VMVALPH01 - ENERGY AUDITING

Value Added Course (30 hrs)

Offered by

DEPARTMENT OF PHYSICS

VIMALA COLLEGE (AUTONOMOUS), THRISSUR

COURSE OUTCOME

- To impart a scientific understanding of the fundamentals related to energy
- To acquire knowledge on energy conservation and energy auditing
- To be aware of basic electrical safety measures
- To practice environment friendly aspects of energy consumption

SYLLABUS

Unit-01: Global and Indian Energy Scenario **6 hours**

Global Energy Scenario - Indian Energy Scenario - Role of energy in economic development and social transformation: Energy & GDP, GNP and its dynamics – Energy resources and consumption in various sectors and its changing pattern - Exponential increase in energy consumption and Projected future demands - Depletion of energy sources and impact exponential rise in energy consumption on economies of countries and on international relations - Energy Security - Energy for Sustainable Development - Energy and Environmental policies - Need for use of new and renewable energy sources ts impact on environmental climatic change.

Unit-02: Energy resources **6 hours**

Classification of Energy Sources - Principle fuels for energy conversion: Fossil fuels, Nuclear fuels - Conventional & Renewable Energy Sources: Coal, Oil, Natural Gas, Nuclear Power and Hydroelectricity, Solar and Other Renewable etc. - prospecting, extraction and resource assessment and their peculiar characteristics

Unit-03: Energy Auditing **10 hours**

Energy Audit Instruments - Basic measurements – Electrical and Thermal Energy measurements, Light, Pressure, Temperature and heat flux, Velocity and Flow rate, Vibrations, etc. Instruments

Used in Energy systems: Load and power factor measuring equipments, Wattmeter, flue gas analysis, Temperature and thermal loss measurements, air quality analysis etc. - Mathematical and statistical modeling and analysis - Mechanical & Utility System Measurements - M & V Protocol

Unit-04: Electrical safety of domestic appliances **8 hours**

Principles of domestic appliances – Air conditioner, Fridge, Induction Cooker, Mixi, Grinder, Electrical Iron, Washing machine, TV, Computer, UPS Lights etc. – Calculations for selection of inverter, UPS, solar appliances, bio gas plant – Electrical safety aspects – Wiring, Earthing, MCB, ELCB etc. –Precautions to prevent electrical accidents - BEE Star rating, ISI stamping

Mode of Evaluation:

The mode of evaluation towards attaining a certificate shall be based on continuous assessment which includes:

Assignments	- 3
Individual Seminar	- 1
Mini Project	- 1 each
Major Project	- 1 (by a group of 5)
Industrial visit	- 1

REFERENCES

1. Non – Conventional Energy Resources, G. D. Rai, Khanna Publishers, 2008.
2. Solar Energy Fundamentals and application, H.P. Garg and J. Prakash, Tata McGraw- Hill Publishing company Ltd., 1997.
3. Energy Technology, S. Rao and Dr. B.B. Parulekar, 1997, 2nd edition
4. Power Technology, A. K. Wahil. 1993.