**UTKAL GOURAV MADHUSUDAN INSTITUTE OF TECHNOLOGY, RAYAGADA**

**Academic Lesson Plan for 1st Semester – 2024 (Winter)**

Name of the teaching faculty:Miss Dasmanti Sabar,
Guest faculty(Chemistry)
Discipline : Common(Civil/Electrical/E &TC/Mechanical)
Dept. : Department of Mathematics & Science
Semester : 1st
Subject : Theory 5b : Environmental science
No of Periods per Week: 4, Total Periods: 60,
End semester Exam : 70 Marks, Class Test(I.A): 30 Marks,
Total Marks: 100 Marks

| Week | Period | Unit / Chapter | Topics to be covered |
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| 1st | 1st | Unit-1 Ecosystem | Introduction of ecosystem and its components (Biotic and Abiotic),structure of ecosystem, food chain ,food web and its schematics diagram with example. . |
| | 2nd | Unit-1 Ecosystem | Recap about the ecosystem and types of ecosystem (aquatic and terrestrial ),various types of aquatic ecosystem(lentic & lotic ), introduction of carbon , nitrogen sulphur and phosphorus cycle.. |
| | 3rd | Unit-1 Ecosystem | Briefly about carbon cycle and nitrogen cycle with flow chart |
| | 4th | Unit-1 Ecosystem | Phosphorus cycle and sulphur cycle |
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| 2nd | 1st | Unit-1 Ecosystem | Introduction of Global warming – causes ,effects, process and prevention. |
| | 2nd | Unit-1 Ecosystem | Recap about global warming and green house gas effect (causes ,control or mitigation strategies |
| | 3rd | Unit-1 Ecosystem | Ozone layer depletion(causes ,effect) |

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| | 4th | Unit-2<br>Air pollution and Noise pollution | Definition of pollution and pollutants, natural & man- made sources of air pollution(refrigerants, I.c boilers ) |
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| | 1st | Unit-2<br>Air pollution and Noise pollution | Air pollutants: types, particulate matter and pollutants with examples and its effects. |
| | 2nd | Unit-2<br>Air pollution and Noise pollution | Control methods: bag filters ,cyclone separator ,electrostatic precipitator |
| | 3rd | Unit-2<br>Air pollution and Noise pollution | Recap about the control measures of air pollution and introduction of gaseous pollution control. |
| | 4th | Unit-2<br>Air pollution and Noise pollution | Gaseous pollution control (absorber, packed bed absorber, catalytic convertor) |
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| 4th | 1st | Unit-2<br>Air pollution and Noise pollution | I.c refrigerants, boilers and introduction of noise pollution (definition and short note on it). |
| | 2nd | Unit-2<br>Air pollution and Noise pollution | Sources and measures of noise pollution & its effect |
| | 3rd | Unit-2<br>Air pollution and Noise pollution | Regulation and control of noise pollution. |
| | 4th | Unit-3<br>Water and soil pollution | Introduction of water pollution and its types , characteristics of water pollutants turbidity ,pH . |

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| 5th | 1st | Unit-3<br>Water and soil pollution | Total suspended solids( TSS) and total solids, biological oxygen demand(BOD) And chemical oxygen demand (COD) differences . |
| | 2nd | Unit-3<br>Water and soil pollution | BOD & COD recap ,Various Waste water treatment methods (primary secondary and tertiary ) |
| | 3rd | Unit-3<br>Water and soil pollution | i) primary methods(sedimentation ,forth floatation |
| | 4th | Unit-3<br>Water and soil pollution | (ii)secondary method (activated sludge treatment, trickling filter biocreators) |
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| 6th | 1st | Unit-3<br>Water and soil pollution | (iii)tertiary methods (membrane separation technology , reverse osmosis(RO) |
| | 2nd | Unit-3<br>Water and soil pollution | Introduction of soil pollution ,causes , effect and preventives measures Causes: excessive use of fertilizers, pesticides, insecticides ,irrigation , E-waste. |
| | 3rd | Unit-3<br>Water and soil pollution | Causes: excessive use of fertilizers, pesticides, insecticides ,irrigation , E-waste. |
| | 4th | Unit-4<br>Renewable sources of energy | Renewable resources and its types . Basics of solar energy ( flat plate collector (liquid and air . |
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| 7th | 1st | Unit-4<br>Renewable sources of energy | Importance of coating and advanced collector ,solar pond (advantages & disadvantages ,application). |
| | 2nd | Unit-4<br>Renewable sources of energy | solar water heater ,solar dryer, solar stills. |
| | 3rd | Unit-4<br>Renewable sources of energy | Biomass (sources ,advantages and disadvantages and application . |

