Chhattisgarh Swami Vivekananda Technical University, Bhilai (C.G.)

Program / Semester: **B.Tech (IV)**	Branch: **Computer Science &Engineering**
Subject: **Discrete Mathematics**	Course Code: B022411(014)
T**otal / Minimum-Pass Marks** (End Semester Exam): **100 / 35**	L: 3 T: 1 P: 0 Credits: 4
Class Tests & Assignments to be conducted: 2 each	Duration (End Semester Exam): **03 Hours**

Course Objectives:

1. To introduce a number of discrete mathematical structures found to be serving as tools in the development of theoretical computer science.
2. Course focuses on how discrete structures actually helped computer engineers to solve problems occurred in the development of programming languages.
3. Course highlights the importance of discrete structures towards simulation of a problem in computer science engineering.

UNIT-I **MATHEMATICAL LOGIC & BOOLEAN ALGEBRA:** Basic concept of mathematical logic, Statements, Connectives, Conditional and biconditional statements, Logical equivalence, Logical implication & quantifiers, Basic concept of Boolean Algebra, Properties of Boolean Algebra, Boolean functions, Disjunctive & conjunctive normal forms of Boolean functions, Applications of Boolean Algebra in switching circuits & logic circuits.

UNIT-II **SET THEORY, RELATIONS, FUNCTIONS:** Basic concept of set theory, Relations, Properties of relation in a set, Equivalence relation, Composition of relations, Partial order & total order relations, Lattices &Hasse diagram, Introduction to function, Inverse, Identity, Injective, Surjective & Bijective functions, Composition of functions and some special functions.

UNIT-III **ALGEBRAIC STRUCTURES:** Groups, Subgroups, Cosets, Lagrange's theorem, Isomorphism, Automorphism, Homomorphism, Codes & group codes, Rings, Integral domains and Fields.

UNIT-IV **GRAPH THEORY:** Introduction to graph theory, Walks, Paths & Circuits, Types of graphs, Shortest path problems, Eulerian and Hamiltonian graphs, Basic concept of tree: spanning tree, minimum spanning tree, search tree, rooted binary tree, Cut sets, Network flow, Matrix representation of graphs.

UNIT-V **COMBINATORICS:** Permutation and combination, Pigeon-hole principle, Mathematical induction, Principle of Inclusion and Exclusion, Generating function, Recurrence relation.

Text Books:

1. Elements of discrete mathematics by C.L. Liu, Tata McGraw-Hill, publications.
2. Discrete Mathematical structures, by Bernard Kolman, Robert C. Busby and Sharon Cutler Ross, Pearson Education.

Reference Books:

1. A Text Book of Discrete Mathematics, Swapan Kumar Sarkar, S. Chand &Compeny Ltd.
2. Graph theory with applications to engineering and computer science, by NarsinghDeo, Prentice Hall of India.
3. Discrete mathematics for computer scientists and mathematicians, by J.L. Mott, A. Kandel and T.P. Baker, Prentice Hall of India.
4. Discrete Mathematical Structures with applications to computer science, by J.P. Tremblay and R. Manohar, Tata McGraw-Hill.

Course Outcomes:

After completion of this course students will be –

1. Able to apply mathematical logic and Boolean algebra in switching circuits & logic circuits.
2. Familiar with set theory, relation and functions.
3. Familiar with algebraic structures, graph theory and combinatorics.
4. Able to solve problems in various fields in computer science, specially networking

Chhattisgarh Swami Vivekananda Technical University, Bhilai (C.G.)

Program / Semester: **B.Tech (IV)**	Branch: **Computer Science &Engineering**
Subject: **Computer System Architecture**	Course Code: B022412(022)
T**otal / Minimum-Pass Marks** (End Semester Exam): **100 / 35**	L: 2 T: 1 P: 0 Credits: 3
Class Tests & Assignments to be conducted: 2 each	Duration (End Semester Exam): **03 Hours**

UNIT- I Basic Structure Of Computers: Functional units, Basic operational concepts, Bus structures Addressing modes, subroutines: parameter passing, Instruction formats, BASIC PROCESSING UNIT: bus architecture, Instruction Cycle, sequencing of control signals, Hardwired control, Micro programmed Control, microinstruction format.

UNIT-II Arithmetic: Number representations and their operations, Design of Fast Adders, Signed multiplication, Booth's Algorithm, bit-pair recoding, Integer Division, Floating point numbers and operations, guard bits and rounding.

