Source :
Biogas plant at VFSTR

22CT201 ENVIRONMENTAL STUDIES

Hours Per Week :

L	T	P	C
1	1	0	1

PREREQUISITE KNOWLEDGE: General awareness regarding environmental problems and importance of environmental protection.

COURSE DESCRIPTION AND OBJECTIVES:

It is a multidisciplinary subject where different aspects of society and environment are dealt using a holistic approach. It is evolving to be the education for sustainable and ethical development both at a local and global level. It helps to prepare the next generation for planning appropriate strategies to address environmental issues. It identifies and creates solutions that conserve to manage ecosystem and biodiversity and helps to eliminate pollutants, toxicants, preserve air, water and soil quality. Environmental education recognizes impacts of global issues, enhances the public awareness and helps to take decisions towards environmentally responsible actions.

MODULE-1

UNIT-1 **4L+4T+0P=8 Hours**

NATURAL RESOURCES, ECOSYSTEMS AND BIODIVERSITY

Environment and sustainable development, Natural resources- forest, water, energy and land resources; Ecosystem-basic structural components, function and interactions in ecosystem, ecological succession.

UNIT-2 **4L+4T+0P=8 Hours**

BIODIVERSITY AND CONSERVATION

Introduction to biodiversity, types of biodiversity - species, genetic and ecosystem diversity, Threats to biodiversity - natural and anthropogenic, species extinctions, man wildlife conflicts, Biodiversity conservation - principles and strategies, in-situ and ex-situ conservation.

PRACTICES:

- Visit to a Biogas plant, Solar Power plant.
- Visit to a local area: river/pond/lake/forest / grassland / hill /mountain and study of different.
- types of ecosystems, biodiversity study and documentation (herbarium sheet preparation).
- Set up an aquarium.
- Case study: Renewable energy use.

MODULE-2

UNIT-1 **4L+4T+0P=8 Hours**

ENVIRONMENTAL POLLUTION AND CLIMATE CHANGE

Air, water, soil, radioactive and noise pollution, Study of different pollutants (SOx, NOx, PAN, PAH etc.); Toxicity study, Climate change - greenhouse effect, acid rain, ozone layer depletion.

UNIT-2 **4L+4T+0P=8 Hours**

POLLUTION CONTROL DEVICES AND WASTEWATER TREATMENT TECHNOLOGIES

Air pollution control devices - Gravitational settling chambers, cyclonic separators, electrostatic precipitators, fabric filters and bio filters, Wastewater management.

PRACTICES:

- Visit to a sewage treatment plant and wastewater analysis.
- Case study: Recycling Technologies.
- Case study: Effects of contaminants on microorganisms.
- Report writing: 12 principles of green chemistry for environmental sustainability.
- Report writing: Environmental Impact Analysis, Local Disaster Management Plan.

COURSE OUTCOMES:

Upon successful completion of this course, students will have the ability to:

CO No.	Course Outcomes	Blooms Level	Module No.	Mapping with POs
1	Apply the basic concepts of sustainable development, natural resource utilization and ecology for the purpose of environmental protection.	Apply	1	1,6,7, 9, 10, 11, 12
2	Design remediation technologies for their abatement.	Apply	2	1, 3,6,7, 9, 10, 11, 12
3	Analyze the biodiversity of different ecosystems and formulate various conservation approaches	Analyze	1	1, 7, 8, 9, 10, 11, 12
4	Analyze the presence of various environmental pollutants.	Analyze	2	1, 6,7,9, 10, 11, 12
5	Recommend various waste management approaches and their implementation strategies.	Evaluate	2	1,2, 7,8,9,10,11, 12

TEXT BOOKS:

1. A. Kaushik and C. P. Kaushik, “Perspectives in Environmental Studies”, New Age International Publishers, 5th Edition, 2016.
2. Y. Anjaneyulu, “Introduction to Environmental Science”, 1st edition, B. S. Publications, 2015.

REFERENCE BOOKS:

1. B. Joseph, “Environmental Studies”, Mc Graw Hill Education, 2nd Edition, 2015.
2. S. Subash Chandra, “Environmental Science”, 1st eidition New Central Book Agency, 2011.
3. M.Basuand S.Xavier, “Fundamentals of Environmental Studies”, 2nd edition Cambridge University Press, 2016.

SKILLS:

- ✓ *Create a bio-diversity map of any habitat/ ecosystem.*
- ✓ *Strategize different ways of using renewable energy resources.*
- ✓ *Design novel strategies and approaches for pollution control and waste management.*