

GUJARAT TECHNOLOGICAL UNIVERSITY
M.E.in Energy Engineering
Semester: I

Subject Name: **Energy Resources, Economics & Environment**
Subject Code : **713901**

Sr. No	Course Content
1.	Global Energy Scenario : • Role of energy in economic development and social transformation, Energy & GDP, GNP and its dynamics. • Discovery of various energy sources, Energy Sources and Overall Energy demand and availability, Energy Consumption in various sectors and its changing pattern, Exponential increase in energy consumption and projected future demands. • Non conventional and conventional energy Resources: Coal, Oil, Natural Gas, Nuclear Power and Hydroelectricity, Solar and Other Renewable etc. • Depletion of energy sources and impact on exponential rise in energy consumption on economies of countries and on international relations. • Energy Security, Energy Consumption and its impact on environmental climatic change. • International Energy Policies of G-8 Countries, G-20 Countries, OPEC Countries, EU Countries. • International Energy Treaties (Rio, Montreal, Kyoto), INDO-US Nuclear Deal. • Future Energy Options, Sustainable Development, Energy Crisis.
2.	Indian Energy Scenario • Energy resources & Consumption, Commercial and noncommercial forms of energy, Fossil fuels, Renewable sources including Bio-fuels in India and their utilization pattern in the past, present and future projections of consumption pattern, Sector wise energy consumption. • Impact of Energy on Economy, Development and Environment, Energy for Sustainable Development, Energy and Environmental policies, Need for use of new and renewable energy sources, present status and future of nuclear and renewable energy, Energy Policy Issues related Fossil Fuels, Renewable Energy,

	Power sector reforms, restructuring of energy supply sector, energy strategy for future. • Energy Conservation Act-2001 & its features, Electricity Act-2003 & its features. • Framework of Central Electricity Authority (CEA), Central & States Electricity • Regulatory Commissions (CERC & ERCs)
3.	Energy Policy • Global Energy Issues, National & State Level Energy Issues, National & State Energy Policy, Industrial Energy Policy, Energy Security, Energy Vision. • Energy Pricing & Impact of Global Variations. • Energy Productivity (National & Sector wise productivity).
4.	Environment • Concept of environment and ecology, various natural cycles in environment and ecology, effect of human activities on environment and ecology. • Environmental Impact Assessment & Economics Analysis, Methodologies for environmental pollution prevention. • Rules, regulations, laws etc. regarding environmental protection, pollution prevention and control, waste disposal etc. • Role of government, semi/quasi govt. and voluntary organizations.

Reference Books:

1. Energy for a sustainable world: Jose Goldenberg, Thomas Johansson, A.K.N.Reddy,
2. Robert Williams (Wiley Eastern).
3. Energy policy by B.V.Desai (Weiley Eastern),
4. Modeling approach to long term demand and energy implication by J.K.Parikh.
5. Energy Policy and Planning by B.Bukhootsow.
6. TEDDY Year Book Published by Tata Energy Research Institute (TERI),
7. S. Rao, "Energy Technology"
8. 'International Energy Outlook' -EIA annual Publication
9. Principles of Energy Conversion by A.W. Culp (McGraw Hill International edition.)
10. 10 BEE Reference book: no.1/2/3/4
11. Frank P Lees, "Loss Prevention in Process Industries" Volume 1, 2 & 3.