Course: VSC
Digital Systems

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

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
• 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
• 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	

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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

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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Chairperson (HoD)	Swatee Sarwate, Asst. Prof,		
Faculty	Anitha Menon, Asst. Prof,		
Subject Expert (Outside SPPU)	Dr.Sangeeta Kale, Professor		
Subject Expert (Outside SPPU)	Dr. Rajshree Jain		
VC Nominee (SPPU)	Dr. Pravin Yawale		
Industry Expert	Dr. Umesh N. Hivarkar		
Alumni	Ms. Prerna Polekar		

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