NIRMA UNIVERSITY
Institute of Technology
B.Tech. in Electrical Engineering
Semester - III

L	T	P	C
0	0	4	2

Course Code	2EE305
Course Title	Analog and Digital Electronics Laboratory

Course Learning Outcomes (CLO):
At the end of the course, students will be able to-
1. compare BJT and FET technology
2. suggest and choose application specific integrated circuit
3. verify the operations of various analog and digital electronic circuits

A minimum of 20 experiments /simulations based on following topics (but not limited to) will be conducted in this course:

➢ BJT operating characteristics
➢ FET operating characteristics
➢ Conventional amplifier design using single and dual supply
➢ Differential amplifier and its characteristics
➢ Operation amplifier parameters
➢ Linear applications of operational amplifier
➢ Non linear applications of operational amplifier
➢ Positive feedback applications of operational amplifier
➢ Instrumentation amplifiers
➢ Function generator and voltage controlled oscillator
➢ Low drop out and linear regulators
➢ Operational amplifier as error amplifier
➢ Characteristics of different Gate ICs
➢ Characteristics of different Flipflop ICs
➢ Half adder, full adder, BCD adder
➢ Half subtractor, full subtractor
➢ Multiplerxers-demultiplexers
➢ Encoders-decoders
➢ Parity bit generators and parity checkers
➢ Different Code converters
➢ Serial in serial out shift register
➢ Serial-in to Parallel-out (SIPO), Parallel-in to Parallel-out (PIPO), Parallel-in to Serial-out (PISO) shift register, bidirectional shift register
➢ Synchronous up-down counters
➢ Asynchronous up-down counters

Suggested Readings:

1. R. Boylestad and L. Nashelsky, Textbook of Electronics Devices & Circuit Theory, PHI Publication.
2. R. Gayakwad, Textbook of Operational Amplifiers and Linear Integrated Circuits, PHI Publication.
3. A. Mottershed, Textbook of Electronics Devices and Circuits An Introduction, PHI Publication.
4. Millman and Halkias, Textbook of Integrated Electronics, Mc Graw Hill.
5. Sergio Franko, Textbook of Designing with Operational Amplifiers and Analog Integrated Circuits, Mc Graw Hill.
6. R. Coughlin and Driscoll, Textbook of OpAmp & Linear Integrated Circuits, PHI Publications.
7. A. Anandkumar, Fundamentals of Digital Circuits, PHI publication
8. Malvino, Digital Computer Electronics, TMH publication
9. Morris Mano, Computer Logic Design, PHI publication
10. Tocci, Widmer and Moss, Digital Systems: Principles and Application, Pearson.
11. Various IEEE/IET Papers & Various Product Literature

L = Lecture, T = Tutorial, P = Practical, C = Credit

W.e.f. academic year 2019-20 and onwards