
Rayat Shikshan Sanstha's

**SADGURU GADGE MAHARAJ COLLEGE, KARAD.**

**(An Autonomous College)**

**Accredited By NAAC with 'A$^{+}$ (3.63 CGPA)' Grade**

**ISO- 9001-2015 Certified**

Affiliated to Shivaji University, Kolhapur

# B.Sc. Computer Science (Optional) Part-II

## DEPARTMENT OF COMPUTER SCIENCE

**Under the Faculty of Science and Technology**

**Choice Based Credit System (CBCS)**

Regulations in accordance with **National Education Policy**
to be implemented from Academic Year 2024-25

**Syllabus For**

**B.Sc. Part – II**

**SEMESTER III & IV**

**(Syllabus to be implemented from June 2024 Onward)**

# B.Sc. Computer Science (Optional) Semester - III & IV

## (CBCS) NEP-2020 Syllabus to be implemented from June 2023 Onwards

1. **TITLE:** Computer Science
2. **YEAR OF IMPLEMENTATION**: Revised Syllabus will be implemented from June 2023 onwards.
3. **DURATION:** B.Sc. in Computer Science Part - II The duration of the course shall be one year and two semesters.
4. **PATTERN:** The pattern of examination will be semester.
5. **STRUCTURE OF COURSE:**

**STRUCTURE OF COURSE**

| Sr. No. | Paper | Name of Paper | Marks | | |
|---|---|---|---|---|---|
| | | | Theory | Internal | Total |
| **Computer Science (Semester - III)** | | | | | |
| 1 | MJBCST24-301 | Operating System | 40 | 10 | 50 |
| 2 | MJBCST24-302 | Object Oriented Programming Using C++ | 40 | 10 | 50 |
| 3 | MJBCSP24-303 | Practical based on MJBCST24-301 & MJBCST24-302 | -- | -- | 50 |
| 4 | MNBCST24-301 | C Programming Part- I | 40 | 10 | 50 |
| 5 | MNBCST24-302 | Web Technology Part- I | 40 | 10 | 50 |
| 6 | MNBCSP24-303 | Practical based on MNBCST24- 301 & MN-BCST24 302 | -- | -- | 50 |
| 7 | OEBCS24-301 | Fundamentals of Computer Part-I | -- | 50 | 50 |
| 8 | VSCI-BCSP24- 301 | HTML and CSS | -- | 50 | 50 |
| 9 | SECI-BCSP24- 301 | Practical on JavaScript | -- | 50 | 50 |
| 10 | AECI-24-301 | English | 40 | 10 | 50 |
| 11 | CCI-24-301 | Co-curricular Course | -- | 50 | 50 |
| **Total** | | | | | 550 |
| **Computer Science ( Semester - IV)** | | | | | |
| 12 | MJBCST24-401 | Cyber Security Essentials | 40 | 10 | 50 |
| 13 | MJBCST24-402 | Data Structure Using C++ | 40 | 10 | 50 |
| 14 | MJBCSP24-403 | Practical based on MJBCST24- 401 & MJBCST24 402 | - | 50 | 50 |
| 15 | MNBCST24-401 | C Programming Part- II | 10 | 40 | 50 |
| 16 | MNBCST24-402 | Web Technology Part- II | 10 | 40 | 50 |
| 17 | MNBCSP24-403 | Practical based on MNBCST24- 401 & MNBCST24-402 | -- | 50 | 50 |
| 18 | OECSOO24-401 | Fundamentals of Computer Part-II | -- | 50 | 50 |
| 19 | SECII-CSP24- 401 | Practical on PHP Programming | -- | 50 | 50 |
| 20 | AECII-24-401 | English | 10 | 40 | 50 |
| 21 | VECES-24-401 | Environmental Studies | -- | 50 | 50 |
| 22 | CEPI24-401 | Community Engagement Programme-I | -- | 50 | 50 |
| **Total** | | | | | 550 |