UNIT- III The Memory System: Various technologies used in memory design, Memory Hierarchy: Main Memory, Auxiliary Memory, Associative Memory, Cache memory, Virtual Memory. Memory Management Hardware, Multi-module memories and Interleaving,

UNIT-IV Input/ Output Organization: Peripheral Devices, I/O interfaces I/O-mapped I/O and memory-mapped I/O, interrupts and interrupt handling mechanisms, vectored interrupts, synchronous vs. asynchronous data transfer, Direct Memory Access

UNIT-V Pipeline and Vector Processing: Parallel Processing, Pipelining, Arithmetic pipeline, Instruction Pipeline, RISC Pipeline, Vector Processing, Array Processors.

Text Books:

1. Computer Organization, V.C.Hamacher,Z.G.Vranesic and S.G.Zaky, McGraw Hill,5th Edition,2002.
2. Structured Computer Organization, A.S.Tanenbaum, 4th Edition, Pearson Education India
3. Computer System Architecture, M. Marris Mano,PHI

Reference Books:

1. Computer System Architecture &Organisation, Dr. Usha, Wiley India
2. Computer Architecture & Organization, 3rdEdition, J.P. Hayes, McGraw-Hill.
3. Computer Organization & Architecture, W. Stallings, Pearson Education India

Course Outcomes [The students should be able to]:

1. Identify the basic hardware components of a computer system.
2. Familiarize themselves with binary and hexadecimal number systems including computer arithmetic.
3. Familiarize themselves with functional units of the processor such as the register file and arithmetic logical unit.
4. Understand basics functionality of systems: parallel, pipelined, superscalar and RISC/CISC architectures.
5. Represent system design in appropriate formats; addressing modes, an instruction sets as per the system configuration requirements.

Chhattisgarh Swami Vivekananda Technical University, Bhilai (C.G.)

Program / Semester: **B.Tech (IV)**	Branch: **Computer Science &Engineering**
Subject: **Database Management System**	Course Code: B022413(022)
T**otal / Minimum-Pass Marks** (End Semester Exam): **100 / 35**	L: 3 T: 1 P: 0 Credits: 4
Class Tests & Assignments to be conducted: 2 each	Duration (End Semester Exam): **03 Hours**

UNIT I Database system architecture: Data Abstraction, Data Independence, Data Definition Language (DDL), Data Manipulation Language (DML). **Data models:** Entity-relationship model, network model, relational and object-oriented data models, integrity constraints, data manipulation operations.

UNIT II Relational query languages: Relational algebra, Tuple and domain relational calculus,
SQL3, DDL and DML constructs, Open source and Commercial DBMS - MYSQL, ORACLE, DB2, SQL server. **Relational database design:** Domain and data dependency, Armstrong's axioms, Normal forms, Dependency preservation, Lossless design.

UNIT III Query processing and optimization: Evaluation of relational algebra expressions, Query equivalence, Join strategies, Query optimization algorithms. **Storage strategies**: Indices, B-trees, hashing,

UNIT IV Transaction processing: Concurrency control, ACID property, Serializability of scheduling, Locking and timestamp-based schedulers, Multi-version and optimistic Concurrency Control schemes, Database Recovery.

UNIT V Database Security: Authentication, Authorization and access control, DAC, MAC and RBAC models, Intrusion detection, SQL injection. **Advanced topics:** Object oriented and object relational databases, Logical databases, Web databases, Distributed databases, Data warehousing and data mining.

Text books:

1. "Database System Concepts", 6th Edition by Abraham Silberschatz, Henry F. Korth, S. Sudarshan, McGraw-Hill.
2. "Fundamentals of Database Systems", 5th Edition by R. Elmasri and S. Navathe, Pearson Education
3. "Introduction to Database Systems", 8th Edition by C J Date, Addison Wesley, 2003.

Suggested reference books

1. "Principles of Database and Knowledge – Base Systems", Vol 1 by J. D. Ullman, Computer Science Press.
2. "Foundations of Databases", Reprint by Serge Abiteboul, Richard Hull, Victor Vianu, Addison-Wesley

Course Outcomes [The students should be able to]:

1. Be familiar with basic concepts of RDBMS, Relational data model & be able to write relational algebra expressions for queries;
2. Be familiar with basic database storage structures and access techniques: file and page organizations, indexing methods including B-tree and hashing;
3. Understand DML, DDL and will be able to construct queries using SQL by knowing the importance of data & its requirements in any applications;
4. Utilize a database modelling technique for a single entity class, a one-to-one (1:1) relationship between entity classes, a one-to-many (1:M) relationship between entity classes, a many-to-many (M:M) relationship between entity classes, and recursive relationships;
5. Be familiar with the basic issues of transaction, its processing and concurrency control.

