

# VEER SURENDRA SAI UNIVERSITY OF TECHNOLOGY, LESSON PLAN

Semester: 1st

Subject: Environmental Science

Session:

Theory/Sessional

Branch/ Course: Civil Engineering/ B.Tech.

Name of the Faculty Member: Sanghamitra Jena

| Period | Module/<br>Number | Topic to be covered  | Remarks/<br>Sign. of<br>Faculty<br>Member |
|--------|-------------------|--|---|
| 1      | Module-I          | <b>Components of Earth System</b> Components of Earth System:<br>Lithosphere, Cryosphere, Atmosphere, Hydrosphere, Biosphere<br>and Outer space. |   |
| 2      |                   | <b>Ecological concepts and natural Resources:</b> Ecological<br>perspective and value of environment, Environmental auditing,                    |   |
| 3      |                   | Biotic components, Levels of organizations in environment  |   |
| 4      |                   | Ecosystem Process: Energy, Food chain  |   |
| 5      |                   | Environmental gradients, Tolerance levels of environmental factor.   |   |
| 6      |                   | <b>Natural Resources covering Renewable and Non-renewable<br/>Resources:</b> Forests, water,minerals,Food and land                               |   |
| 7      |                   | Energy, Growing energy needs   |   |
| 8      |                   | energy sources (conventional and alternative).   |   |
| 9      |                   | <b>Hydrological cycle:</b> Hydrological cycle  |   |
| 10     |                   | water balance, energy budget   |   |
| 11     |                   | evaporation and evapotranspiration.  |   |
| 12     | Module-II         | <b>Environmental Pollution:</b> Definition, Causes, effects and control<br>measures of: Water pollution  |   |
| 13     |                   | Air pollution  |   |
| 14     |                   | Noise pollution  |   |
| 15     |                   | Soil pollution, Marine pollution   |   |
| 16     |                   | Thermal pollution, Nuclear hazards   |   |
| 17     |                   | <b>Environmental Issues:</b> Climate change, Global warming  |   |
| 18     |                   | Acid rain, Ozone layer depletion   |   |
| 19     |                   | Sustainable development  |   |
| 20     |                   | Bio gas, Natural gas,Biodiversity  |   |
| 21     |                   | Urban problems related to energy,water scarcity, Water<br>conservation   |   |
| 22     |                   | rain water harvesting,artificial recharge, watershed management  |   |
| 23     |                   | carbon trading, carbon foot print  |   |
| 24     |                   | National Ambient Air quality Standards, Noise standards, Vehicle<br>emission standards   |   |

|    |                   |  |  |
|----|-------------------|--|--|
| 25 | <b>Module-III</b> | Drinking water standard (IS 10500), Water Quality Criteria and wastewater effluent standards                                       |  |
| 26 |                   | <b>Water treatment:</b> sources and their quality, Lay out of a water treatment plant  |  |
| 27 |                   | working of each unit/ principles of each process of water treatment  |  |
| 28 |                   | Screening, Aeration, Sedimentation,coagulation, flocculation,Filtration,Disinfection   |  |
| 29 |                   | Miscellaneous treatment: Removal of color, tastes and odour control, removal of iron and manganese,:fluoridation and defloridation |  |
| 30 |                   | Advanced water treatment: Ion exchange, electro-dialysis, RO, desalination   |  |
| 31 |                   | <b>waste water treatment:</b> Lay out of a wastewater treatment plant and working of each unit.                                    |  |
| 32 | <b>Module-IV</b>  | <b>Solid waste management:</b> Source, classification and composition of MSW   |  |
| 33 |                   | Storage and transport of MSW,MSW management  |  |
| 34 |                   | Waste minimization of MSW, Reuse and recycling,  |  |
| 35 |                   | Biological treatment, Thermal treatment,landfill   |  |
| 36 |                   | <b>Biomeical Waste Management:</b> sources, treatment (principles only) and disposal   |  |
| 37 |                   | <b>Hazardous Waste management:</b> Introduction, Sources, Classification, treatment (principles only)                              |  |
| 38 |                   | <b>e-waste management:</b> Introduction to e-waste management  |  |
| 39 |                   | <b>Environmental impact Assessment:</b> Project screening for EIA, Scoping studies   |  |
| 40 |                   | <b>Environmental policies and acts:</b> Air, Noise, Water, Forest, E-waste, Hazardous waste acts                                   |  |

**Signature of Faculty Member:**

**Date:**

**Counter Signature of H.O.D.**