## 6. EQUIVALENCE IN ACCORDANCE WITH TITLES AND CONTENTS OF PAPERS (FOR REVISED SYLLABUS)

| Sr. No. | Title of old paper | Sr. No. | Title of New paper |
|---|---|---|---|
| **SEMESTER III** | | | |
| 1 | PHP and MySQL | 1 | Web Technology |
| 2 | Object Oriented Programming Using C++ | 2 | Object Oriented Programming Using C++ |
| **SEMESTER – IV** | | | |
| 3 | Cyber Security Essentials-I | 3 | Cyber Security Essentials |
| 4 | Data Structure Using C++ | 4 | Data Structure Using C++ |
| **PRACTICAL (ANNUAL PATTERN)** | | | |
| 5 | Computer Science Practical Paper - II | 5 | Computer Science Practical Paper - II |
| 6 | Computer Science Practical Paper - III | 6 | Computer Science Practical Paper - III |

**B.Sc. Part – II Computer Science (Optional) (Semester – III)**
**Course Code: MJBCST24-301 Computer Science Paper – V**
**Course Title: Operating System**
**Total Contact Hours: 36 Hrs**
**Teaching Scheme: Theory – 02 Lect. / Week**

**Credits: 02** **Total Marks:40**

**Course Outcomes:**
Upon successful completion of this course, students will be able to

1. Understand the basic organization of operating system.
2. To give a brief about OS organization.
3. Understand memory management techniques.
4. To understand Shell operating system.

**UNIT I – Operating System Organization, Process Management And Memory Management.**

**(18.Hrs)**

System Software, Resource Abstraction, OS strategies. Types of operating systems - Multiprogramming, Batch, Time Sharing, Single user and Multiuser, Process Control & Real Time Systems.

Factors in operating system design, basic OS functions, implementation consideration; process modes, methods of requesting system services – system calls and system programs.

System view of the process and resources, initiating the OS, process address space, process abstraction, resource abstraction, process hierarchy, Thread model, Scheduling: Scheduling Mechanisms, Strategy selection, non-pre-emptive and pre-emptive strategies. Mapping address space to memory space, memory allocation strategies, fixed partition, variable partition, paging, virtual memory.

**UNIT II– Shell introduction and Shell Scripting** **(18.Hrs)**

What is shell and various type of shell, Various editors present in linux, Different modes of operation in vi editor ,What is shell script, Writing and executing the shell script ,Shell variable (user defined and system variables) ,System calls, Using system calls, Pipes and Filters ,Decision making in Shell Scripts (If else, switch), Loops in shell ,Functions ,Utility programs (cut, paste, join, tr , uniq utilities),Pattern matching utility (grep).

**Books Recommended:**

1. A Silberschatz, P.B. Galvin, G. Gagne, Operating Systems Concepts, 8th Edition, John Wiley Publications 2008.(Unit-I,Unit-II)

2. A.S. Tanenbaum, Modern Operating Systems, 3rd Edition, Pearson Education 2007.G. Nutt, Operating Systems: A Modern Perspective, 2nd Edition Pearson Education 1997.

W. Stallings, Operating Systems, Internals & Design Principles, 5th Edition, Prentice Hall of India. 2008. (Unit-I,Unit-III)

3. M. Milinkovic, Operating Systems- Concepts and design, Tata McGraw Hill 1992. (Unit-II)

Pg No.190 to 220,Pg No.223 to 235),(Unit-IV)

4. System Programming and Operating System – D. M. Dhamdhere(Unit-I,Unit-II,Unit-III)

5. Unix concept and applications ------ Sumitabha Das (Unit-IV)

6. Linux programming- Foreword By- Alan Cox (Unit-I,Unit-III)RedHalt Linux 718 Bill Ball , David Pitts

7. Unix shell programming- YashwantKanetkar(Unit-I,Unit-II,UnitIII,Unit IV)

**B.Sc. Part – II Computer Science (Optional) (Semester – III)**
**Course Code: MJBCST24-302 Computer Science Paper – VI**
**Course Title: Object Oriented Programming Using C++**

**Total Contact Hours: 36 Hrs**

**Teaching Scheme: Theory – 02 Lect. / Week**

**Credits: 02** **Total Marks: 40**

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**Course Outcomes:**

Upon successful completion of this course, students will be able to

1. understand the principles of web design.
2. understand how C++ improves C with object oriented features
3. learn syntax and semantics of C++ programming language
4. learn how to write inline functions for efficiency and performance.
5. learn how to overload functions and operators in C++.
6. learn how to design C++ classes for code reuse.
7. learn how inheritance promotes code reuse in C++.
8. learn how inheritance and virtual functions implement dynamic binding with polymorphism.

