GANPAT UNIVERSITY

FACULTY OF ENGINEERING & TECHNOLOGY

Programme	Bachelor of Technology	Branch/Spec.	EE
Semester	II	Version	1.0.0.0
Effective from Academic Year	2026-27	Effective from the batch admitted in	July 2026
Course Code	2PCC-EE-1101	Course Name	Electronic Devices and Applications
Course Category	Professional Core Courses (PCC)		

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	50	50	100
Hours	3	0	2	0	5	Practical	25	25	50

Pre-requisites:

Course Outcomes

COs	Description
CO1	Understand characteristics and applications of diode and special purpose diodes.
CO2	Analyze operational characteristics of Transistors, BJT, FET
CO3	Evaluate Field Effect Transistor performance in biasing, amplification, and switching applications.
CO4	Apply logic gate principles and amplifier configurations to design basic electronic circuits.

Theory Syllabus

Unit	Content	Hours
1	**Diode Theory and Applications:** Introduction, Basic idea about forward bias, reverse bias and VI characteristics, ideal diode, Second and third approximation, Surface mount diodes, Testing of diode with multi-meter, Rectifier & it's Types, RC and LC filters, Design of un-regulated dc power supply, Clipping circuit, Clamping circuit, Voltage multiplier circuit, Reading datasheet of semiconductor diode.	**09**
2	**Special Purpose Diodes and Transistors:** Light emitting diode (LED), Zener diode, Zener diode circuit for voltage regulation, Photo diode, Solar cell, Pin diode, Varactor, Schottky diode, Varistors, Tunnel diode, LED display, Photo transistor, Opto-coupler, Reading datasheet of opto-electronics devices.	**08**
3	**Bipolar Junction Transistor (BJT):** Introduction & operation, BJT voltages and currents, CE, CB and CC characteristics and analysis, DC load line and bias point, Base bias, Emitter feedback bias, Collector feedback bias, Voltage divider bias, Thermal stability, Biasing BJT switching circuits, Transistor power dissipation and switching time. AC analysis of BJT circuits and small signal amplifier coupling and bypass capacitors, AC load lines, Transistor models and parameters, Transistor as a switch, Reading datasheet of BJT.	**11**
4	**Field Effect Transistors (FET):** Junction field effect transistors (JFET), Comparison of BJT and FET, JFET characteristics, FET, biasing in ohmic region and active region, Trans-conductance, Amplification and switching, MOSFETs, CMOS introduction, MOSFET amplifier, Reading datasheet for FET.	**07**
5	**Logic Gates:** Basic gates AND, OR, NOT, NAND, NOR, EX-OR, EX-NOR.	**03**

6	**Amplifier:** Concept of Amplifier, Power & Voltage Amplifier, Classes Of Amplifier, RC-Transformer-Direct Coupled Amplifier	**07**

Practical and Self Learning Content
Practical, assignments, quiz, industrial visit, field survey and tutorials are based on the above syllabus.

Text Books	
1	V.K. Mehta, "Principles of Electronics", S. Chand
2	J.B. Gupta, "Electronic Devices and Circuits", S.K. Kataria & Sons
Reference Books	
1	Albert Malvino & David, "Electronic Principles", Tata McGraw-Hill
2	David A. Bell, "Electronic Devices and Circuits", Oxford University Press
3	Albert Malvino & David, "Problems and Solutions in Basic Electronics, McGraw Hill Education
ICT/MOOCs Reference	
1	https://onlinecourses.nptel.ac.in/noc21_mm03/preview
2	https://onlinecourses.swayam2.ac.in/ntr26_ed101/preview
3	https://onlinecourses.swayam2.ac.in/nou26_ec02/preview

Mapping of COs, POs, and PSOs

COs	PO1	PO 2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2	PSO3
CO1	3	2	2	1	1	0	0	1	1	1	1	2	1	0
CO2	3	3	2	1	2	1	2	0	2	1	3	3	2	1
CO3	2	3	1	2	2	1	1	1	2	2	3	2	3	1
CO4	1	2	3	2	3	1	1	1	1	1	2	2	3	1

Bloom's Taxonomy Level

Unit	Unit Title	Aligned COs	Learning Hours	BTL Level
1	Diode Theory and Applications	CO 1	09	N
2	Special Purpose Diodes and Transistors	CO 1, CO 2	08	U
3	Bipolar Junction Transistor (BJT)	CO 3	11	U- A
4	Field Effect Transistors (FET)	CO 2, CO 3	07	E
5	Logic Gates	CO 4	03	A
6	Amplifier	CO 4	07	C-A

Note:

- Version 1.0.0.0 (First Digit= New syllabus/Revision in Full Syllabus, Second Digit=Revision in Teaching Scheme, Third Digit=Revision in Exam Scheme, Forth Digit= Content Revision)
- 1 Hour Lecture = 1 Credit, 1 Hour Tutorial = 1 Credit, 2 Hours Practical = 1 Credit, 2 Hours Internship/Project/Seminar = 1 Credit
- Bloom's Taxonomy Level (BTL): R: Remember, U: Understand, A: Apply, N: Analyze, E: Evaluate, and C: Create