**BVM ENGINEERING COLLEGE [AN AUTONOMOUS INSTITUTION]**

## ES117: INTRODUCTION TO DIGITAL ELECTRONICS
## CREDITS - 2 (LTP:1,0,1)

**Course Objectives:**

To understand the concept of digital electronics, number systems, logic gates and Boolean functions.

**Teaching and Assessment Scheme:**

| Teaching Scheme (Hours per week) | | | Credits | Assessment Scheme | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | Theory Marks | | Practical Marks | | Total Marks |
| L | T | P | C | ESE | CE | ESE | CE | |
| 1 | 0 | 2 | 2 | 30 | 20 | 20 | 30 | 100 |

**Course Contents:**

| Unit No. | Topics | Teaching Hours |
|---|---|---|
| 1. | **Number Systems:** Binary System, Signed binary, Octal, Hexadecimal number, Gray Code, Binary arithmetic, one's and two's complements of the number, Mathematical operations of the number system – Addition, Subtraction etc., Conversion of the number system. | 05 |
| 2. | **Fundamentals of Digital Systems and Logic Gates:** Basics of digital signals, digital circuits, Logic Gates - AND, OR, NOT, NAND, NOR and Exclusive-OR operations. | 03 |
| 3. | **Boolean Functions:** Boolean laws, DeMorgan laws, Min terms, Max terms, Simplification of logic functions using K-map, minimization of logical functions, Half adder circuits, Full adder circuits. | 06 |
| | **Total** | **14** |

**List of References:**


1. R. P. Jain, "*Modern Digital Electronics*", McGraw Hill Education, 2009
2. S. Salivahanan, "*Digital circuits and Design*", Vikas Publishing house
3. M. M. Mano, "*Digital logic and Computer design*", Pearson Education India, 2016
4. Kumar, "*Fundamentals of Digital Circuits*", Prentice Hall India, 2016


**Course Outcomes (COs):**

By learning this course students will be able to …

1. Understand the concept of number system.
2. Understand the working of logic families and logic gates.
3. Design and implementation of digital circuits using Boolean functions.