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**Unit – 1: Introduction to C++** **18 Hrs.**

1.1 Object oriented programming Concepts: Object, class, Encapsulation, Abstraction, Polymorphism, Inheritance
1.2 Procedure Oriented programming versus Object oriented programming
1.3 Basic C++ program:
  1.3.1 Header file, using namespace std, main(), input:>> extraction using cin and output: << insertion using cout operator
  1.3.2 C++ Tokens:
    1.3.2.1 Keywords - bool, class, delete, namespace, friend
    1.3.2.2 Identifiers, Constants, Strings
1.4 Structure of C++ Program
1.5 Benefits of C++ over C Language
1.6 C++ Data Types:
  1.6.1 Built-in / Fundamental: void, char, int, float, double
  1.6.2 User defined- struct, union, enum, class
  1.6.3 Derived- array, function, pointer, reference

1.7 Variable:
  1.7.1 Definition, Declaration, Initialisation
  1.7.2 Dynamic Initialisation and reference variables
1.8 Operators in C++:
  1.8.1 DMA operators: new, delete
  1.8.2 Scope resolution operator::
  1.8.3 Manipulators: setw, endl, setprecision
1.9 Function:
  1.9.1 Function Call: by value, by pointer, by reference, return by reference
  1.9.2 Default arguments, const arguments
  1.9.3 Inline function
  1.9.4 Function overloading

**Unit – 2: Object Oriented Programming** **18 Hrs.**

- 2.1 Class:
  - 2.1.1 Difference between struct and class
  - 2.1.2 Class specification: class declaration, class definition, adding data membersand member functions
  - 2.1.3 Access modifiers/ visibility labels – private, public, protected members
  - 2.1.4 Member function definition - inside the class and outside the class
  - 2.1.5 Object definition and memory allocation of object
  - 2.1.6 Use of this pointer
  - 2.1.7 Static members - data members and member function
  - 2.1.8 Scope of a variable - local, local to class, global
- 2.2 Friend function and friend class:
  - 2.2.1 Characteristics of friend function, Declaration and Definition of friend function
  - 2.2.2 Use of friend class
- 2.3 Constructor and Destructor:
  - 2.3.1 Constructor - Definition, Characteristics, features
  - 2.3.2 Types - Default, parameterized, copy
  - 2.3.3 Destructor- Definition, Need of destructor
- 2.4 Operator overloading:
  - 2.4.1 Concept, Rules
  - 2.4.2 Definition of operator function:
    - 2.4.2.1 Using member function to overload unary and binary operators Example: unary operator --, ++ and Binary-Arithmetic Operator
    - 2.4.2.2 Using friend function to overload unary and binary operators Example: unary operator --, ++ and Binary-Arithmetic Operator
- 2.5 Inheritance:
  - 2.5.1 Concept, Definition
  - 2.5.2 Types: single, multilevel, multiple, hierarchical, hybrid
  - 2.5.3 Defining derived class
  - 2.5.4 Introducing protected members, visibility of derived members
  - 2.5.5 Diamond problem with hybrid inheritance -virtual inheritance and virtual base class
- 2.6 Polymorphism:
  - 2.6.1 Concept, Definition
  - 2.6.2 Types: Compile time/early binding/static binding and run time/ late binding / dynamic binding
  - 2.6.3 Pointer to object
  - 2.6.4 Virtual and pure virtual functions -abstract class, rules for virtual functions

**Reference Books**


1. Object - Oriented Programming in C++ by Rajesh K. Shukla - Wiley India Pvt. Ltd
2. Object Oriented Programming Using C++ by Poonam Ponde
3. Object-Oriented Programming with C++ by E Balagurusamy - McGraw Hill India
4. Mastering C++ by K. R. Venugopal - McGraw Hill Higher Education
5. C++ Programming by D. Ravichandran
6. A Tour of C++ (2nd Edition) - Bjarne Stroustrup.
7. The C++ Programming Language (4th Edition) - Bjarne Stroustrup.

