

**M.E Semester: 3 Mechanical Engineering (Automobile Engineering)**  
**Subject Name: Energy conservation and management (Elective-III) MEA303A**

**A. Course Objective**

- To present a problem oriented in depth knowledge of Energy conservation management
- To address the underlying concepts and methods behind Energy conservation management

**B. Teaching / Examination Scheme**

SUBJECT		Teaching Scheme				Total Credit	Evaluation Scheme					Total Marks
		L	T	P	Total		THEORY		IE	CIA	PR. / VIVO	
CODE	NAME	Hrs	Hrs	Hrs	Hrs		Hrs	Marks	Marks	Marks	Marks	
MEA303A	Energy conservation management	3	0	0	3	3	3	70	30	20	0	120

**C. Detailed Syllabus**

1. Energy scenario, Principles of energy Conservation, Energy consumption pattern, Resource availability.
2. Evaluation of thermal performance, calculation of heat loss – heat gain, estimation of annual heating & cooling load factors that influence thermal performance, analysis of existing buildings.
3. Organizing for energy conservation programme, the energy audit and energy information system, technology for energy conservation, co-generation of process, steam & electricity, computer controlled energy management, commercial options in waste heat recovery equipment, cases of energy studies, energy conservation opportunity, Energy conservation in I. C. Engine.
4. Strategies for electricity and management, setting up an energy management programme, electricity saving technique by category of end use, Electrical end use in industries, energy & power management in industry, energy management strategies for industry, demand management.

5. Importance and role of energy management, Energy economics, Payback period, Internal rate of return, life cycle costing.

**D. Lesson Planning**

<u>SR.NO</u>	<u>DATE/WEEK</u>	<u>UNIT NO</u>	<u>%WEITAGE</u>	<u>TOPIC NO</u>
1	1 <sup>ST</sup> , 2 <sup>ND</sup> , 3 <sup>RD</sup>	1	20	1
2	4 <sup>TH</sup> , 5 <sup>TH</sup> , 6 <sup>TH</sup>	2	20	2
3	7 <sup>TH</sup> , 8 <sup>TH</sup> , 9 <sup>TH</sup>	3	20	3
4	10 <sup>TH</sup> , 11 <sup>TH</sup> , 12 <sup>TH</sup>	4	20	4
5	13 <sup>TH</sup> , 14 <sup>TH</sup> , 15 <sup>TH</sup>	5	20	5

**E. Instructional Method & Pedagogy**

- At the start of course, the course delivery pattern , prerequisite of the subject will be discussed
- Lecture may be conducted with the aid of multi-media projector, black board, OHP etc. & equal weightage should be given to all topics while teaching and conduction of all examinations.
- Attendance is compulsory in lectures and laboratory, which may carries five marks in overall evaluation.
- One/Two internal exams may be conducted and total/average/best of the same may be converted to equivalent of 30 marks as a part of internal theory evaluation.
- Assignment based on course content will be given to the student for each unit/topic and will be evaluated at regular interval. It may carry an importance of ten marks in the overall internal evaluation.
- Surprise tests/Quizzes/Seminar/Tutorial may be conducted and having share of five marks in the overall internal evaluation.

**F. Students Learning Outcomes**

- The student can identify different areas of Energy conservation and management.
- Can find the applications of all the areas in day to day life.

**G. Recommended Study Materials**

• **Text & Reference Books:**

1. C.B.Smith, Energy Management Principles, Pergamon Press, New York, 1981.
2. W.C. Turner, Energy Management, Hand Book.
3. Hamies, Energy Auditing and Conservation, Methods, Measurements, Management and Case Study, Hemisphere, Washington, 1980.

4. Kreith, Economics of Solar Energy and Conservation Systems, Vol -3.
5. W.F.Kenny, Energy Conservation in Process Industry.
6. Trivedi, P.R, Jolka K.R., Energy Management, Commonwealth Publication, New Delhi,1997.
7. Witte, Larry C, Industrial Energy Management and Utilization, Hemisphere Publishers, Washinton, 1988.

