Cour	Course Code	18EEO306T Course Name		ENERGY CONSERVATION		Course O			Open	Open Elective				3	⊢ 0	0	U m
P Q	Pre-requisite Courses	ĪZ	Co-requis	Co-requisite Courses NII		Progressive Courses	\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\										
Course	Offering I	Course Offering Department Electrical a	and Electror	Electrical and Electronics Engineering   Data Book /	Data Book / Codes/Standards	Nil											
Course	Leaming	Course Learning Rationale (CLR): The purpos	The purpose of learning this cours	g this course is to:		Learning			Ē	Program Learning Outcomes (PLO)	aming (	Jutcome	se (PL(	<u> </u>			
CLR-1		Outline the concepts of world energy scenario in industries	senario in in	dustries		1 2 3	_	2 3	4 5	9	7   8	6	10	11   12	13	14	15
CLR 2		Describe the basics of electrical system Innart knowledge on various methods of improving energy efficiency in industries	n improving	seintsulpri ni voneivita vonevno		(9			яср		Yılla						
CLR-4	_	an overview about the energy police	icies, energy	Give an overview about the energy policies, energy planning and policy making in India		су (%	әбрә	Juən			20181	Work					
CLR-5: CLR-6:		le an understanding of the basics s overall structure of energy conse	s of energy c ervation sta	Provide an understanding of the basics of energy conservation method and energy auditing in industries Create overall structure of energy conservation starting from environmental aspects to energy management systems	ndustries nanagement systems	Thinking (I Proficien b Attainme	lwon's gnin	Analysis Pevelopr	, Design, F 	S Culture	nent & Sus	msəT & l	noitation	Agt. & Fina Teaming			
Course	Leaming	Course Learning Outcomes (CLO): At the end	At the end of this course, learners	se, learners will be able to:		xbecte	əəuigu			ociety &	:nvironr :thics	subivibr			1-0S	Z - OS	E-08
CLO-1 :		Gain knowledge of world energy scenario	rio			72	Ι			s ·		11 .			-	d 7	<del>1</del>
CLO-2:		Understand the concepts of electrical system  4 sees the energy efficiency in industrial exetem	ystem			3 75 75	I				. 1				2 2	N I	N
252		Assess the energy entremy in maastina system. Analyse the energy policies, energy planning and policy making in india	an system	olicy making in india		75	_ I				+				2	. 2	į I
0.0-5		Correlate with various methods of energy conservation	av conserva	tion		75	Ξ.				;	N	2		2	ī	2
CLO-6:		Implement energy conservation methods and laws to save energy	ds and laws	to save energy		7.5	Ι					N	N	· •	Z	N	Τ
C	(F-1)			c				c			L			c			ſ
Durati		) :			ۍ. د		;	מס						ρ.			T.
-S-	SL0-1	Energy classificatios		Introduction Electrical Systems	Air condition and refrigeration	<u>u                                     </u>	Introduction to energy policy	o energy µ	olicy		luve	Investment - need, appraisal and criteria	. need,	apprai	sal and	criter	ia i
	SL0-2	Power Past & Present scenario of World		Electrical network types and classifications	Diesel Generator	<u>v</u>	National energy policy in the last plan periods	rgy policy ı	n the las	t plan	Fina	Financial analysis techniques	alysis t	echniq	sən		
S-2	SLO-1	Sectorial energy consumption		HT supply	Energy Efficiency in Building	3/	ISO-50001, PDCA, PAT scheme	PDCA, PA	r schem	ď	Simp	Simple payback period	ack pe	poir			
	SLO-2	domestic, industrial and other sectors		LT supply	Energy Efficiency in Building	<u> </u>	BEE & State Development Agencies & EESL Programmes	Developm mmes	ent Agei	cies &	Retu	Retum on investment	vestme	ent			
S <del>-</del> 3		energy needs of growing economy, energy intensity		Transformers and its operation	Savings opportunities in HVAC		Municipal & Agriculture DSM Initiatives	4griculture	DSM In.	fiatives	Net <sub>I</sub>	Net present value, internal rate of return, cash flows	value,	interna	l rate o	ıf retur	m,
		long term energy scenario, energy pricing		Types of transformer	Fans and blowers	ш_	Energy use and Energy supply	and Energy	, supply		Net ,	Net present value, internal rate of retum, cash flows	value,	interna	l rate o	ıf retur	π,
8 4	SLO-1	energy security, energy conservation		Cables – and its construction	Conservation opportunities	# C	Overview of renewable energy policy and the Five Year Plan programme	renewable Plan prog	energy <sub>i</sub>	olicy and		Risk and sensitivity analysis	nsitivity	, analys	sis		
	SLO-2	energy conservation importance, energy strategy for the future		Types and Cable Sizing	Pumps - CASE STUDY	S	Standards and Labelling Programme EEC initiatives in Other Sectors	nd Labellin Other Sect	g Progra	mme EE	C Fina	Financing options	otions				
S-5		National Energy consumption Data		Concept of Capacitors	Control strategies	B	Basic concept of Input-Output analysis	nt of Input-	Output a	nalysis	Ener	Energy performance contracts and role of Energy Service Companies (ESCOs)	ormano rice Co	e contr mpanie	acts ar	nd role 20s)	o of
	SLO-2	Energy Pricing		Types of Capacitors	Conservation opportunities	) <u> </u>	Concept of energy multiplier and Implication of energy multiplier for analysis of regional and national energy policy Organizational structure	nergy mult f energy m nd national al structure	iplier an ultiplier i energy	f or analys. oolicy		Energy Monitoring	nitoring				
9-S	SLO-1	Environmental aspects associated with energy utilization		Power Factor Improvemen	Cooling Tower -performance	<u>× 0 0 0</u>	key developments and changes in India's energy policies and planning in the context of energy efficiency and environmental concerns	nents and es and pla ciency anc	changes nning in t enviror	in India's the conte, nental		Targeting: Defining monitoring & targeting	efining	monita	oring &	target	ting