**MJBCSP24-303**

**Practical based on MJBCST24-301 & MJBCST24-302**

## Practical Based on MJBCST24-301

**Learning Objectives:**

1. Understand memory management techniques.
2. To understand Shell operating system.
3. Identify the need to create the special purpose operating system
4. Present case studies to demonstrate practical applications of different concepts.
5. Provide a scope to students where they can solve small, real life problems.

**Part A:**

Software Lab based on Operating Systems

Note: Following exercises can be performed using Linux or Unix

1. Write a program to check status of keyboard using interrupt handler
2. Write a program to implement copy command of DOS.
3. Write a program to display date and time of system
4. Write a program to implement pwd command of linux.
5. Write a program to implement wccommand oflinux.
6. Usage of following commands: ls, pwd, tty, cat, who, who am I, rm, mkdir, rmdir, touch, cd.
7. Usage of following commands: cal, cat(append), cat(concatenate), mv, cp, man, date.
8. Usage of following commands: chmod, grep, tput (clear, highlight), bc.
9. Write a shell script to check if the number entered at the command line is prime or not.
10. Write a shell script to modify "cal" command to display calendars of the specified months.
11. Write a shell script to modify "cal" command to display calendars of the specified range of months.
12. Write a shell script to accept a login name. If not a valid login name display message – "Entered login name is invalid".
13. Write a shell script to display date in the mm/dd/yy format.
14. Write a shell script to display on the screen sorted output of "who" command along with the total number of users .
15. Write a shell script to display the multiplication table any number.

## Practical Based on MJBCST24-302

Use "Problem Solving Techniques" for following problems and implement code through C++ programming language. It includes: Problem Analysis, Algorithm, Flowchart, Output Tracing using Algorithm, Source Code with Output

First introduce the C++ compilation process and components (cpp, g++, as only ) with a simple program and Debugging using(GDB).

| Sr. No. | Content |
|---|---|
| 1 | **Function Default Argument:**<br>i) To calculate perimeter of square(4*r), rectangle(2*l+2*b), triangle (a+b+c)<br>ii) To calculate area of square(r*r), rectangle(l*b), trapezium(1/2*h*(s1+s2))<br><br>Keeping other argument to default value zero. |
| 2 | **Function Overloading:**<br>i) To calculate perimeter of square(4*r), rectangle(2*l+2*b), triangle (a+b+c)<br>ii) To calculate area of square(r*r), rectangle(l*b), trapezium(1/2*h*(s1+s2)) |
| 3 | **Constructor And Destructor:**<br>Demonstrate the working of constructor (default, parameterised, copy) and destructor to allocate and de-allocate memory to or from an array of integers using DMA operators new and delete. |
| 4 | **Static Members:**<br>Display counter which counts numbers of objects of class, counter is incremented in constructor and decremented in destructor. |
| 5 | **Friend Function:**<br>Create two classes Celsius and Fahrenheit and define friend functions to add and to compare two temperatures. |
| 6 | **Operator Overloading:**<br>To overload binary arithmetic operator using member function/friend function |
| 7 | **Operator Overloading:**<br>To overload unary --, ++ operator using member function/friend function |
| 8 | **Pure Virtual Function And Inheritance:**<br>To specify base class Shape with pure virtual methods Input(), Perimeter() and Area(). Inherit three classes Square, Rectangle and Triangle from class Shape with appropriate data members and override methods Input(), Perimeter() and Area(). Use Pointer of class Shape to access objects of Three classes and Demonstrate working in "main" function. |

**B.Sc Part –II Computer Science (Optional) (Semester-III)**
**Course Code : MNBCST24-301**
**Course Title : C Programming Part-I**
**Total Contact Hours : 36 Hrs**
**Teaching Scheme : Theory -02 Lect./Week**

**Credits-02** **Total Marks :40**

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**Course Outcomes:** Upon successful completion of the course students will able to:

1) Demonstrate a familiarity of computer programming language concepts.
2) Understand to develop C programs on Linux platform.
3) Apply C programming control structures for problem solving.
4) Understand working and implementation of arrays.

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**Unit – 1 Problem Solving Using Computers** **15 hrs.**

**(A) Planning the Computer Program:** Concept of problem solving, Problem definition, Program design, Debugging, Types of errors in programming, Documentation.

