## Energy and Environmental Engineering

**CEME 106 S1**
**CEME 106 S2**

| | L | T | P | Credit |
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| **Scheme** | **3** | **0** | **2** | **04** |

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- **ENVIRONMENT AND ECOSYSTEMS** **(12 hours)**
  Introduction: Concept of an ecosystem- structure and functions of ecosystem. Components of ecosystem - producers, consumers, decomposers, Food chains, food webs, ecological pyramids, Energy flow in ecosystem. Bio-geo- chemical cycles, Hydrologic cycle
  Components of Environment and their relationship, Impact of technology on environment, Environmental degradation. Environmental planning of urban network services such as water supply, sewerage, solid waste management.

- **ENVIRONMENTAL POLLUTION** **(10 hours)**
  Water, air, soil, noise, thermal and radioactive, marine pollution: sources, effects and engineering control strategies. Drinking water quality and standards, Ambient air and noise quality standards

- **GLOBAL ENVIRONMENTAL ISSUES AND ITS MANAGEMENT** **(8 hours)**
  Engineering aspects of climate change. Acid rain, depletion of ozone layer.Concept of carbon credit. Concepts of Environmental impact assessment and Environmental audit. Environmental life cycle assessment

- **ENERGY FUNDAMENTALS** **(8 hours)**
  Energy systems.Importance of energy. Quantifying energy, types of energy sources and end uses. Energy conversion processes.Conventional energy sources.Non-conventional energy sources.

- **ENERGY AND THE ENVIRONMENT** **(7 hours)**
  Global and Indian energy demand and growth. Environmental impacts of energy production – air and water. Climate change and energy.Energy and environment policy.Transportation and energy. Built environment and energy

**(Total Lecture Hours: 42)**

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**REFERENCES**


1. Daniel B Botkin& Edward AKeller,Environmental Sciences, John Wiley & Sons
2. R. Rajagopalan, Environmental Studies, Oxford UniversityPress
3. Benny Joseph,Environmental Studies, TMHpublishers
4. Dr. Suresh K Dhameja,Environmental Studies, S K Kataria& Sons, 2007
5. U K Khare,Basics of Environmental Studies, Tata McGrawHill, 2011


**Practical**

1. Study of different ecosystem and different Biochemical cycles.
2. Study of Water Treatment Plant.
3. Study of Water Distribution Network.
4. Study of Effluent Treatment Plant
5. Study of Solid Waste Management system for urban area.
6. Demonstration of air pollution and noise monitoring equipments
7. Exercise on life cycle Assessment
8. Exercise on EIA
9. Exercise on Quantifying energy and energy growth demand
10. Analysis of Carbon Credit
11. Tutorial on Energy in Built environment