

GANPAT UNIVERSITY

**FACULTY OF ENGINEERING AND TECHNOLOGY (DIPLOMA PROGRAMMES)**

Programme		Diploma Engineering				Branch/Spec.	Computer Engineering / Information & Technology		
Semester		I				Version	1.0.0.0		
Effective from Academic Year			2018-19			Effective for the batch Admitted in			June 2018
Subject code		1ES108		Subject Name		BASIC ELECTRICAL & ELECTRONICS ENGINEERING			
Teaching scheme						Examination scheme (Marks)			
(Per week)	Lecture(DT)		Practical(Lab.)		Total		CE	SEE	Total
	L	TU	P	TW					
Credit	3	0	1	0	4	Theory	40	60	100
Hours	3	0	2	0	5	Practical	30	20	50

Pre-requisites:

None
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Learning Outcome:
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- I. To apply the basic electronic skills as required in the field of computers
- II. To implement basic electronic components for circuit design
- III. To understand function of optoelectronic devices and measuring instruments
- IV. To understand cables and connectors used for computers

<b>Theory syllabus</b>
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Unit	Content	Hrs
1	<b>Fundamentals of Electric and Magnetic Circuits</b> Definitions of EMF, Current, Potential Difference, Power and Energy. Ohm's law, Study of terms: - M.M.F, magnetic force, magnetic field strength, permeability, reluctance, leakage factor etc. Comparison of magnetic and electric circuit. Study of AC terms; cycle, instantaneous value, amplitude, frequency, time period, R.M.S. value, average value, Resistors & its colour coding	10
2	<b>TRANSFORMER AND INSTRUMENTS</b> Transformer: Basic principle, types, construction, transformation ratio, EMF equation, losses & efficiency. Types of electrical instruments; voltmeter, ammeter, multimeter, clip-on meter, cathode ray oscilloscope (CRO); connection diagram and applications.	10
3	<b>DIODE AND RECTIFIER</b> Comparison between Conductor, Insulator and Semiconductor, P-type and N-type semiconductor, PN junction diode, Formation of Depletion Region, Forward Bias, Reverse Bias, V-I characteristics of PN junction diode, Zener Diode, Rectifier, Half Wave Rectifier, Full Wave Rectifier, Bridge Rectifier, Filter Circuit	09
4	<b>TRANSISTOR</b> Symbols and Basics of Transistor, Working of NPN transistor, Operating Regions for Transistor, Transistor Configurations, Comparison of CB, CE and CC Configurations, Transistor as a switch, Transistor as an amplifier	08
5	<b>OPTO ELECTRONIC DEVICES</b> Photo diode, Light Emitting Diode (LED), Seven Segment Display, Liquid Crystal Display (LCD), Opto Coupler, Light Dependent Resistor (LDR)	08

List of Practical	
1	Verify ohm's law.
2	Demonstrate difference between AC and DC.
3	Identify the different parts of transformer.
4	Measurement of various electrical parameters using voltmeter, ammeter and multimeter.
5	Measurement of various electrical parameters using CRO.
6	Perform V-I characteristics of PN Junction Diode.
7	Perform Zener Diode as Voltage Regulator.
8	Perform Half Wave Rectifier Circuit.
9	Perform Full Wave Rectifier Circuit.
10	Perform Bridge Rectifier Circuit.
11	Perform Capacitor Filter Circuit.
12	Test Optoelectronic components.
13	Perform Transistor as a switch and amplifier
14	Observe types of cables and connectors.
Text Books	
1	A text book of Electrical Technology vol. I & II, B. L. Theraja, S.Chand Publication, New Delhi
Reference Books	
1	Principle of Electronics, V.K.Mehta, S.Chand & Co.
2	Cables and Connectors, John Kadick, AVO International
3	Electronic Instrumentation, H. S. Kalsi, TMH
4	Electronics Principles, Albert Paul Malvino, TMH