NATIONAL INSTITUTE OF TECHNOLOGY, TIRUCHIRAPPALLI

COURSE OUTLINE TEMPLATE			
Course Title	FOUNDATION FOR ENERGY ENGINEERING		
Course Code	EN 601	**No. of Credits**	3
Department	DEE	**Faculty**	Dr.M.Premalatha/Dr.C.Naveen/Mr.Ramesh R /Mr.G.Suriya narayanan
Pre-requisites Course Code			
Course Coordinator(s) (if, applicable)	Dr.M.Premalatha		
Other Course Teacher(s)/Tutor(s) E-mail		**Telephone No.**	
Course Type	☐ **Core course**	☐ **Elective course**	

COURSE OVERVIEW

This course aims to provide (i) Basic principles of thermodynamics,power generation cycles and fluid mechanics (ii)Theory of Network Analysis,Overview of electrical machines and Introduction to power transmission&distribution.

COURSE OBJECTIVES

(i)To outline the thermodynamic laws and its applications.
(ii)To provide the concepts of power generation cycles.
(iii)To impart the basics of fluid mechanics and heat transfer processes.
(iv)To become familiar with different types of electrical machines.
(v)To introduce power transmission and distribution concepts.

COURSE OUTCOMES (CO)

Course Outcomes	Aligned Programme Outcomes (PO)
1. To apply the thermodynamics principles in energy engineering(K5) 2.To compare the different power generation cycles.(K5) 3.To analyze and solve the electrical network problems.(K4) 4. To evaluate the performance/efficiency of electrical machines.(K5) 5. To interrelate the heat transfer process with fluid mechanics.(K4)	PO's 1,2,4,6,8,9

COURSE TEACHING AND LEARNING ACTIVITIES

S.No.	Week	Topic	Mode of Delivery
1	1	Thermodynamic laws	Lecture/board
2	2,3,4	Power Generation Cycles + 3 Tutorial class	Lecture/board
3	5	Basics of fluid mechanics(Stress-Strain, mass-momentum relations, viscosity, flow through pipe)	Lecture/board
4	6&7	Heat transfer Processes (Conduction, Convection, Radiation)	Lecture/board
5	8&9	Network analysis(Electrical Laws-ohms law, Kirchoff's current and voltage law, voltage and current division rule, Mesh analysis, Nodal Analysis) +2 Tutorial class	Lecture/board
6	10&11	Basics (AC, DC) and broad classification of Electrical Machines (Motors, Generators, Transformers), Speed Control of Electrical Machines.	Lecture/board
7.	12	Introduction to Power Transmission and distribution- T&D principles and operation.	Lecture/board

COURSE ASSESSMENT METHODS

S.No.	Mode of Assessment	Week/Date	Duration	% Weightage
1	Cycle test 1	End of 4th week	1 hr	20
2	Cycle test 2	End of 8th week	1 hr	20
3	Assignment-2 Nos	End of 4th week and End of 9th week		20
4	End semester exam		2 hrs	40

ESSENTIAL READINGS : Textbooks, reference books Website addresses, journals, etc

- M. W. Zemansky, Heat and Thermodynamics 4th Edn. McGraw Hill, 1968.
- A. L. Prasuhn, Fundamentals of Fluid Mechanics, Prentice Hall, 1980
- S. P. Sukhatme, A Text book on Heat Transfer, Orient Longman, 1979.
- P. C. Sen, Modern Power Electronics, Wheeler, New Delhi, 1998.

- N. Balbanian, T. A. Bickart, Electrical network theory, John Wiley, New York, 1969
- B. L. Theraja, A. K. Theraja, Text-book of electrical technology: in S.I. units: v.2 AC and DC machines, Nirja Construction & development, New Delhi, 1988.

COURSE EXIT SURVEY (mention the ways in which the feedback about the course is assessed and indicate the attainment also)

Feedback through google docs at regular intervals(4TH, 8TH and 12THweeks)

COURSE POLICY (including plagiarism, academic honesty, attendance, etc.)

Use of mobile phones is strictly prohibited inside class room/exam room.
Late coming for theory classes leads to "ABSENT" in attendance.
75% attendance is mandatory for appearing in end semester exam.
Late submission of assignment will not be accepted.
Prior permission is required from HoD to avail ON-DUTY.
All other disciplinary actions as per NITT rules& regulations.

ADDITIONAL COURSE INFORMATION

Faculty can be contacted at their staff rooms in DEE premises or through email address latha@nitt.edu.

FOR SENATE'S CONSIDERATION

Ramesh. R

Course Faculty _____ **CC-Chairperson** _____ **HOD** _____