

**DEPARTMENT OF EEE
NATIONAL INSTITUTE OF TECHNOLOGY, TIRUCHIRAPPALLI**

COURSE PLAN – PART I			
Course Title	ENERGY AUDITING AND MANAGEMENT		
Course Code	EE686	No. of Credits	3
Course Code of Pre-requisite subject(s)			
Session	Jan. 2018	Section (if, applicable)	-
Name of Faculty	S Arul Daniel	Department	EEE
Email	daniel@nitt.edu	Telephone No.	0431-2503256
Course Type	<input type="checkbox"/> Core course <input checked="" type="checkbox"/> Elective course		
Syllabus (approved in BoS)			
Basics of Energy – Need for energy management – Energy accounting - Energy monitoring, targeting and reporting - Energy audit process. Energy management for electric motors – Transformer and reactors - Capacitors and synchronous machines, energy management by cogeneration – Forms of cogeneration – Feasibility of cogeneration – Electrical interconnection. Energy management in lighting systems – Task and the working space - Light sources – Ballasts – Lighting controls – Optimizing lighting energy – Power factor and effect of harmonics, lighting and energy standards. Metering for energy management – Units of measure - Utility meters – Demand meters – Paralleling of current transformers – Instrument transformer burdens – Multi tasking solid-state meters, metering location vs requirements, metering techniques and practical examples. Economic analysis – Economic models - Time value of money - Utility rate structures – Cost of electricity – Loss evaluation, load management – Demand control techniques – Utility monitoring and control system – HVAC and energy management – Economic justification.			
COURSE OBJECTIVES			
<ol style="list-style-type: none"> 1. To emphasize the energy management on various electrical equipment and metering. 2. To illustrate the energy management in lighting systems and cogeneration. 3. To study the concepts behind the economic analysis and load management. 			
COURSE OUTCOMES (CO)			
Course Outcomes			
<ol style="list-style-type: none"> 1. Understand the basics of Energy auditing and Energy management. 2. Employ energy management strategies for electric machines and cogeneration. 3. Employ energy management strategies in lighting systems. 4. Devise energy management strategies for metering and instrumentation. 5. Analyze and justify the economics of different energy management strategies. 			

COURSE PLAN – PART II

COURSE OVERVIEW

Energy is needed for the development of the Country. Transportation, Infrastructure, Agriculture, Education, and Defence need Energy. This course deals with the management of energy so that optimal use is put in place. Further, techniques of Auditing Energy to conserve its use is also studied.

COURSE TEACHING AND LEARNING ACTIVITIES

S.No.	Week/Contact Hours	Topic	Mode of Delivery
1	Weeks 1 to 3	Introduction to Energy	Lecture
2	Week 4 to 6	Energy Management of Electric Machinery and Co-generation	Lectures and Laboratory Exercises
3	Weeks 7 and 9	Energy Management of Lighting System	Lectures and Laboratory Exercises
4	Weeks 9 and 11	Metering for Energy Management	Lectures and Laboratory Exercises
5	Weeks 11 and 13	Economic Analysis	Lectures, videos

COURSE ASSESSMENT METHODS (shall range from 4 to 6)

S.No.	Mode of Assessment	Week/Date	Duration	% Weightage
1	Summative Assessment I	End of 6 th week	1 hour	20%
2	Laboratory Assessment	End of 11 th week	1 hour	20%
3	Group Project	Submission end of 13 th week		20%
4	Seminar Talk on Project work	14 th week		10%
CPA	Compensation Assessment*	14 th week	1 hour	
5	Final Assessment (Lab + summative)	16 th week	2 hours	30%

COURSE EXIT SURVEY

As decided by the Academic Section.

COURSE POLICY (preferred mode of correspondence with students, policy on attendance, compensation assessment, , academic honesty and plagiarism etc.)

MODE OF CORRESPONDENCE (email/ phone etc)

In person during office hours. However, can contact over phone under exigencies.

ATTENDANCE Students with less than 75% attendance shall be prevented from appearing the final assessment and shall be awarded V grade.

COMPENSATION ASSESSMENT

Compensation Assessment is applicable only to those who have obtained prior permission due to prolonged illness.

ACADEMIC HONESTY & PLAGIARISM

Copying in the examination will result in V or F grade if it is a final assessment. If found copying in other summative assessments the student will be given no marks for the assessment and no compensation assessment will be permitted.

ADDITIONAL INFORMATION

FOR APPROVAL

Course Faculty _____

Lawal

CC-Chairperson _____

J. Gandhimati

HOD _____

G.M

13/02/2011