Chhattisgarh Swami Vivekananda Technical University, Bhilai (C.G.)

Program / Semester: **B.Tech (IV)**	Branch: **Computer Science &Engineering**
Subject: **Object Oriented Programming (with JAVA)**	Course Code: B022414(022)
T**otal / Minimum-Pass Marks** (End Semester Exam): **100 / 35**	L: 2 T: 1 P: 0 Credits: 3
Class Tests & Assignments to be conducted: 2 each	Duration (End Semester Exam): **03 Hours**

UNIT- I Introduction & Fundamentals of JAVA, Background of JAVA, About Java Technology, Java's architecture, Reading console inputs, Arrays, Constructors, Finalize method, final, this method and reference, static members.

UNIT-II Concrete class, Abstract class, Interface, Inner classes. Aggregation, Composition and Inheritance, super method and reference. Method overloading and overriding. Singleton classes. Package concepts. Exception Handling: Inbuilt, User defined, Checked and Unchecked.

UNIT- III String class. Wrapper classes (Integer, Boolean, Character, etc.). Multi-threading: Thread concept, Thread class, Runnable interface, Creating cutomized threads, Thread synchronization, Thread class methods. Java I/O: Use of InputStream, OutputStream, Reader and Writer classes for reading from and writing data into disk files.

UNIT-IV AWT & SWING: Frame, Panel, Dialog, CheckBox, Choice, List, JComboBox, JFrame, JPanel, JRadioButton, JScrollPane, JTabbedPane, Using Listeners: ActionListener, ContainerListener, FocusListener, ItemListener, KeyListener, MouseListener, TextListener, WindowListener. Applets. JDBC: Type1 to Type4 drivers. Java Networking: ServerSocket, Socket, RMI.

UNIT-V Collections Frameworks: HashSet, TreeSet, ArrayList, LinkedList, Vector, HashMap, TreeMap, Hashtable classes. Generics in Java: Creating instances of generic classes, generic types, Declaring (and invoking) methods that take generic types. Creating and running executable JAR (Java ARchives).

Text Books:

1. Herbert Schildt: "Java A Beginner's Guide, 7th edition",Oracle Press.
2. Maurice Naftalin, Philip Wadler, "Javas Generics and Collections", O'Reilly Media, Inc.
3. Benjamin J Evans, David Flanagan., "Java in a Nutshell", O'Reilly Media, Inc.

Reference Books:

1. Kathy Sierra, Bert Bates, "Head First Java", O'Reilly Media, Inc.
2. Kathy Sierra, Bert Bates, "OCA Java SE 8 Programmer I Exam Guide", McGraw Hill Professional.
3. Kathy Sierra, Bert Bates, "OCA Java SE 8 Programmer II Exam Guide", McGraw Hill Professional.
4. Kathy Sierra, Bert Bates, "OCA/OCP Java SE 8 Programmer Certification Bundle", McGraw Hill Professional.

Course Outcomes [The students should be able to]:

1. Apply Java in developing Object Oriented code.
2. Apply the knowledge of Multi-threading and Streams in developing Java applications.
3. Design and implement applications using GUI and Networking in Java.
4. Apply the knowledge of Collections and Generics for building Java applications.
5. Design and develop Java based applications for solutions to real world problems.

Chhattisgarh Swami Vivekananda Technical University, Bhilai (C.G.)

Program / Semester: **B.Tech (IV)**	Branch: **Computer Science &Engineering**
Subject: **Design & Analysis of Algorithms**	Course Code: B022415(022)
T**otal / Minimum-Pass Marks** (End Semester Exam): **100 / 35**	L: 2 T: 1 P: 0 Credits: 3
Class Tests & Assignments to be conducted: 2 each	Duration (End Semester Exam): **03 Hours**

UNIT I Algorithms: Definitions and Application of notations, Asymptotic notations: big oh, small oh, omega and theta notations, worst case, best case and average case analysis. solving recurrence equations: General recurrence equation, Master Method, Recursive Tree Method, substitution method, analysing control structures. Analysis of Sorting and Searching: Heap, insertion, selection and bubble sort; sequential, binary and Fibonacci search.

