. Human Rights in India: Historical. Social, political perspectives- Chiranjivi J Nirmal.
14. Human Rights in Post colonial India: Edited by Om Prakash Dwivedi and Julie Rajan.