Faculty of Engineering and Technology,

SRM University,Kattankulatthur-603203.

DEPARTMENT OF MECHANICAL ENGINEERING

COURSE PLAN

Course Code : ME1227
Date:01/02/2016
Course Title : **ENERGY CONSERVATION**
Semester : Open Elective (Third year)
Academic Year: 2015-2016 (Even semester: Jan – May 2016)

Details of Faculty Members

Section	Class Room No	Details of Faculty Members				
		Name	Room No	Intercom No	Email id	Students Contact Timing
Open Elective for other departments		K Sathiyamoorthy	MEB 208	NA	Sathiya.k@ktr.srmuniv.ac.in	12.30 pm -1.30pm

Direct Assessment Details

Name of Assessment	Marks	Topics	Tentative Time	Duration
CYCLE TEST – 1	10	ENERGY CONSERVATION PRINCIPLES	24/02/2016	2 PERIODS
SURPRISE TEST	5	ENERGY CONSERVATION IN STEAM SYSTEMS	Any date between 24/2/2016 to 01/04/2016	1 Period
CYCLE TEST – 2	10	ENERGY CONSERVATION IN FLUID MACHINERY	23/03/2016	2 PERIODS
MODEL EXAM	20	FULL SYLLABUS	25/04/2016	3 Hours
ATTENDANCE	5			
END SEMESTER EXAM	50	FULL SYLLABUS		3Hours

ME1227	ENERGY CONSERVATION	L	T	P	C
	Prerequisite Nil	3	0	0	3

PURPOSE

To enable the students to acquire the knowledge of energy conservation measures in thermal and electrical energy systems.

INSTRUCTIONAL OBJECTIVES

1. Energy conservation principles.
2. Energy conservation in steam systems.
3. Energy conservation in fluid flow machinery.
4. Electrical energy conservation measures.
5. Energy management concepts.

UNIT I - ENERGY CONSERVATION PRINCIPLES (9 hours)

Energy scenario, principles of energy conservation, resource availability, energysavings, current energy consumption in India, roles and responsibilities of energymanagers in industries.

UNIT II - ENERGY CONSERVATION IN STEAM SYSTEMS (9 hours)

Power plant components, conservation measures in steam systems, losses inboiler, Methodology of upgrading boiler performance - blow down control,excess air control, pressure reducing stations, condensate recovery , condensatepumping , thermo compressors, recovery of flash steam, air removal and venting,steam traps, cooling towers.

UNIT III - ENERGY CONSERVATION IN FLUID MACHINERY (9 hours)

Centrifugal pumps, energy consumption and energy saving potentials, designconsideration, minimizing over design. Fans and blowers - specification, safetymargin, choice of fans, controls and design considerations. Air compressor andcompressed air systems, selection of compressed air layout, energy conservationaspects to be considered at design stage.

UNIT IV - ELECTRICAL ENERGY CONSERVATION (9 hours)

Potential areas for electrical energy conservation in various industries,conservation methods, energy management opportunities in electrical heating,lighting system, cable selection, energy

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COURSE PLAN

Session No.	Title/Details of the Chapter	References
	ME1227 - ENERGY CONSERVATION	
	ENERGY CONSERVATION PRINCIPLES	
1.	Energy scenario, principles of energy conservation,	AR1
2.	Resource availability,	AR1
3.	Energy savings	AR1
4.	Current energy consumption in India	AR1,AR2,AR3
5.		AR1,AR2,AR3
6.	Roles and responsibilities of energymanagers in industries	AR1,AR2,AR3
7.		AR1,AR2,AR3
8.		AR1,AR2,AR3
9.	Review	AR1,AR2,AR3
	ENERGY CONSERVATION IN STEAM SYSTEMS	
10.	Power plant components, conservation measures in steam systems	AR1,AR2,AR3
11.	Losses inboiler	AR1,AR2,AR3
12.	Methodology of upgrading boiler performance - blow down control,excess air control	AR1,AR2,AR3
13.	Methodology of upgrading boiler performance - pressure reducing stations	AR1,AR2,AR3
14.	Methodology of upgrading boiler performance - condensate recovery , condensatepumping	AR1,AR2,AR3

36.	Review	AR1,AR2,AR3
	ENERGY MANAGEMENT	
37.	Organizational background desired for energy management persuasion,motivation, publicity role, tariff analysis, industrial energy management systems	AR1,AR2,AR3
38.		AR1,AR2,AR3
39.		AR1,AR2,AR3
40.	Energy monitoring, auditing and targeting	AR1,AR2,AR3
41.		AR1,AR2,AR3
42.	Economics of various energyconservation schemes – energy policy and energy labeling.	AR1,AR2,AR3
43.		AR1,AR2,AR3
44.		AR1,AR2,AR3
45.	Review	AR1,AR2,AR3

TEXT BOOK:

1. Reay.D.A, "Industrial energy conservation", Pergamon Press, 1st edition, 2003.
2. White.L.C, "Industrial Energy Management and Utilization", Hemisphere Publishers, 2002.

REFERENCES:

1. Smith.C.B, "Energy Management Principles", Pergamon Press, 2006.
2. Hamies, "Energy Auditing and Conservation; Methods, Measurements, Management and Case study", Hemisphere, 2003.
3. Trivedi.P.R and Jolka.K.R, "Energy Management", Common Wealth Publication, 2002.

ADDITIONAL REFERENCES:

1. http://www.em-ea.org
2. http://www.energyefficiencyasia.org/index.html
3. Y P Abbi, Shashank Jain, " Handbook on Energy Audit and Environment Management", TERI Press, 2006.

2/2/16

(K Sathiyamoorthy)
CO-ORDINATOR

DEAN/MECHANICAL 2/2/2016