

Course Title	Energy Management (Department Elective - II)
Course Code	EPS704
Course Credit	Lecture : 03
	Practical : 00
	Tutorial : 01
	Total : 04

Course Objective

The objective of the course is:

To enable the students acquire a comprehensive ideas on various aspects of Energy management. To acquire the knowledge on Energy Audit & Case Studies. To understand the various Modern Energy efficient technologies

Detailed Syllabus

Sr. No.	Name of chapter & Details	Hours Allotted
Section – I		
1	Energy management: Concept of energy management, elements of energy management, energy cost, energy performance, energy saving calculations, balancing, energy use and requirement, maximizing system efficiencies, optimizing, input energy requirement, Demand Side Management	7
2	Quality and Reliability of Industrial / Commercial Power Systems: Introduction, Harmonics in supply system, Voltage Sag, Power Factor Reliability analysis of power system	7
3	Economic aspects of energy audit: Cost evaluation by ROI, IRR Cost evaluation by payback terms, Organization for energy management. Conservation measures and diagnostic review	6
4	Energy Audit & Case Studies: Introduction, types and walkthrough energy audit. Energy audit at unit level, Industrial Audit approaches. Procedure for energy audit and equipments required. Comprehensive Energy audit Site testing	5
Section – II		
5	The Electric Utility in Industry: Introduction, Electric utilities characterized by function, Different regulated electric utility frameworks, “Electric Utility” structure in deregulated industry, Energy conservation task in industry, Co – generation, Energy conservation in cement, textile, sugar, etc. industry Energy conservation in building	7
6	Energy performance assessment of motors / variable speed drives: Introduction, Efficiency of the induction motor, Determining motor loading, Field tests for determining efficiency, Performance evaluation of rewind motors, Format for data collection, Concept of variable	7

	frequency drives and Applications, Factors for successful implementation of variable speed drives, Information needed to evaluate energy savings for variable speed application	
7	Energy performance assessment: Energy performance assessment of Pumps, Compressors, Blowers and Cooling Towers, Introduction and types, Performance terms and definitions, Performance, Analysis and suggestions	7
8	Modern Energy efficient technologies: Maximum demand controller, Automatic power factor controller, Energy efficient motors, Soft starters with energy saver, Energy efficient Transformers, electronic ballast, occupancy sensors etc. Energy efficient, Energy saving in transportation system, Energy saving in air conditioning system	4

Instructional Method and Pedagogy:

- Lectures will be conducted with the aid of multi-media projector, black board, Transparencies etc.
- Assignments and Exercise will be given to the students for each unit/topic and will be evaluated at regular interval.
- Surprise tests/Quizzes/Seminar/Tutorials will be conducted.
- Self study assignments, seminar from students can be conducted

Students Learning Outcomes:

At the end of the course students will be able

- To acquire the knowledge on Energy Audit & Case Studies
- To understand the various Modern Energy efficient technologies

Reference Books/Text book:

1. Energy Technology by S.Rao
2. Energy conservation techniques by P.M. Dave & M.N.Sheth
3. Course Material for Accredited Energy Managers & Energy Auditors – Bureau of Energy Efficiency

Additional Resources:

www.sciencedirect.com
www.delnet.nic.in