GANPAT UNIVERSITY

FACULTY OF ENGINEERING & TECHNOLOGY

Programme	Bachelor of Technology	Branch /Spec.	Computer Science & Engineering Computer Science & Engineering (Big Data and Analytics) Computer Science & Engineering (Cyber Security) Computer Science & Engineering (Artificial Intelligence and Machine Learning)
Semester	II	Version	1.0.0.0
Course Code	2ESC1119	Course Name	Basic Electronics Workshop
Effective from Academic Year	2026-27	Effective for the batch Admitted in	July 2026
Course Category	ESC		

Teaching, Learning and Examination Scheme

Teaching & Learning Scheme							Examination scheme (Marks)					
Hours (per week)				Cr	SL	TSL	Theory			Practical		
L	TU	P	TTH				CE	SEE	Total	CE	SEE	Total
0	0	2	2	1	15	30	0	0	0	25	25	50

L: Lecture, TU: Tutorial, P: Practical, TTH: Total Teaching Hours/Week, Cr: Credit, SL: Min. Self Learning/Term Work Hours/Sem, TSL: Min. Total Teaching & Learning Hours/Sem, CE: Continuous Evaluation, SEE: Semester End Examination,

Pre-requisites

Basic fundamentals of Electronics & Physics.

Course Outcomes

COs	Description
CO1	Understand basic operations and measurements of Electronic instruments.
CO2	Learn characteristics of semiconductor devices like diodes, transistors etc.
CO3	Analyze different circuits using a simulator.
CO4	Design and develop a mini-project using Electronic components and devices.

Practicals are defined based on the following topics:

Unit	Content
1	**Electronic Measurements :** Lab 01 : Introduction to CRO, Function Generator & Signal Measurements on CRO. Lab 02 : Introduction to Bread Board, passive components, Measurement using Multimeter, Color code system and assembly of circuit on bread board.
2	**Semiconductor Physics & Power Supply Design (Hardware + Simulation on software) :** Lab 03 : Introduction to PN Junction diode and V-I Characteristics of Diode. Lab 04 : Halfwave & Bridge Rectifier and its efficiency. Lab 05 : Power Supply design using 78xx series ICs. Lab 06 : Transistor introduction and Transistor as a Switch.
3	**Application Development Using Timer Circuits :** Lab 07 : Introduction to 555 timer IC and Monostable Multivibrator. Lab 08 : Astable Multivibrator using 555 timer IC for various frequencies. Lab 09 : Timer Based application circuit development using 555 IC.
4	**Project Development :** Project Development using Counter ICs, Op-Amp Ics or any analog / digital IC on bread board and then GPP. Knowledge of soldering tools to be delivered.

Practical Content

Practicals are defined based on the aboe topics:

Text Books

1	Integrated Electronics By Millman & Halkias.
2	Electronic Principles by Malvino

Reference Books

1	Electronic Devices & Circuits by David A Bell
2	Op-Amps & Linear Integrated Circuits by Ramakant Gaykwad

ICT/MOOCs Reference	
1	Link: https://nptel.ac.in/courses/117101106

Mapping of Cos, POs, and PSOs														
COs	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PSO 1	PSO 2	PSO 3
CO1	2	0	3	1	3	2	0	1	2	1	2	1	2	2
CO2	3	2	2	0	2	1	0	2	1	2	2	1	2	3
CO3	3	2	2	2	1	1	3	2	2	0	1	2	3	2
CO4	3	1	2	0	0	0	1	2	1	2	0	2	3	2

Unit	Unit Title	Aligned COs	Learning Hours	BTL Level
1	Electronic Measurements	1	-	R,U,N
2	Semiconductor Physics & Power Supply Design (Hardware + Simulation on software)	2	-	U,N
3	Application Development Using Timer Circuits :	3	-	N,C,A
4	Project Development	4	-	A,E,C

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)
- L=Lecture, TU=Tutorial, P= Practical/Lab., TW= Term work, DT= Direct Teaching, Lab.= Laboratory work CE= Continuous Evaluation, SEE= Semester End Examination
- 1 Hour Lecture = 1 Credit, 1 Hour Tutorial = 1 Credit, 2 Hours Practical = 1 Credit, 2 Hours Internship/Project/Seminar = 1 Credit
- As per NCrF/NEP 2020, Minimum Self-Learning or Term Work Hours per Semester should be calculated in such a way that 1 Credit should have minimum 30 Hours of Teaching and Self Learning Engagement per semester