

**DAV PUBLIC SCHOOLS, RANCHI ZONE**  
**COMPUTER SCIENCE (083)**  
**CLASS XI**  
**Syllabus (Session- 2017-18)**

Month	Contents	No. of periods required	
		Theory	Practical
June	<p><b>UNIT 1: COMPUTER FUNDAMENTALS</b></p> <p>Evolution of computers; Basics of computer and its operation: Functional Components and their inter-connections, concept of Booting, Use of Operating System for directory listing, hierarchical directory structure, renaming, deleting files/folders, formatting floppy, copying files, concepts of path and pathname, switching between tasks, installation/removal of applications;</p> <p><b>Software Concepts:</b> Types of Software - System Software, Utility Software and Application Software; System Software: Operating System, Compilers, Interpreters and Assembler;</p> <p><b>Operating System:</b> Need for operating system, Functions of Operating System (Processor Management, Memory Management, File Management and Device Management), Types of operating system – Interactive (GUI based), Time Sharing, Real Time and Distributed; Commonly used operating systems: Solaris, UNIX, LINUX, Mac OS, MS Windows; General functionalities of an Operating System to be illustrated and implemented using any of the above operating systems.</p>	08	02
July	<p><b>UNIT 2: PROGRAMMING METHODOLOGY</b></p> <p>General Concepts; Modular approach; Clarity and Simplicity of Expressions, Use of proper Names for identifiers, Comments, Indentation; Documentation and Program Maintenance; Running and Debugging programs, Syntax Errors, Run-Time Errors, Logical Errors;</p> <p>Problem Solving Methodology and Techniques: Understanding of the problem, Identifying minimum number of inputs required for output, Step by step solution for the problem, breaking down solution into simple steps, Identification of arithmetic and logical operations required for solution, Using Control Structure: Conditional control and looping (finite and infinite);</p>	25	08

	<p><b>UNIT 3: INTRODUCTION TO PROGRAMMING IN C++</b></p> <p><b>Programming by Example In C++ Language :</b>  C++ character set, C++ Tokens (Identifiers, Keywords, Constants, Operators), Structure of a C++ Program (include files, main function); Header files – iostream.h, iomanip.h; <b>cout, cin</b>; Use of I/O operators (&lt;&lt; and &gt;&gt;), Use of endl and setw(), Cascading of I/O operators, Error Messages; Use of editor, basic commands of editor, compilation, linking and execution; standard input/output operations from C language: gets(), puts() of stdio.h header file;</p> <p><b>Data Types, Variables and Constants:</b>  Concept of Data types; Built-in Data types: <b>char, int, float and double</b>; Constants: Integer Constants, Character Constants (Backslash character constants - \n, \t ), Floating Point Constants, String Constants; Access modifier: <b>const</b>; Variables of built-in data types, Declaration/Initialisation of variables, Assignment statement; Type modifier: signed, unsigned, long;</p> <p><b>Operators and Expressions:</b>  Operators: Arithmetic operators (-,+,*/,%), Unary operator (-), Increment and Decrement Operators (--,++), Relational operators (&gt;,&gt;=,&lt;,&lt;=,==,!=), Logical operators (!, &amp;&amp;,   ), Conditional operator: &lt;condition&gt;?&lt;if true&gt;:&lt;else&gt;; Precedence of Operators; Expressions; Automatic type conversion in expressions, Type casting; C++ shorthand's (+=, -=, *=, /=, %=);</p> <p><b>Flow of control:</b>  <b>Conditional statements: if-else, Nested if.....</b></p>		
<p><b>August</b></p>	<p><b>Flow of control (Contd....)</b>  <b>switch..case..default</b>, Nested <b>switch..case</b>, break statement (to be used in switch..case only);  <b>Loops: while, do - while , for</b> and Nested loops;</p> <p><b>Structured Data Type: Array</b>  Declaration/initialization of One-dimensional array, Inputting array elements, Accessing array elements, Manipulation of Array elements (sum of elements, product of elements, average of elements, linear search, finding maximum/minimum value); Declaration/Initialization of a String, string manipulations (counting vowels/consonants/digits/ special characters, case conversion, reversing a string, reversing each word of a string);</p>	<p><b>15</b></p>	<p><b>8+5(scheduled from th)</b></p>

