S. No.	Course Code	Course Name	Course Type	Cd	L	T	P	Marks		
								Sessional	Final Exam	Total
3	ECE-302	Digital Electronics	PCC	4	3	1	0	50	100	150

Course Outcomes:

At the end of the course the student will be able to:	
CO1	Understand various number systems to be used in digital circuit design
CO2	Solve boolean expressions using minimization techniques
CO3	Analyze and design combinational and sequential circuits
CO4	Formulate problems and simplify with state minimizing techniques
CO5	Analyze and compare various logic families

Detailed Syllabus
Section-A

Unit 1: Data and number systems: Binary, Octal and Hexadecimal representation and their conversions; BCD, ASCII, EBDIC, Gray codes, Excess-3 and their conversions; Signed and unsigned binary number representation with 1"s and 2"s complement methods, Binary arithmetic, An overview of Boolean algebra, Simplification of logic variable using K- map method, Quine McCluskey method.

(12 Hrs)

Unit 2: Combinational circuits: Encoder, Decoder, Comparator, Binary Adder-Subtractor, Parallel Adder, Multiplexer, De-Multiplexer, Code converters and Parity Generator and checker, Memory Systems: RAM, ROM, EPROM, EEROM, Design of combinational circuits-using ROM, Programming logic devices and gate arrays (PLAs and PLDs).

(10 Hrs)

Unit 3: Logic families: TTL, ECL, MOS and CMOS, their operation and specifications.

(5 Hrs)

Section-B

Unit 4: Sequential Circuits: Basic memory element-S-R, J-K (master-slave), D and T Flip Flops and their conversions with excitation table. Various types of Registers, Synchronous and Asynchronous Counters and their design. State Machine Design, State machine as a sequential controller, Moore and Mealy state machines.

(12 Hrs)

Unit 5: Analog and Digital Converters: Different types of A/D (flash, successive approx.., delta encoded) and D/A (R- 2R Ladder and binary weighted) conversion techniques.

(6 Hrs)

Text Books

S.No	Name of the Suggested Books	Name of Author	Publisher Name	Edition (Pub. year)
1	Modern Digital Electronics	R.P.Jain	McGraw-Hill	4th (2010)
2	Fundamentals of Digital Circuits	Anand Kumar	PHI	4th (2016)
3	Digital Design	M. Morris Mano, and Michhael D Ciletti Pearson	Pearson	3rd (2012)

Reference Books

S.No	Name of the Suggested Books	Name of Author	Publisher Name	Edition (Pub. year)
1	Digital Electronics	A.K. Maini	Wiley India	1st (2007)
2	Digital Electronics	Kharate	Oxford	1st (2012)