UNIT II Divide-Conquer & Greedy Paradigm: Introduction to Divide and conquer paradigm, Quick and merge sorting techniques, the basic divide and conquer algorithm for matrix multiplication, Greedy Method: The basic greedy strategy & computing minimum spanning trees, Algorithms of Kruskal and Prims, use of greedy strategy in algorithms for the Knapsack problem and Huffman trees.

UNIT III Dynamic Programming and String-Matching Algorithms: The basic dynamic programming paradigm, Dynamic programming solution to the optimal matrix chain multiplication and the longest common subsequence problems, String matching algorithm: The general string problem as a finite automata, Knuth Morris and Pratt algorithms, Boyer-Moore Algorithm, linear time analysis of KMP algorithm and Boyer-Moore algorithm.

UNIT IV Backtracking: Back tracking and Recursive back tracking, the general method, 8-queens problem, sum of subsets, graph coloring, Hamiltonian cycle, Knapsack problem

UNIT V Branch and Bound & NP Complete Problem: General method, applications: Travelling sales person problem, 0/1 knapsack problem, LC (Least-cost search), FIFO Branch and Bound solution. NP-Hard and NP-Complete problems: Basic concepts, non-deterministic algorithms, NP – Hard and NP-Complete classes, Cook's theorem.

Text Books:

1. Cormen, Lelserson, Rivert, "Introduction to Algorithms", Second Edition, PHI.
2. Ellis Horowitz, Sartaj Sahni, Sanguthevar Rajasekaran, "Fundamentals of Computer Algorithms", Galgotia Publications Pvt. Ltd., 2008

Reference Books:

1. Paneerselvam, "Design and Analysis of Algorithms", Prentice-Hall of India, 2006
2. Anany Levitin, "Introduction to the Design and Analysis of Algorithms", Pearson Education, 2005.
3. Gilles Brassard and Paul Bratley, "Fundamentals of Algorithms", Prentice-Hall of India, 1997

Course Outcomes: [The students should be able to]:

1. Calculate the Time complexity of Insertion sort, Heap sort, Bubble sort, Linear and Binary search algorithms.
2. Apply the algorithms and design techniques to solve problems related to divide and conquer and Greedy Algorithm
3. Analyse Dynamic programming problems including Matrix chain multiplication, Longest Common subsequence and Knapsack Problem.
4. Understand the implementation of Backtracking and Recursive Backtracking Methods.
5. Understand the basic concepts of NP-Hard, NP-Complete and Branch and Bound methods.

Chhattisgarh Swami Vivekananda Technical University, Bhilai (C.G.)

Program / Semester: **B.Tech (IV)**	Branch: **Computer Science &Engineering**
Subject: **Computer System Architecture (Laboratory)**	Course Code: B022421(022)
T**otal / Minimum-Pass Marks** (End Semester Exam): **40/ 20**	L: 0 T: 0 P: 2 Credit(s): 1

List of Experiments: *(At least Ten experiments are to be performed by each student)*

1. Assembling of a Personal Computer:
   a. Identifying parts of mother board, power connections and locating other connectors.
   b. Interconnection of disk drive units, keyboard, mouse and monitor.
2. Hard disk partitioning and OS installation:
   a. Partitioning the hard disk using FDISK/ Partition Magic/ Disk Manager
3. a. Installation of Windows XP/2000/Pro
   b. Installation of Linux kernel (possibly with dual boot option).
4. Circuit Tracing: Using Multimeter and continuity test mode, to trace a given circuit board and draw the schematic.
5. Load testing of SMPS: Testing the given SMPS of a PC using a multimeter.
6. Installation of Software packages in Linux Platform.
7. BIOS setup and Configuration.
8. Hardware Troubleshooting:
9. (Students have to be given a PC which does not boot due to improper assembly or defective peripherals. They should identify the problem and fix it to get the computer back to working condition. The work done should be verified by the instructor and followed up with a Viva.)
10. Software Troubleshooting:
11. (Students have to be given a malfunctioning CPU due to System software problems. They should identify the problem and fix it to get the computer back to working condition. The work done should be verified by the instructor and followed up with a Viva.)
12. Basic operation using Command Line Interface in DOS and Linux Terminal.
13. Computer User and Device Management through Windows Control Panel.
14. Design of digital circuits (MUX, DEMUX & ALU) in VHDL using Active VHDL.
15. Write a program to perform signed bit multiplication using Booth's algorithm.
16. Write a program for IEEE-754 floating point representation and perform Addition/Subtraction.

