Department of Electrical and Electronics

New course introduced

SL. NO.	COURSE CODE	COURSE OFFERED
1	SEE1617	Computer Aided Electrical Drawing

SEEA3017	Computer Aided Electrical Drawing	L	T	P	Credits	Total Marks
		3	0	0	3	100

COURSE OBJECTIVES

- To discuss the basic terminology of DC and AC armature windings.
- To discuss design and procedure to draw armature winding diagrams for Transformers, DC and AC machines
- To explain development of sectional views of Transformers, DC machine and alternators using the design data

UNIT 1 WINDING DIAGRAMS **9 Hrs.**

Winding Diagrams of D.C. Machines: Simplex Double Layer Lap and Wave Windings. Winding Diagrams of AC .Machines. Integral and Fractional Slot Double Layer Three Phase Lap and Wave Windings. Single Layer Windings – Un-Bifurcated 2 and 3 Tier Windings, Mush Windings, Bifurcated 3 Tier Windings.

UNIT 2 SINGLE LINE DIAGRAMS **9 Hrs.**

Single Line Diagrams of Generating Stations and Substations Covering Incoming Circuits, Outgoing Circuits, Busbar Arrangements (Single, Sectionalized Single, Main and Transfer, Double Bus Double Breaker, Sectionalised Double Bus, One and a Half Circuit Breaker Arrangement, Ring Main),Power Transformers, Circuit Breakers, Isolators, Earthing Switches, Instrument Transformers, Surge or Lightning Arresters, Communication Devices (Power-Line Carrier) and Line Trap.

UNIT 3 TRANSFORMERS ASSEMBLY DRAWINGS **9 Hrs.**

Transformers - Sectional Views of Single and Three Phase Core And Shell Type Transformers

UNIT 4D.C. MACHINE ASSEMBLY DRAWINGS **9 Hrs.**

D.C. Machine - Sectional Views of Yoke with Poles, Armature and Commutator dealt separately.

UNIT 5 ALTERNATOR ASSEMBLY DRAWINGS **9 Hrs.**

Alternator – sectional views of stator and rotor dealt separately battery storage and charging

Max. 45 Hrs.

COURSE OUTCOMES

On completion of the course, student will be able to

CO1 - Understand the basic concepts of DC and AC armature windings.
CO2 - Develop a layout for substation using the standard symbols for substation.
CO3 - Draw sectional views of core and shell types transformers using the design data.
CO4 - Draw sectional views of assembled DC machine using the design data or the sketches.
CO5 - Draw sectional views of assembled alternator using the design data or the sketches
CO6 - Design of an electrical machine using the aid of computer.

TEXT / REFERENCE BOOKS

1. Yogesh, M., Nagaraja, B., & Nandan, N. (2014). *Computer Aided Electrical Drawing*. PHI Learning Pvt. Ltd.
2. M. G. Say, Performance & Design of Alternating Current machines,CBS publishers,E- Edition,2017
3. A.E Clayton & N.N.Hancock, The Performance & Design of DC machines, CBS Publication,E- Edition,2018.
4. Manuals of Auto – CAD

END SEMESTER EXAMINATION QUESTION PAPER PATTERN

Max. Marks:100 **Exam Duration:3 Hrs.**

PART A: 10 Question of 2 marks each – No choice **20 Marks**
PART B: 2 Questions from each unit of internal choice; each carrying 16 marks **80 Marks**