

DEPARTMENT OF PHYSICS				<i>Certificate Course</i>				
Sem	Course Type	Course Code	Course Title	Credits	Total Contact Hours	CIA	Ext	Total
	Certificate course		Energy Audit	2	30	50	50	100

**Objective:**

- To improve energy performance and minimize the environmental impacts of the organization's operations.
- To identify behavioral change opportunities by evaluating current operations and maintenance practices.
- To identify technical opportunities by evaluating significant process energy-using components or utilities including boilers, refrigeration plant, ventilation systems, building performance and fleet efficiency.

**Learning Outcomes:**

- Enable the students to have clear financial information regarding energy savings opportunities in order to prioritize these items for the organization's decision-making process.
- Enable the students to identify potential for using renewable energy supply technologies.
- Enable the students to contribute to the process for certification to a formal energy management system, as set out in ISO 50001

**Unit – I Basic of Energy and its various forms**

Introduction – Work, Energy, and Power – Electricity Basics – Energy Units – Conversions.

**Unit –II Undertaking an Energy Audit**

Energy audit – Energy audit work – Preparation – Initial Preparation - Pre – analysis and Planning – Conducting the site visit.

**Unit –III Technical Assessment**

Buildings and building fabric such as glazing and insulation - Lighting - Heating, controls and boilers - Heating ventilation and air conditioning (HVAC) – Pumps - Transport fleet, telematics - Refrigeration - Industrial processes - Wastewater treatment plants - Compressed air.

**Unit – IV Financial Analysis of Opportunities**

Choice of financial analysis tool - Validated calculations -Financial analysis methods

**Unit – V Identifying and Prioritizing Opportunities**

Identify opportunities forImprovement - Generate register of opportunities – Methods to identify opportunities - Prioritize opportunities - Reporting the Results.

**Text Book:**

1. Energy Sources & Policies in India 2011, Rishi Muni Dwivedi.
2. Energy Audit Handbook, Sustainable Energy Authority of Ireland (SEAI).

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