Laboratory Equipments / Machine Requirements: Computer Hardware trainer kits, Old computing system – should be used for training, Prepare museum of antique computer components for display in laboratory, Xilinx ISE WebPACK

Recommended Books:

1. Computer Repair with Diagnostic Flowcharts Third Edition: Troubleshooting PC Hardware Problems from Boot Failure to Poor Performance - Morris Rosenthal
2. A+ Guide to Hardware: Managing, Maintaining, and Troubleshooting: by Jean Andrews
3. Kenneth L. SHORT "VHDL FOR ENGINEERS" Pearson Education

Course Outcomes [The students should be able to]:

1. Assemble the hardware part of the computer system and will be able to partition the memory and format the system.
2. Install different types of OS and BIOS setup and Configuration.
3. Trace the Circuit using Multimeter and perform continuity test mode, able to draw the schematic
4. Design and simulate digital circuit like multiplexer, demultiplexer and ALU in VHDL.
5. Use terminal Windows for Linux (multiuser and a free and open-source) and DOS (Single User) user OS.

Chhattisgarh Swami Vivekananda Technical University, Bhilai (C.G.)

Program / Semester: **B.Tech (IV)**	Branch: **Computer Science &Engineering**
Subject: **Object Oriented Programming (with JAVA) Laboratory**	Course Code: B022422(022)
T**otal / Minimum-Pass Marks** (End Semester Exam): **40 / 20**	L: 0 T: 0 P: 2 Credit(s): 1

List of Experiments:*(At least Ten experiments are to be performed by each student)*

1. Write a program in Java to read from console employee details of 5 employees with following details: Name of employee, Department, Age, Salary. Print the details of every employee.
2. Write a program to show the use 'this' keyword to call the default and parameterized constructors.
3. Write a program in Java to display the count of number of objects created and finalized. Provide unique IDs to every object while creation and display the same ID during finalization.
4. Create a Shape Interface which has a member method area(). Derive two subclasses Circle and Triangle from it. Using reference of Shape class fill the required members in Circle and Triangle also display the area of Circle and Triangle. Take input from user while filling data members.
5. Write a program to demonstrate the effect of access modifiers (default, protected, public and private) on members with and without inheritance within a package and outside a package.
6. Write a program to show inbuilt and user defined: checked and unchecked exceptions.
7. Write a program to show the use of various member methods of String class.
8. Create two threads T1 and T2. The thread T1 should print numbers from 1 to 10 and thread T2 prints characters from A to J. Ensure that T2 starts first and T1 should only start when T2 finishes. (Note: use join())
9. Demonstrate using a Java program, how DEADLOCK occurs between threads and also give solution program.
10. Write a program to merge the contents of text files T1.txt and T2.txt into T3.txt. The contents of T1.txt should appear first and then T2.txt in the destination file T3.txt.
11. Develop a GUI application that gives text equivalent of any numeric value entered by the user ranging from 0 to 9.
12. Develop a GUI application to implement Date of Birth validator. The DOB should only be in the form "dd/mm/yyyy". Use customized exception handling method as the validator.
13. Develop an Applet to insert username and password into a MySQL (or any) database.
14. Develop an Applet to display all the usernames and passwords present in a MySQL (or any) database.
15. Develop two applications in Java using Sockets to communicate with each other using text messages.
16. Develop two applications in Java using RMI to communicate with each other using text messages.
17. Develop a Java program to demonstrate the use of HashSet, TreeSet, ArrayList, LinkedList classes.
18. Develop a Java program to demonstrate the use of Vector, HashMap, TreeMap, Hashtable classes.
19. Develop a Java program to demonstrate the use of generics.
20. Create and run an executable JAR.

Laboratory Equipments / Machine Requirements: Windows operating system, 4GB RAM, 500GB HDD, JDK8 and Netbeans IDE.

Recommended Books:

1. Maurice Naftalin, Philip Wadler, “Java Generics and Collections”, O'Reilly Media, Inc.
2. Benjamin J Evans, David Flanagan., “Java in a Nutshell”, O'Reilly Media, Inc.

