

**Course: VSC
Digital Systems**

Semester: I	Credits: 2	Subject Code: BSVSCCSE12302	Lectures: 30
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Course Outcomes:

At the end of this course, the learner will be able to:

- CO1- Classify and represent numbers to solve binary arithmetic problems
- CO2- Demonstrate logic gates and identify their use to build circuits using Boolean Algebra
- CO3- Apply logic gates to build combinational circuits.
- CO4- Utilize logic gates to construct sequential circuits.

Unit 1: Number Systems, Logic Gates and Applications	15
<ul style="list-style-type: none"> • Introduction to Binary number system-Binary and hexadecimal number systems and their interconversions, BCD, Gray Codes • Unsigned and signed binary number representations • Binary addition and binary subtraction using 2's Complement method • Concept of logic levels, Logic gates (NOT, AND, OR, NAND, NOR, XOR) with their symbol, Boolean equation and truth table • Boolean algebra rules and Boolean laws: Commutative, Associative, Distributive, AND, OR and Inversion laws, De Morgan's theorem, Universal gates • K-Map • Assignment: 	

Unit 2: Combinational Circuits and Sequential Circuits	15
<ul style="list-style-type: none"> • Applications of EX-OR gates as parity Checker and generator • Arithmetic Circuits- Concept of half adder and full adder, Universal nibble adder/subtractor circuit • Multiplexer-4:1 Mux using NAND gates, Applications • Demultiplexer-4:1 Demux using NAND gates, Applications • Encoder- Decimal to Binary/BCD • Decoder- BCD to 7-Segment • Flip flops- SR FF, JK FF, D FF & T FF • Class test 	

Reference Books:

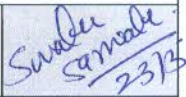

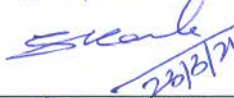
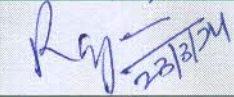

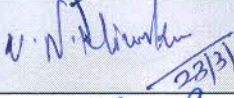

- Floyd T.M, *Digital Fundamentals*, 10th Edition, Pearson
- G.K.Kharate, *Digital Electronics*, Oxford University press
- Jain R.P., *Digital Electronics*, Tata McGraw Hill
- Malvino Leach, *Digital Principles and Applications*, Tata McGraw-Hill.
- Ronald J. Tocci., *Digital Systems-Principles and Applications*, 6/e. PHI. New Delhi. 1999



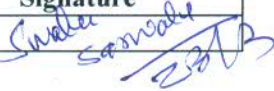
Board Of Studies	Department Name	Name	Signature
Chairperson (HoD)	B.Sc(Comp. Sci.)	Swatee Sarwate	<i>Swatee Sarwate</i>

Websites:

- <https://circuitglobe.com/number-system-in-digital-electronics.html>
- <https://www.iitr.ac.in/departments/PH/uploads/Teaching%20Laboratory>
- http://epgp.inflibnet.ac.in/epgpdata/uploads/epgp_content/S000574EE/
- <https://study.com/academy/lesson/basic-combinational-circuits-types-examples.html>
- <https://www.youtube.com/watch?v=CeD2L6KbtVM&list=PL803563859BF7ED8C>
- NPTEL lecture series- Electronics-Digital Circuits and Systems by Prof. S. Srinivasan IIT Madras - 5,6,7,8,9 on YouTube
- NPTEL lecture series- Electronics-Digital Circuits and Systems by Prof. S. Srinivasan IIT Madras, 3,4,11,13,14

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