

<b>22MEHO110</b>	<b>ENERGY MANAGEMENT AND ENVIRONMENTAL BENEFITS</b>							
		<b>CATEGORY</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>		
		<b>PE</b>	<b>3</b>	<b>0</b>	<b>0</b>	<b>3</b>		
<b>COURSE OBJECTIVES</b>								
1	To create awareness on the energy scenario of India with respect to world							
2	To learn the methodology adopted for an energy audit							
3	To appreciate the concepts adopted in project management							
4	To study the different techniques adopted for financial appraisal of a project							
5	To Comprehend the impact of energy on environment							
<b>UNIT I ENERGY SCENARIO</b>			<b>9</b>	<b>0</b>	<b>0</b>	<b>9</b>		
Comparison of energy scenario – India and World (energy sources, generation mix, consumption pattern, T&D losses, energy demand, per capita energy consumption)– energy pricing – energy security-energy conservation and its importance, Energy Conservation Act 2001.								
<b>UNIT II ENERGY MANAGEMENT</b>			<b>9</b>	<b>0</b>	<b>0</b>	<b>9</b>		
Energy audit- need – types – methodology– barriers- analysis on energy costing and sharing bench marking - fuel and energy substitution– billing parameters in TANGEDCO – demand side management-instruments for energy audit– energy monitoring and targeting- CUSUM energy labelling.								
<b>UNIT III PROJECT MANAGEMENT</b>			<b>9</b>	<b>0</b>	<b>0</b>	<b>9</b>		
Four Basic Elements of Project Management- Project Management Life Cycle- Steps in Project Management- Project Definition and Scope, Technical Design, Financing, Contracting, Implementation Techniques (Gantt chart, CPM and PERT) and Performance Monitoring.								
<b>UNIT IV FINANCIAL MANAGEMENT</b>			<b>9</b>	<b>0</b>	<b>0</b>	<b>9</b>		
Investment appraisal for energy conservation projects - Financial analysis techniques, Simple payback period, Return on investment, Net present value, Internal rate of return-Cashflows, Risk and sensitivity analysis: micro and macro factors.								
<b>UNIT V ENERGY AND ENVIRONMENT</b>			<b>9</b>	<b>0</b>	<b>0</b>	<b>9</b>		
Greenhouse effect and the carbon cycle - current evidence and future effects of climate change – Global Environmental Concerns – U n i t e d Nations Frame work Convention on Climate Change (UNFCC), Kyoto Protocol, Conference of Parties (COP), Emissions trading (ET), Joint implementation (JI), Clean Development Mechanism(CDM), Prototype Carbon Fund(PCF), sustainable development.								
<b>TOTAL(45L) : 45 PERIODS</b>								
<b>REFERENCE BOOKS:</b>								
1	Energy Manager Training Manual (4Volumes) available at <a href="http://www.em-ea.org/gbook1.asp">http://www.em- ea.org/gbook1.asp</a> , a website administered by Bureau of Energy Efficiency (BEE), a statutory body under Ministry of Power, Government of India.2004.							
2	L.C.Witte, P.S.Schmidt, D.R.Brown, “Industrial Energy Management and Utilisation ”Hemisphere Publ, Washington,1988.							
3	W.C.turner,“EnergyManagementHandbook”Wiley,NewYork,1982.							
4	W.R.MurphyandG.McKay“EnergyManagement”Butterworths,London1987.							
5	Eastop.T.D& Croft D.R, Energy Efficiency for Engineers and Technologists,.Logman Scientific & Technical,ISBN-0-582-03184,1990.							

<b>COURSE OUTCOMES:</b> Upon completion of this course, the students will be able to:		<b>Bloom Taxonomy Mapped</b>
<b>CO1</b>	Recognize the importance of energy conservation and suggest measures for improving per capita energy consumption.	Understand
<b>CO2</b>	Analyses the energy sharing and cost sharing pattern of fuels used in industries.	Analyze
<b>CO3</b>	Apply Gantt Chart, CPM and PERT in energy conservation projects.	Apply
<b>CO4</b>	Evaluate the techno-economics of a project adopting discounting and non- discounting cash flow techniques.	Evaluate
<b>CO5</b>	Assess the sources of additional revenue generation for energy conservation projects adopting	Evaluate

### COURSE ARTICULATION MATRIX

COs/POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
<b>CO1</b>	3	2	1	1	0	1	0	0	0	1	1	0	0	2	2
<b>CO2</b>	3	2	0	0	0	1	0	0	0	0	0	2	0	2	0
<b>CO3</b>	3	1	1	1	0	1	0	0	0	0	0	0	0	2	3
<b>CO4</b>	3	2	0	0	0	0	1	0	0	0	0	1	0	0	2
<b>CO5</b>	2	1	0	0	1	2	1	0	0	0	0	0	0	0	0
<b>Avg</b>	<b>2.8</b>	<b>1.6</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>1.25</b>	<b>1</b>	<b>0</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>1.5</b>	<b>0</b>	<b>2</b>	<b>0</b>

3/2/1 – indicates strength of correlation (3 – high, 2- medium, 1- low)