

Subject Code: 1ET4010101	Subject Title: Basic Electrical Engineering
Pre-Requisite	--

RATIONALE:

In the era of technology integration, it has become unavoidable to possess the basic knowledge of various engineering disciplines. The advancement in technology is the best on multi technology integration and hence in performance too. The motive of this subject is to enhance the knowledge & skill level in the inter disciplinary area to strengthen the present practices.

This course is specially designed with a view to impart basic knowledge of other conventional disciplines (other than his own discipline). In this course, the Civil Engg. students will study the curriculum of Electrical Engg.

COURSE OBJECTIVE:

1. Know the importance of A.C. fundamentals.
2. Understand the working principle, construction and applications of transformer.
3. Understand the working principle, construction and application of rotating electrical machines.
4. Select and use appropriate materials for electrical installation.
5. Appreciate the importance of various protective devices applied for the machines.
6. Know the use and methods of connecting measuring instruments.
7. Know the use of C.R.O. in various electrical measurements.

TEACHING AND EVALUATION SCHEME:

Teaching Scheme (Hours per week)				Evaluation Scheme (Marks)				Total (Marks)
Lecture	Tutorial	Practical	Credit	Theory		Practical		
				University Assessment	Continuous Assessment	University Assessment	Continuous assessment	
-	1	2	2	-	-	-	50	50

DETAILS OF COURSE CONTENTS:

Sr. No.	Topics and Subtopics	Theory Hours	Pract. Hours
1	A.C.Circuits A.C. Fundamentals Three phase circuit fundamentals	02	02
2	Transformer Principle of working and e.m.f equation, Classification according to construction, Losses, Methods of cooling of transformers, Maintenance, testing	02	04
3	Rotating Electrical Machines Principle of working, Construction and applications of A.C& D.C Generator & Motor , Principle of working, Construction and applications of Synchronous motor and Induction motor	03	06
4	Protection & Utilisation of Electrical Power Domestic wiring, Industrial wiring, Heating types and their applications, Welding types and their applications , Protections used for electrical Machines like overload relay, earth fault relay, single phase preventor etc, Electrical Safety and earthing.	02	06
5	Electrical Measuring Instruments Classification of Measuring Instrument, Application of Measuring Instrument, Methods of connecting indicating instruments., Block dia of C.R.O., Functions of cathode ray tube, Application of CRO	02	02
6	Basic Electronics Semiconductor Devices, diode, transistor, and S.C.R. Construction & applications., Simple control systems like speed control and temperature control using S.C.R. Conversion of analog to digital.	02	04
7	Starters D.O.L.(DIRECT ON LINE) Star Delta, Auto Transformer and slipring induction motor Starters for A.C. motors	01	04

COURSE OUTCOME:

The students will be able to

1. Understand the basic concept of Electrical Engineering.

2. Understand the working, construction and application of static and rotating electrical machines.
3. Know the importance of various protective devices applied for machines.
4. Know the Use and Methods of Connecting measuring instruments.
5. Understand the importance of electronic circuit used in control system.

LIST OF PRACTICAL:

1. Wiring of tubelight / lamp point and testing.
2. Use multimeter & megger for testing .
3. Overhauling of ceiling / table fan or any other domestic appliance.
4. Wiring of panel for 3phase induction motor using main switch starter.
5. Measure power R.L.C series circuit.
6. Calibrate single phase energy meter.
7. Measure voltage and frequency using C.R.O.
8. Study D.C shunt motor starter.
9. Open circuit & short circuit test on single phase transformer.
10. Load test on single phase transformer.
11. Speed control of Universal motor using SCR.
12. Study A.C. Motor starters.

LIST OF REFERENCES:

1. Fundamentals of Electrical Engineering by B.L.Theraja
2. Fundamentals of Electrical Engineering by V.K.Mehta
3. A Text book of Electrical Engineering by S.L.Uppal
4. Elementary Electrical Engineering by M.L.Gupta.