ng monitoring & targeting	itoring & targeting	ation-analysis, techniques	ntion	Production, cumulative sum of differences (CUSUM).	Energy Management Information Systems (EMIS)	nent Information Systems
Targeting: Defini	elements of mon	Data and informe	Energy consumption	Production, cum. (CUSUM).	Energy Managen (EMIS)	Energy Managen (EMIS)
key developments and changes in India's Targeting: Defining monitoring & targeting energy policies and planning in the context of energy efficiency and environmental	regulatory frameworks and reforms across elements of monitoring & targeting various energy sectors	regulatory frameworks and reforms across Data and information-analysis, techniques various energy sectors	Energy Policies success stories, failures	Energy saving potential of technology	Energy tariffs and Energy Instrument	CASE STUDY for energy tariffs in industry   Energy Management Information Systems   IEMIS)
Efficient system operation	Efficient system operation	Validation of energy saving using application software	Energy saving opportunities	Energy saving opportunities	Assessment of cooling towers	Assessment of cooling towers
Harmonics	Electric Motors – Motor Efficiency Computation	Energy Efficient Motors	Illumination – Lux, Lumens	Types of lighting, Efficacy	LED Lighting And types	Scope Of Encon In Illumination
SLO-2 Environmental aspects associated with energy conservation	Energy Auditing: Needs, Types,	Methodology and Barriers	Role of Energy Managers	Needs of Energy Managers	Instruments for energy auditing	SLO-2 Energy conservation
SLO-2	S-7 SLO-1	SLO-2	S-8 SLO-1	SL0-2	S-9 SLO-1	SLO-2
	S-7		8-S		S-9	

Learning	1. Witte, L.C., P.S. Schmidt, D.R. Brown, Industrial Energy Management and Utilisation, Hemisphere Publ, 4. R Loulou, P.R Shukla and A Kanudia, Energy and Envir	4	R Loulou, P R Shukla and A Kanudia, Energy and Envi
Resources	Washington, 1988		Allied Publishers Ltd, New Delhi, 1997
	2. Callaghn, P.W. Design and Management for Energy Conservation, Pergamon Press, Oxford, 1981	5.	Handbook on Energy Efficiency, TERI, New Delhi, 2001
	3. Energy Manager Training Manual (4 Volumes) available at www.energymanager training.com, a website		https://www.edx.org/course/incorporating-renewable-en
	administered by Bureau of Energy Efficiency (BEE), a statutory body under Ministry of Power,		
	Coursement of India 2001		

ŕ	n coulou, r. n. Shana and A Nahadia, Eriefyy and Erivinghintent Folicies for a sustainable Lutu
	Allied Publishers Ltd, New Delhi, 1997
5.	Handbook on Energy Efficiency, TERI, New Delhi, 2001
9	https://www.edx.org/course/incorporating-renewable-energy-in-electricity-grids-2

	م'سوم ا			Conti	Continuous Learning Assessment (50% weightage)	essment (50% weigh	tage)				(000;42;0;;, (EO9)
	DIOUIII S	CLA -	CLA - 1 (10%)	CLA -	CLA - 2 (15%)	CLA - 3 (15%)	(15%)	CLA - 4 (10%)#	#(%01)		riliai Examination (30% weightage)
	Dilly in the second	Theory	Practice	Theory	Practice	Theory	Practice	Theory	Practice	Theory	Practice
1	Remember	70 07		/0 00		70 00		/0 00		/000	
Level I	Understand	40.70		30.70	•	20.20		20.20		30%	1
0 000	Apply	70 07		70 07		70 07		70 07		700%	
7 000	Analyze	9/ 04		40 /6	•	9/ 04		9/ 0+	•	9/04	ı
2	Evaluate	70 00		70 00		20.00		20 00		2000	
0 0	Create	0/ 07		9/ 00	•	9/ 00		8 00	•	9/00	11
	Total	100	100 %	10(	100 %	100 %	%	100 %	%	100	100 %

# CLA - 4 can be from any combination of these: Assignments, Seminars, Tech Talks, Mini-Projects, Case-Studies, Self-Study, MOOCs, Certifications, Conf. Paper etc.

Course Designers		
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