**19MC2101 - ENVIRONMENTAL SCIENCES**

(Common to CE, EEE, ECE, CSE & IT)

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| **Course Category:** | Mandatory course  | **Credits:** | 0 |
| **Course Type:** | Theory | **Lecture – Tutorial – Practical:** | 3-0-0 |
| **Pre-requisite:** | Basic idea on environment, Environmental pollution causes, effects and control measures. | **Sessional Evaluation:****External Exam Evaluation:****Total Marks:** | 4060100 |

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| **Course Objectives:** | To make the student learn about |
| 1.The importance of Environmental Sciences and understand the various components of environment.2.The value of natural resources and need to protect them.3.The value of biodiversity and it`s conservation methods.4.The advanced methods to solve problems related to environmental pollution.5.The social issues and provide plans to minimize the problems.6.To articulate various environmental acts in order to protect the environment. |
| **Course Outcomes:** | Upon successful completion of the course, the students will able to: |
| CO1 | Know the importance of Environmental sciences and understand the various components of environment. |
| CO2 | Understand the value of natural resources |
| CO3 | Summarize the function of ecosystem, values of biodiversity and conservation. |
| CO4 | Identify how the environment is polluted and suggest themitigation measures. |
| CO5 | Understand the environmental problems in India and way to minimize the effects. |
| CO6 | Categorize the environmental protection laws in our country and role of information technology in environment protection. |
| **Course Content:** | UNIT-IMultidisciplinary nature of environmental sciences: Introduction, Definition, Scope and Importance of environmental sciences - Various components of environment – Atmosphere, lithosphere, hydrosphere and biosphere –Multidisciplinary nature of environmental sciences. UNIT-II**Natural resources:****Land resources:** Importance, Land degradation, Soil erosion and desertification, Effects of modern agriculture (fertilizer and pesticideproblems).**Forest Resources**: Use and over-exploitation-Mining and Dams-their effects on forest and tribalpeople.**Water Resources:** Use and over-utilization of surface and ground water - Floods and droughts.**Energy resources:** Renewable and non-renewable energy, need to use of alternate energy sources, Impact of energy use onenvironment.UNIT-III**Ecosystem**: Definition, types, structure (biotic and abiotic components) and functions of an Ecosystem –Energy flow, Food chain, food web, ecological pyramids and Ecological succession.**Bio-diversity and its conservation:** Definition - genetic, species and ecosystem diversity- value of biodiversity -hotspots of biodiversity in India - threats to biodiversity – in situ and ex situ conservation of biodiversity.UNIT-IV**Environmental Pollution:** Causes, effects and control measures of Air pollution, Water pollution, Soil pollution, Marine pollution, Noise pollution, Thermal pollution and Nuclear hazards.**Solid waste management**: causes, effects and control measures of urban and industrial waste. **Disaster management:** Floods, earthquake and cyclones.UNIT-V**Social issues and Environment:** From unsustainable to sustainable development, urban problems related to energy, water conservation, rainwater harvesting and water shed management. **Case Studies:** Silent valley project, Madhura Refinery and TajMahal, Tehri Dam, Kolleru Lake Aquaculture and Fluorosis in Andhra Pradesh.**Climate change-** Global warming, Acid rain and Ozone depletion.UNIT-VIHuman population and Environment: Population growth, variation among nations and population explosion- Role of information technology in environment and human health. **Environmental Acts:** Water (Prevention and control of pollution) Act-Air (Prevention and control of pollution) Act – Wildlife protection Act and Forest conservation Act.**Field work:**Visit to Local Area having river/Forest/grass land/hill/mountain to document environmental assets. |
| **Text Books &****Reference Books:** | **TEXT BOOKS:**1. “Environmental science”, by AnubhaKaushik and C.P.Kaushik.
2. “Environmental science and Engineering”, by P.Anandan and R.K.Kumaravelan.

**REFERENCE BOOKS:**1. “Introduction to Environmental science”, by Y.Anjaneyulu.
2. “Environmental studies”, by Dr B.S.Chauhan.
3. “Environmental science”, by M.Chandrasekhar.
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| **e-Resources** | 1. <https://nptel.ac.in/courses>
2. <https://freevideolectures.com/university/iitm>
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