

GANPAT UNIVERSITY										
FACULTY OF ENGINEERING & TECHNOLOGY										
Programme		Diploma Engineering				Branch		Electrical		
Semester		IV				Version		1.0.0.0		
Effective from Academic Year			2019-20			Effective for the batch Admitted in			June 2018	
Subject code		1EE2405		Subject Name		Computer Aided Drafting and Electrical Drawing				
Teaching scheme					Examination scheme (Marks)					
(Per week)	Lecture(DT)		Practical(Lab.)		Total		CE	SEE	Total	
	L	TU	P	TW						
Credit	0	0	2	0	2	Theory	00	00	00	
Hours	0	0	4	0	4	Practical	60	40	100	

Pre-requisites:
None

Course Learning Outcomes:
<p>The course content should be taught and implemented with an aim to develop different skills leading to the achievement of the following competencies and course learning outcomes:</p> <p>T1. Use various symbols and notations in electrical and electronics engineering drawings.</p> <p>T2. Interpret drawings, draw interferences and workout other technical details.</p> <p>T3. Draw various electrical and electronics circuits according to standard practices using CAD software.</p> <p>T4. Simulate/test simple electrical and electronics circuits using Simulation software</p> <p>T5. Prepare a PCB for a given mini project.</p> <p>The practical should be carried out in such a manner that students are able to acquire different learning outcomes in cognitive, psychomotor and affective domain to demonstrate course learning outcomes.</p>

Course Content				
Name of UNIT	Unit Content	Unit Learning Outcomes	Marks	Hrs
UNIT – 1	1a. List the steps of Computer aided electrical drawing 1b. Draw general graphical symbols and notations used in Electrical engineering using CAD software. 1c. Draw various electrical circuits using CAD software. 1d. Draw the cross sectional view of various electrical machines using CAD software. 1e. Draw the winding diagrams ac/dc machine 1f. Draw lighting and power wiring diagram for a given installation.	1.1 Procedure to be adopted for computer aided drawings 1.2 Electrical machines - AC and DC, motor starters, measuring and display instruments etc. 1.3 R-L series, parallel circuit 1.4 R-C series, parallel circuit 1.5 R-L-C series, parallel circuit 1.6 D.C. machine parts and cross sectional view 1.5 A.C. machine parts and cross sectional view	--	06

UNIT – 2	<p>2a. Draw general graphical symbols and notations used in electronics engineering using CAD software</p> <p>2b. Draw various electronics circuits using Auto CAD electrical and Electronics software.</p>	<p>2.1 Symbols and notations of: Electronic components - Resistor, Inductor, transformer and Capacitor Semiconductor device Diodes, Zener diode, Transistors PNP/ NPN, Tunnel diode, photo diode, varactor, FET, MOSFET,IGBT, UJT etc.</p> <p>2.2 Half-wave, full-wave and bridge rectifier, Power amplifier and voltage amplifier and different types of oscillators circuits.</p>	--	06
UNIT – 3	<p>3a. List the steps of using Simulation software in Electrical engineering.</p> <p>3b. State the procedure to build simple circuits.</p> <p>3c. Build, Simulate and test simple electric circuits.</p> <p>3d. State the steps to generate graphics and plot Waveform/ response for analysis.</p>	<p>3.1 Getting started, ending, commonly used blocks, Creating a model, Assigning Variables, Observing Variables during Simulation, Storing/Saving Data</p> <p>3.2 Creating and Masking Sub-systems</p> <p>3.3 Series and parallel R-L circuit</p> <p>3.4 Series and parallel R-L-C circuit</p> <p>3.5 Resonance in AC Circuit and Electrical machines circuits</p>	--	06
UNIT – 4	4a. Build, Simulate and test simple electronic circuits.	<p>4.1 Half wave, full wave and bridge rectifier.</p> <p>4.2 Power amplifier and voltage amplifier.</p> <p>4.3 Different types of oscillators circuits.</p>	--	06
UNIT – 5	5a. Design PCB using computer software	<p>5.1 Overview of software for PCB design.</p> <p>5.2 PCB layout of rectifier and amplifier circuit.</p> <p>5.3 PCB layout of oscillator circuit.</p>	--	06

List of Practical		
No.	Unit	Name of Practical
1	1	Draw electrical and electronic symbols using CAD and take print out
2	1	Draw D.C. and A.C machine parts using CAD and take print out
3	2	Draw different types of rectifier circuit using CAD and take print out of : (a)Single phase half wave (b)Single phase full wave (c)Bridge rectifier
4	2	Draw R-C couple amplifier circuit using CAD and take print out
5	2	Draw the following oscillator circuit using CAD and take print of (a)Hartley oscillator (b)Colpitt oscillator (c) Phase-Shift Oscillator (d) Wien Bridge Oscillator
6	3	Simulate three resistances in series circuit and find out voltage and current in each resistance .
7	3	Simulate the following circuits and find out voltage and current in each resistance. (a)Two resistances in parallel (b)Resistance and inductor in parallel
8	3	Simulate a given complex circuit having combination of series-parallel resistances and find out current and voltage across each resistor. (Students can use circuit which asked in exams of D.C. Circuits course.)
9	3	Simulate R-L series circuit and observe voltage wave forms across each component
10	3	Simulate R-C series circuit and observe voltage wave forms across each component.
11	4	Simulate single phase half-wave rectifier circuit.
12	4	Simulate single phase full-wave rectifier circuit.
13	4	Simulate single phase bridge rectifier circuit.
14	4	Using CRO find out voltage across resistors.
15	5	Develop P.C.B. layout for a given electronics circuit using software
16	5	Develop P.C.B. layout for a given electrical circuit using software

List of Reference Books			
No	Title of Reference Books	Authors	Publication
1	Mastering AutoCAD 2013 and AutoCAD LT 2013	George Omura	Sybex, New Delhi, Latest edition
2	Mastering electronics workbench: Version 5 and Multisim Version 6	John Adams	McGraw-Hill, New Delhi, Latest edition
3	Introduction to PSpice Using OrCAD For Circuits And Electronics	Muhammad H. Rashid	PHI Learning, New Delhi, Latest edition

Link of Learning Web Resource	
1	Open Source Softwares preferred.
2	AutoCAD
3	PSIM/ WORK BENCH