**(B) Logical Continuum of Program of Programming :** Linux Operating System and C Language, Introduction to GCC Compiler, Components of Compilation Process, Getting Used to the Data Types , Built-In Standard Library, Nitty-Gritty of Programming, structures, Algorithm, Pseudocode, Procedure, Program, C Program Structure, Vi Editor, Whittling the First 'C' Program, Checking Whether the Compiler Is Working, Execution of Make file, Variable Declaration , Input / Output Statement, Format Specifiers, Escape Sequences, Operators.

**Unit – 2 Control Structures** **15 hrs.**

**Decision Making and Looping Constructs:** Introduction, The if Statement, The if-else Statement, Nested if-else, The Switch Case Statement, The while Loop, The odd Loop (do while), the for Loop, Loop Control Statements, Infinite Loop.

**Unit – 3 Arrays** **06 hrs.**

**Arrays:** Features, Definition, Types of Arrays, Single-Dimensional Array, Two- Dimensional Array, Multi-Dimensional Array.

**B.Sc Part –II Computer Science (Optional) (Semester-III)**
**Course Code : MNBCST24-302**
**Course Title : Web Technology Part-I**
**Total Contact Hours : 36 Hrs**
**Teaching Scheme : Theory -02 Lect./ Week**

**Credits-02** **Total Marks :40**

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**Course Outcomes :**Upon successful completion of this course, students will be able to

1. understand the principles of web design.
2. construct basic websites using HTML and Cascading Style Sheets.
3. build dynamic web pages with validation using JavaScript.
4. develop a modern web application that meets the current industry requirement.

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**Unit – 1: Introduction to Internet, HTML, CSS and JavaScript** **18 Hrs.**

1.1 Fundamentals
- 1.1.1 Introduction Internet.
- 1.1.2 WWW, Web Browsers, Web Servers.URL and URI.

1.2 Overview of different protocols
- 1.2.1 HTTP, SMTP, FTP.

1.3 HTML
- 1.3.1 Introduction,
- 1.3.2 Standard HTML Document Structure
- 1.3.3 Basic Text Formatting Elements <b>, , <i>, <s>, <emp>, <u>, <small>, <big>, <tt>.
- 1.3.4 Images <img>, Hypertext Links<a>,  and ,Lists -Ordered and Unordered, <input> (Type – Text, Password, Button, Submit, Reset).

1.4 Cascading Style Sheets
- 1.4.1 Introduction
- 1.4.2 Types of CSS
- 1.4.3 Basic syntax
- 1.4.4 Selectors –element, id, class, group, universal.
- 1.4.5 Style Properties of color, font, text, size and border

1.5 Java Script
- 1.5.1 Introduction
- 1.5.2 Document Object Model
- 1.5.3 Variables, Datatypes and Operators
- 1.5.4 Control Statement – if, if-else, break
- 1.5.5 Looping Statements – while, for
- 1.5.6 Element Access in Java scripts – getElementById() and getElementsByName()
- 1.5.7 Event and event handling – onClick(), onBlur(), onFocus(), onKeyPress()
- 1.5.8 dialog boxes – alert(), prompt(), confirm().

**Unit – 2: Introduction to PHP** **18 Hrs.**

2.1 Introduction PHP –

- 2.1.1 Introduction and Features,
- 2.1.2 PHP basic syntax <?php...?>,
- 2.1.3 Comment(single and multiline),
- 2.1.4 Echo command, PHP script execution in web browser.
- 2.1.5 Variables: Basics, Variable naming rules, unset(), gettype(), isset(),
- 2.1.6 constants -define() and constant()
- 2.1.7 Operators: Arithmetic, Comparison, Relational, Assignment, Increment Decrement, Ternary, Other operators(., $, @, {}, ``, =>),
- 2.1.8 Strings: Single Quoted and Double Quoted, escape sequences,
- 2.1.9 Forms: HTML forms, action and get & post methods. PHP super global variables ($_GET, $_POST, $_REQUEST
- 2.1.10 Decision-Making Statements: if, if... else, if ... elseif...else, switch statement, iterative Statements: for, while, do... while, foreach, break and continue statement
- 2.1.11 Exit statements: exit, die
- 2.1.12 User-Defined Functions: Declaring functions, Function call
- 2.1.13 Arrays: Concept, Types(Numerical/List, Associative/Maps, Multidimensional), accessing array elements

