Lesson Plan 2025-26

Teacher Name-: Dr. Kavita Sharma

Name of the Class -: BCA-1st Sem

Name of the Subject -: Computer Architecture

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| Month | Topic |
| July to August | **UNIT-I**  **Digital Principles**: Definition for Digital signals, Digital logic, Digital computers, Von Neumann Architecture, Boolean Laws and Theorems, K-Map: Truth Tables to K-Map, 2, 3 and 4 variable K Map, K-Map Simplifications, Don’t Care Conditions, SOP and POS.  **Number Systems:** Decimal, Binary, Octal, Hexadecimal, Number System Conversions, Binary Arithmetic, Addition and subtraction of BCD, Octal Arithmetic, Hexadecimal Arithmetic, Binary Codes, Decimal Codes, Error detecting and correcting codes, ASCII, EBCDIC, Excess3 Code, The Gray Code. |
| August to September | **UNIT-II**  **Combinational Circuits:** Half Adder and Full Adder, Subtractor, Decoders, Encoder, Multiplexer, Demultiplexer, Sequential Circuits: Flip-Flops- SR Flip- Flop, D Flip-Flop, J-K Flip-Flop, T Flip-Flop.  **Register:** 4 bit register with parallel load, Shift Registers- Bidirectional shift register with parallel load Binary Counters-4 bit synchronous and Asynchronous binary counter.  **Assignment -1 and test-1** |
| September to October | **UNIT-III**  **Basic Computer Organization and Design:** Instruction Codes, Computer Registers, Computer Instructions, Timing and Control, Instruction Cycle, Memory-Reference Instructions, InputOutput Interrupt, Complete Computer Description, Design of Basic Computer, Design of 37 Accumulator logic.  **Central Processing Unit:** Introduction, General Register Organization, Stack Organization, Instruction Formats, Addressing Modes, Data Transfer and Manipulation, Program Control, Reduced Instruction Set Computer(RISC), RISC Vs CISC.  **Assignment -2 and test-2** |
| October to November | **UNIT-IV**  **Pipeline and Vector Processing:** Parallel Processing, Pipelining, Arithmetic Pipeline, Instruction Pipeline, RISC Pipeline. Input-Output Organization: Peripheral Devices, Input-Output Interface, Asynchronous data transfer, Modes of Transfer, Priority Interrupt, Direct memory Access, Input-Output Processor(IOP**).**  **Memory Organization**: Memory Hierarchy, Main Memory, Auxiliary memory, Associate Memory, Cache Memory, Virtual Memory, Memory Management Hardware. |

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Lesson Plan 2025-26

Teacher Name-: Dr. Kavita Sharma

Name of the Class -: BCA-III Sem

Name of the Subject -: OOPS using C++

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| Month | Topic |
| July to August | **UNIT-I**  **Introduction to OOP concepts**: Procedural Vs. Object- Oriented Programming, Principles of OOP and their benefits. Object, classes, Inheritance, Abstraction, Encapsulation Polymorphism, Dynamic Binding, Message passing.  **C++ Programming Basics:** Syntax and structure of C++ programs, Data types, variables, and constants in C++, Control structures: decision making and looping constructs |
| August to September | **UNIT-II**  **Classes and objects:** Defining and using classes and objects, Member functions and data members, Access specifiers: public, private, protected, Functions and parameter passing in C++, Arrays and strings in C++, Pointer, Constructors and destructors.  **Inheritance:** Derived class and Base class, Types of inheritance: single, multiple, multilevel, hierarchical, Access control in inheritance.  **Assignment -1 and test-1** |
| September to October | **UNIT-III**    **Polymorphism:** function overloading, Operator overloading, Virtual functions and dynamic polymorphism, Abstract classes and pure virtual functions, Encapsulation and data hiding, Friend functions, static function.  **Memory Management**: Dynamic Memory Allocation: new, delete, Object Creation at run time.  **Assignment -2 and test-2** |
| October to November | **UNIT-IV**    **Exception handling:** Throwing, Catching, Re-throwing an exception, specifying exception: processing unexpected exceptions; try-catch blocks, Exception propagation, Templates: class and function templates, Standard Template Library: benefits of STL and generic programming  **Working with Files:** Stream Classes, File input and output Operations in C++, Error handling during file operations. |

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Lesson Plan 2025-26

Teacher Name-: Dr. Kavita Sharma

Name of the Class -: BCA-V Sem

Name of the Subject -: Computer Graphics

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| Month | Topic |
| July to August | **UNIT-I**  **Graphics Primitives**: Introduction to computer graphics, Basics of Graphics systems, Application areas of Computer Graphics, overview of graphics systems, video-display devices, and raster-scan systems, random scan systems, graphics monitors and workstations and input devices.  **Output Primitives**: Points and lines, line drawing algorithms, mid-point circle and ellipse algorithms. Filled area primitives: Scan line polygon fill algorithm, boundary fill and floodfill algorithms . |
| August to September | **UNIT-II**  **2-D Geometrical Transforms:** Translation, scaling, rotation, reflection and shear transformations, matrix representations and homogeneous coordinates, composite transforms, transformations between coordinate systems**.**  **2-D Viewing**: The viewing pipeline, viewing coordinate reference frame, window to viewport coordinate transformation, viewing functions, Cohen-Sutherland and Cyrus-beck line clipping algorithms, Sutherland –Hodgeman polygon clipping algorithm.  **Assignment -1 and test-1** |
| September to October | **UNIT-III**  **3-D Object Representation**: Polygon surfaces, quadric surfaces, spline representation, Hermite curve, Bezier curve and B-Spline curves, Bezier and B-Spline surfaces. Basic illumination models, polygon-rendering methods.  **Assignment -2 and test-2** |
| October to November | **UNIT-IV**    **3-D Geometric Transformations:** Translation, rotation, scaling, reflection and shear transformations, composite transformations.  **3-D Viewing**: Viewing pipeline, viewing coordinates, view volume and general projection transforms and clipping. |

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