



**M. C. E. Society's**

**Abeda Inamdar Senior College**

Of Arts, Science and Commerce, Camp, Pune-1

(Autonomous) Affiliated to Savitribai Phule Pune University

NAAC accredited 'A' Grade

## **B.C.A. (Science) (Minor) as per NEP**

**(CBCS – Autonomy 21 Pattern)**

<b>Course Offered as</b>	Minor (Theory)
<b>Course/ Paper Title</b>	Computer Organization
<b>Course Code</b>	<b>23SBCA31MN</b>
<b>Semester</b>	III
<b>No. of Credits</b>	2
<b>No of Hours</b>	30

### **Aims & Objectives of the Course**

<b>Sr. No.</b>	<b>Objectives</b>
<b>1.</b>	To study number system, logic gates
<b>2.</b>	To understand combinational & Sequential circuits.
<b>3.</b>	To provide a broad overview of architecture and functioning of computer systems
<b>4.</b>	To learn the basic concepts behind the architecture and organization of computers.

### **Expected Course Specific Learning Outcome**

<b>Sr. No.</b>	<b>Learning Outcome</b>
<b>1.</b>	Data representation and Computers Arithmetic
<b>2.</b>	Design of Combinational Circuit.
<b>3.</b>	Design of Sequential circuit.

## Syllabus

Unit No	Title with Contents	No. of Lectures
<b>Unit I</b>	<b>Data representation and Computers Arithmetic</b>	<b>8</b>
	<ol style="list-style-type: none"> <li>1. Introduction to Decimal, Binary and Hexadecimal Number Systems and their inter-conversions</li> <li>2. BCD code, Gray code and ASCII Code</li> <li>3. 1's and 2's complement of binary numbers</li> <li>4. Binary Addition , Binary Subtraction , Binary subtraction using 1's and 2's complement Method</li> </ol>	
<b>Unit II</b>	<b>Logic Gates and Boolean Algebra</b>	<b>12</b>
	<ol style="list-style-type: none"> <li>1. Logic gates (With their symbols, Boolean Equation and Truth Table)</li> <li>2. Boolean theorems, Boolean Laws, De Morgan's Theorem, simplifying of Boolean expression using Boolean Algebra, Implementation of other gates using universal gates</li> <li>3. Karnaugh Maps: Introduction, Reduction technique using Karnaugh maps ,2/3/4 variable K-maps, Grouping of variables in K-maps, simplifying of Boolean expression using K-map</li> </ol>	
<b>Unit III</b>	<b>Combinational Circuits and Sequential Circuits</b>	<b>16</b>
	<ol style="list-style-type: none"> <li>1. <b>Arithmetic Circuits:</b> Half Adder, Full Adder, Parallel Adder, Half Subtractor, Universal Adder / Subtractor</li> <li>2. <b>Study of Multiplexer and Demultiplexer</b></li> <li>3. <b>Study of Encoder and Decoder</b></li> <li>4. <b>Flip Flops:</b> Introduction and Types</li> <li>5. <b>Shift Registers:</b> Introduction, Types of Shift registers, Ring Counter.</li> <li>6. <b>Counters</b> -Synchronous and Asynchronous type (3 -bit Up, Down and Up - Down counter)</li> <li>7. <b>IC 7490:</b> Internal Block Diagram and designing Mod-N counters.</li> </ol>	

**References:**

1. R.P. Jain, “Modern Digital Electronics”, McGraw-Hill Publications.
2. Floyd and Jain, “ Digital Fundamentals”, Pearson Publication
3. Morris Mano , “Computer System Architecture”, Prentice-Hall.

**Website Reference Link:**

1. Tutorial Points  
[https://www.tutorialspoint.com/microprocessor/microcontrollers\\_overview.htm](https://www.tutorialspoint.com/microprocessor/microcontrollers_overview.htm)
2. Electronic Tutorials : [https://www.electronics-tutorials.ws/boolean/bool\\_7.html](https://www.electronics-tutorials.ws/boolean/bool_7.html)

