

SEMESTER-II (Pool-B)

COURSE NAME : ENERGY AND ENVIRONMENT

(CHOI-B34)

Number of Credit: - 02

Maximum marks: 50

Unit-I

Introduction to energy resources-oil, natural gas, gasoline, coal, solar, wind, hydro, nuclear, biomass etc., environmental impacts of power production by different energy sources, comparison of carbon emissions from different types of power plants.

Unit-II

Air pollution- definition, sources and causes of air pollution, impact of air pollution on human health, comparison of World Health Organisation data on death toll due to air pollution in low income, middle income and higher income countries.

Unit-III

Direct air pollutants- NO_x, SO_x, lead, CO, particulate matter, indirect air pollutants- ground level ozone or smog, particulate matter, health impact and welfare losses caused by pollution, measures to reduce these pollutants.

Unit-IV

Climate Change- definition, reason for climate change, observed changes in climate system-green house gas concentrations and CO₂ emissions, impacts of climate change on physical, biological and human managed systems.

Unit-V

Future Climate Change- Introduction to Representative Concentration Pathways (RCPs), mitigation scenarios, (RCP2.6), intermediate scenarios (RCP4.5 and RCP6.0) and scenario with very high GHG emissions (RCP8.5), their impacts.

Book References

1. Renewable Energy Engineering and Technology: Principles and Practice, Edited by V V N Kishore, The Energy and Resources Institute, New Delhi.
2. Energy Science: Principles, technologies and impacts – John Andrews & Nick Jelly (Oxford).
3. Renewable Energy: Power for sustainable future, Godfrey Boyle, Oxford University Press, 2004.
4. World Health Organization
<https://www.who.int/airpollution/ambient/en/>
<https://www.who.int/health-topics/air-pollution/>
5. IPCC Climate Change 2014, Synthesis Report, Summary for Policymakers

6. The Cost of Air Pollution: Strengthening the Economic Case for Action, World Bank and IHME report 2013
7. Global Carbon atlas <http://www.globalcarbonatlas.org/en/CO2-emissions>
8. Carbon Emissions <https://www.co2.earth/>