2.2 Database Connection – Connection to MySQL

- 2.2.1 Establishing Connection - mysqli_connect()
- 2.2.2 Closing connection - mysqli_close()
- 2.2.3 Select a database - mysqli_select_db()
- 2.2.4 Execute MySQL commands- mysqli_query()
- 2.2.5 Fetch data from tables - mysqli_fetch_row(), mysqli_fetch_array(), mysqli_fetch_assoc()

**Reference Books –**


1. Web Programming – John Dean, John and Bartlett Learning
2. Internet Fundamentals & Concepts – Shubhra Garg, S.K.Kataria& Sons
3. Web Technologies HTML, JavaScript, PHP, Java, JSP, ASP.NET, XML, and AJAX - Comprehensive Problem Solver, Black Book -Kogent Learning Solutions Inc, Dreamtech Press, Willey India Pvt Ltd.
4. Internet and World Wide Web How to Program – P. J. Deitel, H. M. Deitel,, Pearson
5. PHP and MySQL byDreamtech Publications
6. PHP Concepts Unleashed for Novice – Vol I - By Poornima Naik, Kavita Oza, Evincepub Publishing
7. PHP A Beginner's Guide – Vikram Vaswami
8. Beginning PHP 6, Apache, MySQL Web Development- By Timothy Boronczyk, ElizabethNaramore, Jason Gerner, Yann Le Scouarnec, Zeremy Stolz, Michael K. Glass
9. PHP and MySQL by Rajendra Salokhe, Aruta Publications
10. Learning Laravel: The easiest way – Jack Vo, Lean Publishing
11. Beginning Laravel -Sanjib Sinha, Apress
12. Web application development with Laravel PHP Framework version 4 - Jamal Armel, Metropolia

**Paper code MNBCSP24-303**

**Practical based on MNBCST24- 301 & MN-BCST24 302**

| Sr. No. | Name of the Practical |
|---|---|
| 1 | Converting degrees Celsius to Fahrenheit and vice versa? |
| 2 | Display three input numbers in sorted (non-decreasing) order? |
| 3 | Given a positive integer value n (>= 0) display number, square and cube of numbers from 1 to n in a tabular format? |
| 4 | Given an input positive integer number, display odd numbers from in the range[1,n]? |
| 5 | Display first mathematical tables, each table up to 10 rows? Generalize this to display first n (> 0) mathematical tables up to m (m > 0) rows? |
| 6 | Display the first n (n > 0) terms of the fibonacci sequence? |
| 7 | Given two positive integer numbers n1 and n2 check if the numbers are consecutive numbers of the fibonacci sequence |
| 8 | Extract digits of an integer number (left to right and right to left)? |
| 9 | Check if a given positive integer number is a palindrome or not? |
| 10 | Compute character grade from the marks ($0 \leq$ marks $\leq 100$) of a subject. Grading Scheme: 80-100 : A, 60 - 79: B, 50 - 59: C, 40-49: D, 0-39: F? Solve this using both else-if ladder and switch case? |
| 11 | Check if a given positive integer number Armstrong number or not |
| 12 | Compute prime factors of a positive integer number |
| 14. | Create a web page to demonstrate the use of text formatting elements. |
| 15. | Create a web page having a link to another web page containing a gallery of images. |
| 16. | Design a web page to demonstrate CSS selectors. |
| 17. | Design a Web page to demonstrate the use of – CSS Text, Color, Border, and Size properties. |
| 18. | Design a web page having three sections Header, Footer and Navigation Bar. Use ,, <ul> and CSS. |
| 19. | Create a web page<br>i) To check given number is odd or even<br>ii) To check given number is a Palindrome or not.<br>iii) To check given number is Armstrong or not. |
| 20. | Create a web page to perform simple arithmetic calculations |
| 21. | Create a web page with a Textbox and 4 buttons. Click on the 1st button will display the text entered in the text box on the web page, click on 2nd button will change text color, click on 3rd button will change font and click on 4th button will set border to text. |
| 22. | Design an HTML form with the following fields and validate user input using JavaScript: Roll No., Name and Email address. |
| 23. | Design a web page to input temperature in degree Celsius. Convert the temperature to degree Fahrenheit using PHP script. |
| 24 | Design a web page to input a number. Using PHP script check whether given number is Odd/Even. |
| 25. | Design a web page to input a number. Using PHP script check whether given number is Palindrome/Armstrong and display message in Web page accordingly. |
| 26. | Design a web page to input a number. Using PHP script check whether given number is Prime or Not. |
| 28. | Write a PHP script that will display array elements, smallest element in array, largest element in array and Sum of elements of array. (Use hard coded array) |
| 29. | Write PHP script to display 'n' terms of Fibonacci series using user defined function. |
| 30. | Write PHP script to display factorial of natural number using user defined function. |