Course Outcomes [The students should be able to]:

1. Use an integrated development environment to write, compile, run, and test simple object-oriented Java programs.
2. Implement Object Oriented programming concept using basic syntaxes of control Structures, strings and function for developing skills of logic building activity.
3. Identify classes, objects, members of a class and the relationships among them needed for a finding the solution to specific problem
4. Demonstrates how to achieve reusability using inheritance, interfaces and packages and describes faster application development can be achieved.
5. Demonstrate understanding and use of different exception handling mechanisms and concept of multithreading for robust faster and efficient application development.

Chhattisgarh Swami Vivekananda Technical University, Bhilai (C.G.)

Program / Semester: **B.Tech (IV)**	Branch: **Computer Science &Engineering**
Subject: **Database Management System Laboratory**	Course Code: B022423(022)
T**otal / Minimum-Pass Marks** (End Semester Exam): **40 / 20**	L: 0 T: 0 P: 2 Credit(s): 1

List of Experiments: *(At least Ten experiments are to be performed by each student)*
Topics to be covered during LAB

1. How to install Oracle/ MySQL/ PostgreSQL in Windows/ Linux platforms. Creating users and database objects, inserting rows in the database tables.
2. Introduction to SQL, DDL, DDL, DCL queries and constraints. Populating and manipulating database tables using DML statements.
3. Selecting data from tables : SELECT statement, where clause, having clause, group by, order by, selecting NULL values, use of IN and DISTINCT keywords.
4. SQL functions : Study the use of SQL string, date, arithmetic and aggregate functions with examples.
5. JOINS : study the use of joining tables using natural, inner, outer joins.
6. Subqueries and set operations : Study the use of nested queries and how to apply them in database.
7. Views : Study the use of inline and external views.
8. Introduction to PL/ SQL : Pl/ SQL block, PL/ SQL statements, if else statements, looping statements.
9. Cursor : Study the use of cursor and exceptions.
10. Functions and procedures : Study the use of functions and procedures in PL/ SQL programs.
11. Trigger : Study the use of triggers to enforce constraints.
12. Forms and Report generation using PL/SQL.

Hardware / Software Requirements:

- At least Dual Core or Core-I3 Pro Computing System, 2GB RAM, 80GB HDD
- All systems are configured in **DUAL BOOT** mode i.e.Students can boot from Windows 7/8 or Linux as per their lab requirement.
- MySQL/ PgSQL /Oracle May be used as Database Management System

Recommended Books:

1. "Database System Concepts", 6th Edition by Abraham Silberschatz, Henry F. Korth, S. Sudarshan, McGraw-Hill.
2. "Fundamentals of Database Systems", 5th Edition by R. Elmasri and S. Navathe, Pearson Education.
3. "Introduction to Database Systems", 8th Edition by C J Date, Addison Wesley, 2003.

Course Outcomes [The students should be able to]:

1. Write efficient DB handling codes in DML, DDL and will be able to construct queries using SQL by knowing the importance of data & its requirements in any applications.
2. Write codes using efficient database storage structures and access techniques: file and page organizations, indexing methods including B-tree and hashing, transaction processing and concurrency control.
3. Write programs in PL/SQL using cursor, functions, triggers.
4. Write programs in PL/SQL, to generate the Report.
5. Design the database of any organisation with Front end and Back end with database connectivity.

Chhattisgarh Swami Vivekananda Technical University, Bhilai (C.G.)

Program / Semester: **B.Tech (IV)**	Branch: **Computer Science &Engineering**
Subject: **Virtual Laboratory (PHP / MySQL)**	Course Code: B022424(022)
T**otal / Minimum-Pass Marks** (End Semester Exam): **40 / 20**	L: 0 T: 0 P: 2 Credit(s): 1

List of Experiments:*(At least Ten experiments are to be performed by each student)*

1. Create a PHP webpage and print “hello world”.
2. Write a PHP program to find maximum of three numbers.Write a PHP program Create a switch statement that will output "Hello" if $var is "1", and "welcome" if $var is "2".
3. Write a PHP program to compute factorial of a number using While loop.
4. Write a program to enter numbers till the user wants. At the end it should display the count of positive, negative and zeros entered. (Using do-while loop)
5. Write a program that will accept an array of integers as input, and output an array where for each item in the source array, the new array will perform the following operations:
    a) For even numbers divide by 2
    b) For odd numbers multiply by 3
6. Create an associative array using the countries as keys, the cities as values and display the data as a table.
7. Write a function calculate_Average () which takes four arguments which are marks for four courses in the semester and returns their average.
8. Write a PHP program to compute factorial of a number using recursion.
9. Write a program that displays a different message based on time of day. For-example, page should display “Good Morning” if it is accessed in the morning.
10. Write a program for Student Mark List Processing by executing DDL, DML, DCL commands on MySQL database.
11. Create pages for signup and sign-in process using PHP MySQL database operations.
12. Create pages for profile updation and deletion of an employee using PHP MySQL.
13. Write a php program to demonstrate Login Panel by session creation, checking and deletion.
14. Create the pages for Petrol and diesel with their rates, quantity, write the program to calculate the total, display the selected item and total in separate page using cookies.