<b>September (First Week)</b>	<b>Library Functions :</b> <b>String Functions:</b> <b>Header File:</b> string.h <b>Functions:</b> isalnum(), isalpha(), isdigit(), islower(), isupper(), tolower(), toupper(); <b>Character Functions:</b> <b>Header File:</b> ctype.h <b>Functions:</b> isalnum(), isalpha(), isdigit(), islower(), isupper(), tolower(), toupper(), strcpy(), strcat(), strlen(), strcmp(), strcmpi(); <b>Mathematical Functions:</b> <b>Header File:</b> math.h, stdlib.h; <b>Functions:</b> fabs(), log(), log10(), pow(), sqrt(), sin(), cos(), abs(), <b>-----Half yearly Exam-----</b>	<b>10</b>	<b>10</b>
<b>October</b>	<b>Other Functions:</b> <b>Header File:</b> stdlib.h; <b>Functions:</b> randomize(), random(); <b>Two-dimensional Array:</b> Declaration/initialisation of a two-dimensional array, inputting array elements Accessing array elements, Manipulation of Array elements (sum of row element, column elements, diagonal elements, finding maximum/minimum values);	<b>12</b>	<b>08</b>
<b>November</b>	<b>User Defined Functions:</b> Defining a function; function prototype, Invoking/calling a function, passing arguments to function, specifying argument data types, default argument, constant argument, call by value, call by reference, returning values from a function, calling functions with arrays, scope rules of functions and variables; local and global variables;	<b>12</b>	<b>08</b>
<b>December</b>	<b>Event programming: Games as examples</b> General Guidelines: Initial Requirement, developing an interface for user (it is advised to use text based interface screen), developing logic for playing the game and developing logic for scoring points 1. Memory Game: A number guessing game with application of 2 dimensional arrays containing randomly generated numbers in pairs hidden inside boxes. 2. Cross 'N Knots Game: A regular tic-tac-toe game 3. Hollywood/Hangman: A word Guessing game 4. Cows 'N Bulls: A word/number Guessing game	<b>10</b>	<b>15</b>

<p><b>January</b></p>	<p><b>UNIT 4: COMPUTER SYSTEM ORGANISATION</b></p> <p><b>Number System:</b> Binary, Octal, Decimal, Hexadecimal and conversion between two different number systems. Integer, Floating Point, 2's complement of number from base-2;</p> <p><b>Internal Storage encoding of Characters:</b> ASCII, ISCII (Indian scripts Standard Code for Information Interchange), and UNICODE; Microprocessor: Basic concepts, Clock speed (MHz,GHz), 16 bit, 32 bit, 64 bit processors; Types – CISC, RISC; Concept of System Buses, Address bus, Data bus, Concepts of Accumulator, Instruction Register, and Program Counter;</p> <p><b>Commonly used CPUs and CPU related terminologies:</b> Intel Pentium Series, Intel Celeron, Cyrix, AMD Series, Xeon, Intel Mobile, Mac Series; CPU Cache; Concept of heat sink and CPU fan, Motherboard; Single, Dual and Multiple processors;</p> <p><b>Types of Memory:</b> Cache (L1,L2), Buffer, RAM (DRAM, SDRAM, RDRAM, DDRAM), ROM(PROM, EPROM), Hard Disk Drive, Floppy Disk Drive, CD/DVD Drive; Access Time;</p> <p><b>Input Output Ports/Connections:</b> Power connector, Monitor Socket, Serial (COM) and Parallel(LPT) port, Universal Serial Bus port, PS-2 port, SCSI port, PCI/MCI socket, Keyboard socket,Infrared port (IR), audio/speaker socket, Mic socket; data Bus; external storage devices connected using I/O ports;</p> <p><b>Keyboards:</b> QWERTY, Inscript, Multilingual, Dvorak</p> <p><b>Printers:</b> Dot Matrix Printer, Line Printer, Deskjet/Inkjet/Bubblejet Printer, Laser Printer;</p> <p><b>Power Supply:</b> Switched Mode Power Supply (SMPS): Elementary Concept of Power Supply: Voltage, Current, Power (Volt, Ampere, Watt), SMPS supplies – Mother Board,</p> <p><b>Power Conditioning Devices:</b> Voltage Stabilizer, Constant Voltage Transformer (CVT), Uninterrupted Power Supply (UPS)-Online and offline.</p> <p style="text-align: center;"><b>Project Work</b> <b>Revision</b></p>	<p style="text-align: center;"><b>22</b></p>	<p style="text-align: center;"><b>04</b></p>
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