**B.Sc Part –II Computer Science (Optional) (Semester-III)**
**Course Code : OEBCS24-301**
**Course Title : Fundamental of computer- I**
**Total Contact Hours : 36 Hrs**
**Teaching Scheme : Theory -02 Lect./ Week**

**Credits-02** **Total Marks :50**

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**Course Outcomes:** Upon successful completion of this course, students will be able to

1. Describe the basic components and functions of a computer system.
2. Explain the different types of hardware, software, and operating systems.
3. Understand basic data representation, including number systems (binary, decimal, hexadecimal).

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**UNIT-1:**
**Introduction to computer and Basic Organization:** **10 hrs**
Block Diagram of Computer, History of Computer, Applications of computer, Types of Computers, Computer Languages

**UNIT-2:** **10 hrs**
**Peripheral Devices:** Input Devices, Output Devices, Memory Devices, Computers Hardware, Network Protocols

**UNIT – 3:** **16 hrs**
**Number System and Binary Codes:**
Decimal Number System, Binary Number System, Octal Number System, Hexadecimal Number System, Number system Relationship, Number system Conversion, Binary Codes

## Practical based on OEBCS24-301

1. Identify various components of Computer
2. Classify System and Application Software
3. Identify output(Monitor and Printer) devices
4. Identify Input(Pointing and scanning) devices
5. Demonstrate Hardware Component – CPU and Motherboard
6. Internal and External DOS commands
7. Number Conversion:
   1. Decimal to Binary & vice versa
   2. Binary to Octal & vice versa
   3. Decimal to Hexadecimal & vice versa
8. Demonstrate to handle Paint application
9. Demonstrate to handle Notepad application
10. Demonstrate to handle Calculator application
11. Write an algorithm on mathematical operation on given number
12. Installation of different application

**Reference Books –**


1. "Fundamentals of Computers" by V. Rajaraman
2. "Introduction to Computers" by Peter Norton
3. "Go! All in One: Computer Concepts and Applications" by Shelly, Cashman, and Vermaat

**B.Sc Part –II Computer Science (Optional) (Semester-III)**
**Course Code : VSCI-BCSP24- 301 (SEC-II)**
**Course Title : Practical on HTML and CSS**
**Total Contact Hours : 36 Hrs**
**Teaching Scheme : Practical -1practical / Week**

**Credits-02** **Total Marks :50**

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**Course Outcomes:** Upon successful completion of this course, students will be able to

1. Understand the principles of web design.
2. Construct basic web sites using HTML and Cascading Style Sheets.

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1. Design a welcome page by using the tags like title, head and body
2. Design a webpage to display use of all the head tags
3. Design a webpage to showcase use of marquee tags
4. Design a html page to display an history of your college using various text formatting tags
5. Write Html program to display a table with 5 rows and 4 columns. Provide appropriate heading to the form
6. Design HTML Page to display the table of your last semester examination
7. Design HTML Page to display the table of your last semester examination
8. Design HTML page to demonstrate a Clickable image
9. Write a CSS code to change the square into circle when mouse is over to the square shape
10. Write a CSS code to create 3 different colors box which partially overlapped to each other
11. Design your personal website using external CSS
12. Create a web page having a link to another web page containing a gallery of images.
13. Design a web page to demonstrate CSS selectors.
14. Design a Web page to demonstrate the use of – CSS Text, Color, Border, and Size properties.
15. Design a web page having three sections Header, Footer and Navigation Bar.