Remarks: Design of a toy project as an independent study towards problem-based learning to be submitted at the end of semester for evaluation.

Laboratory Equipment / Machine Requirements:
Dual Core or Core-I3 Pro Computing System (2GB RAM, 80GB HDD): systems configured in DUAL BOOT mode (inter-switching bootable between Windows 7/8 or Linux as per their lab requirements); MySQL to be used as Database Management System -php7.0 as scripting language

Recommended Books:

1. PHP: The Complete Reference by Steven Holzner
2. Head First PHP & MySQL – by Lynn Beighley & Michael Morrison
3. The Joy of PHP Programming: A Beginner’s Guide – by Alan Forbes

Course Outcomes [The students should be able to]:

1. Develop dynamic web designing applications and database handling applications using php;
2. Design and develop dynamic web page components, interfaces & portals – (Project-based Learning technique).

Chhattisgarh Swami Vivekananda Technical University, Bhilai (C.G.)

Program / Semester: **B.Tech (IV)**	Branch: **Computer Science &Engineering**
Subject: **Constitution of India**	Course Code: B000406(046)
Total Marks (Internal Assessment): 10	L: 0 T: 0 P: 2 Credits: 0
Internal Assessments to be conducted: 02	Duration (End Semester Exam): **NA**

Unit 1: The Constituent Assembly & The Constitution Of India: Historical Context of Constituent Assembly, Compositions & Functions, Critical Evaluation, Features of Indian Constitution, Preamble to the Constitution of India, Introduction to Fundamental Rights, Right to Equality, Right to Freedom, Constitutional Position of Some Democratic Rights, Right Against Exploitation, Right to Freedom of Religion, Right To Constitutional Remedies, Directive Principles

Unit 2: Organs Of The Government: The President of India, Powers and Functions of President, Emergency Powers and the Position of the President, Union Council of Ministers, Prime Minister, The Rajya Sabha, The Lok Sabha& Lok Sabha Speaker, Relation between Lok Sabha & Rajya Sabha

Unit 3: Indian Judiciary: The Structure and Organization of the Judiciary & the High Court, The Supreme Court, Role of The Supreme Court, Judicial Activism in India, Basic Structure Doctrine & PIL

Unit 4: Federalism & Decentralization: Legislative Procedures of the Parliament, Parliamentary Committees, Centre-State Legislative Relations, Centre-State Administrative Relations, Centre-State Financial Relations, The 5th & 6th Schedules

Unit 5: Indian Municipality and Gram Panchayats: Municipality-1 (History of Indian Municipality), Municipality-2 (Organization & Functions), Panchayat---1 (Idea of Panchayat), Organization and Powers of Panchayats in India

Text Books:

1. Durga Das Basu --- Introduction to the Constitution of India, 23rd Edition (Gurgaon; LexisNexis, 2018).
2. J.C.Johari -- The Constitution of India: A Politico-Legal Study (Greater Noida: Sterling Publishers Pvt. Ltd. 2013).
3. Himangshu Roy and M.P.Singh – Indian Political System, 4th Edition (Bengalaru; Pearson Education, 2018)
4. Vidya Bhushan &VishnooBhagwan--- Indian Administration (S. Chand, 2011)

Reference Books:

1. S.R.Maheswari --- Indian Administration (Orient Blackswan, 2001)
2. Dr. A.Avasthi& A.P. Avasthi --- Indian Administration (L.N. Agarwal Educational Publishing, 2017).
3. B. L. Fadia --- Indian Government and Politics (Sahitya a. Bhawan, 13th Revised Edition, 2017).
4. P.M.Bakshi – The Constitution of India (Prayagraj, UP; a. Universal Law Publishing, January, 2018)

Course Outcomes [The students should be able to]:

1. The citizens of India learn to abide by the laws of Indian Parliament and the judiciary.
2. Indians become aware of their fundamental rights and duties from the Constitution of India.