BHARATHIAR UNIVERSITY: COIMBATORE-641 046
B.Sc. CS/IT/CT/SS/MM/CSA &BCA degree courses
(For the students admitted from the academic year **2017-2018** and onwards)

CBCS PATTERN

The syllabus for **CORE 2: DIGITAL FUNDAMENTALS AND COMPUTER ARCHITECTURE** for **BSc CS, IT, CT, SS, CSA, MM & B.C.A degree courses and**

SKILL BASED SUBJECT- 4 SOFTWARE TESTING LAB for B.Sc. Computer Science degree course- papers are revised and furnished below be followed and there is no change   in the scheme of examination and syllabi of remaining   papers

Course	**BSc CS, IT, CT, SS, CSA, MM & B.C.A (Regular)**
Effective from	**2017-2018 and Onwards**
Semester	**I**
Subject	**CORE 2:** **DIGITAL FUNDAMENTALS AND COMPUTER ARCHITECTURE**

Subject Description: This subject deals with fundamentals of digital computers, Microprocessors and System architecture.

Goal: To learn about Computer Fundamentals and its Architecture.

Objective: On successful completion of this subject the students should have Knowledge on Digital circuits, Microprocessor architecture, and Interfacing of various components.

UNIT I: Number System and Binary Codes: Decimal, Binary, Octal, Hexadecimal – Binary addition, Multiplication, Division – Floating point representation, Complements, BCD, Excess3, Gray Code. Arithmetic Circuits: Half adder, Full adder, Parallel binary adder, BCD adder, Half subtractor, Full subtractor, Parallel binary subtractor - Digital Logic: the Basic Gates – NOR, NAND, XOR Gates.

UNIT II: Combinational Logic Circuits: Boolean algebra – Karnaugh map – Canonical form 1 – Construction and properties – Implicants – Don't care combinations - Product of sum, Sum of products, simplifications. Sequential circuits: Flip-Flops: RS, D, JK, and T - Multiplexers – Demultiplexers – Decoder Encoder – shift registers-Counters.

UNIT III: Input – Output Organization: Input – output interface – I/O Bus and Interface – I/O Bus Versus Memory Bus – Isolated Versus Memory – Mapped I/O – Example of I/O Interface. Asynchronous data transfer: Strobe Control and Handshaking

UNIT IV: Priority Interrupt: Daisy- Chaining Priority, Parallel Priority Interrupt. Direct Memory Access: DMA Controller, DMA Transfer. Input – Output Processor: CPU-IOP Communication.

UNIT V: Memory Organization: Memory Hierarchy – Main Memory- Associative memory: Hardware Organization, Match Logic, Read Operation, Write Operation. Cache Memory: Associative, Direct, Set-associative Mapping – Writing into Cache Initialization.

TEXT BOOKS:

1. Digital Electronics Circuits and Systems, V.K. Puri, TMH.

2. Digital principles and applications, Albert Paul Malvino, Donald P Leach, TMH, 1996.

3. Computer System Architecture -M. Morris Mano , PHI.

REFERENCE BOOKS:

1. Computer Architecture -M. Carter, Schaum's outline series, TMH

For B.Sc Computer Science degree course
SKILL BASED SUBJECTS (2017-18 onwards)
SKILL- 4 – CS : SOFTWARE TESTING LAB

Write at least 10 TEST CASES for the following programs. Test cases can be for Input data, Conditional expressions, control transfer, output, etc. Run-Test-Debug- until all the test cases are in success status. Marks distribution as follows:

1. List of Test Descriptions (at least 10) for the Program. (20%)

2. Test Cases (40%)

3. Program with all test case results success (30%)

4. Record (10%)

TEST CASE EXAMPLE:

Test -Id	Test Description	Test Steps	Expected Output	Actual Output	Status
TC-01	Acceptance of 10 digit input data	Input 10 Digit Number	Accepting 10 digit number	Accepted 10 digit number	Success
TC-02	Non- acceptance of character data	Input a character data X	Character X should not be accepted	Accepting Character data	Failure

Modify PIC X(10) into PIC 9(10) and then run program for Test-id TC-02 again.

TC-02	Non- acceptance of character data	Input a character data X	Character X should not be accepted	Character data not accepted	Success
TC-03	Digit sum of 10 digit is in single digit	Output data	Single digit sum	Single digit Sum	Success

1. Test the C program: Finding the sum of individual digits of a 10-digit number until a single digit is produced.

2. Test the C Program: Accept the inputs student name, marks in five subjects and declare the result as PASS if the student gets minimum 40 in each subject; otherwise declare the result as FAIL.

3. Test the C program: Program for generating n prime numbers

4. Test the C program: Sort and store the elements of two arrays of integers into the third list.

5. Test the C program: Experiment the operations of a stack using array implementation.

6. Test the C program: Menu-driven option for queue operations like add, remove and display.

7. Test the C++ program: Palindrome string checking program (using pointers)