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| | 4th | Unit-4<br>Renewable sources of energy | Thermal characteristics of biomass as fuel(heat value ,moisture content composition ,fuel size and density ) |
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| 8th | 1st | Unit-4<br>Renewable sources of energy | Utilization (production of heat ,electricity generation vehicle fuel , digestate) and storages of biogas. |
| | 2nd | Unit-4<br>Renewable sources of energy | Wind energy ,current status and future prospect of wind energy |
| | 3rd | Unit-4<br>Renewable sources of energy | Wind energy in India, environmental benefits and problems of wind energy. |
| | 4th | Unit-4<br>Renewable sources of energy | New energy resources and different types of energy resources and their application. |
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| 9th | 1st | Unit-4<br>Renewable sources of energy | Application of hydrogen energy and ocean energy resources (tidal energy conservion) Concept ,origin and power plants of geothermal energy . |
| | 2nd | Unit-4<br>Renewable sources of energy. | Concept ,origin and power plants of geothermal energy . |
| | 3rd | Unit-5<br>Solid waste management ,ISO 14000 & Environmental management | Introduction of solid waste generation sources and characteristics of municipal solid waste . |
| | 4th | Unit-5<br>Solid waste management ,ISO 14000 & Environmental management | Sources & characteristics of e-wastes(hazardous & non hazardous) ,biomedical waste (sources and characteristics) |
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| 10th | 1st | Unit-5<br>Solid waste | Metallic waste and non-metallic wastes and briefly about lubricant ,plastics, rubber) |

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| | | management ,ISO 14000 & Environmental management | |
| | 2nd | Unit-5 Solid waste management ,ISO 14000 & Environmental management | Collection and disposal, collection of municipal solid wastes. disposal of municipal waste . |
| | 3rd | Unit-5 Solid waste management ,ISO 14000 & Environmental management | Principles and about 3Rs (reduce, recycle, reuse) ,energy recovery introduction, sanitary landfills |
| | 4th | Unit-5 Solid waste management ,ISO 14000 & Environmental management | Hazardous waste ,air quality act 2004, air pollution control act 1981(objectives ) |
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| 11th | 1st | Unit-5 Solid waste management ,ISO 14000 & Environmental management | water (prevention and control of pollution) act 1974 (objectives ), introduction of structure and role of central & state pollution control board |
| | 2nd | Unit-5 Solid waste management ,ISO 14000 & Environmental management | Function of central board at the national level, structure and role of state pollution control board |
| | 3rd | Unit-5 Solid waste management ,ISO 14000 & Environmental management | Concept of carbon credit and carbon foot print. Environmental management in fabrication industry. |
| | 4th | Unit-5 Solid waste | Environmental management in fabrication |

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| | | management ,ISO 14000 & Environmental management | industry. |
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| 12th | 1st | Unit-5 Solid waste management ,ISO 14000& Environmental management | ISO 14000 |
| | 2nd | Unit-5 Solid waste management ,ISO 14000 & Environmental management | Revision. |
| | 3rd | Unit-11 Solid waste management ,ISO 14000 & Environmental management | Revision. |
| | 4th | Unit-5 Solid waste management ,ISO 14000 & Environmental management | Revision. |
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