    Use ,, <ul> and CSS.

**Reference book:**


1. Web Programming– John Dean, John and Bartlett Learning
2. Internet Fundamentals & Concepts –Shubhra Garg, S.K.Kataria& Sons
3. PHP and MySQL by DreamtechPublications
4. Angular: Up and Running: Learning Angular, Step by Step by Shyam Seshadri, O′Reilly

**B.Sc Part –II Computer Science (Optional) (Semester-III)**
**Course Code : SECI-BCSP24- 301 (SEC-II)**
**Course Title : Practical on JavaScript**
**Total Contact Hours : 36 hrs**
**Teaching Scheme : Practical -01 practical / Week**

**Credits-02** **Total Marks :50**

**Course Outcomes :**

Upon Successful Completion of this course , student will be able to

1. Understand the basic concepts of Javascript.
2. To acquire programming skills in Javascript.
3. To acquire Object Oriented Skills in Javasvript .
4. Design a web page to interact with user.
5. Handle different events like mouse, key, focus for user interaction

**Practical Based on SECI-BCSP24- 301 (SEC-II)**

1. Write a JavaScript Program to print Hello Wolrd.
2. Write a JavaScript Program to Add numbers.
3. Write a JavaScript Program to Check Armstrong Number.
4. Design Alert Button using JavaScript .
5. Write a JavaScript Program to implement CheckBox, RadioButton ,Dropdown List.
6. Create Home Page using JavaScript.
7. Create Web Form for Student Details.
8. Write a Using JavaScript Programe to implement Click Event.
9. Create Login Page Using JavaScript.
10. Write a JavaScript Program to make Calculator.

**Text Book/Reference Book:**


1. Mastering HTML, CSS & JavaScript BPB Publication
2. Web Technology – Ramesh Bangia
   Java script for beginners, Mahesh Bhave & Sunil Patekar, Shroff publishers & distributer PVT,LTD
3. "Core Web Programming", Marty Hall, Larry Brown ,Pearson Education, 2ndEdition,2001

**B.Sc. Part – II Computer Science (Optional) (Semester – IV)**
**Course Code: MJBCST24-401**

**Computer Science Paper – VII**

**Course Title: Cyber Security Essentials**
**Total Contact Hours: 36 Hrs**
**Teaching Scheme: Theory – 02 Lect. / Week**

**Credits: 02** **Total Marks: 40**

**Course Outcomes:**
Upon successful completion of this course, students will be able to

1. understand the concept of information security management.
2. learn different access control methods.
3. understand wireless network security.
4. learn cyber security laws and the importance of security audit.

**Unit – 1: Computer Networks and Information Security** **18 Hrs.**

- **Basic Terminologies:** Network, Internet, Internet Protocols, IP Address, MAC Address, Domain Name Server (DNS), DHCP. Components of computer networks - files server, workstation. Network, devices - hub, repeater, bridge, router, gateway.
- **OSI Model, TCP/IP Model**
- **Information Security:** Network Security, Types of Network Security, Cyber Security, CIA Triad, Common Types of Attacks -Distributed denial of service (DDoS), Man in the middle, Email attacks, Password attacks, Malware attacks. DoS attack, Goals for Security, E-commerce Security, Security protocols, Computer Forensics, Security Management- Overview of Security Management, Information Classification Process, Security Policy, Risk Management, Security Procedures and Guidelines, Business Continuity and Disaster Recovery, Ethics and Best Practices.

**Unit – 2: Network Security, Access Controls, Cyber Security and Cyber Laws** **18 Hrs.**

- **Wireless Network Security:** Components of wireless networks, Security issues in wireless, Firewall, types of firewall.
- **Access Controls:** Overview of Authentication and Authorization, Overview of Intrusion Detection Systems, Intrusion Detection Systems and Intrusion Prevention Systems.
- **Introduction to Cyber Security:** Firewalls, Intrusion Detection Systems, Response, Scanning, Security policy, Threat Management, Cyber Security Vulnerabilities and Cyber Security Safeguards Introduction to Cryptography, Network-based Intrusion detection, Intrusion prevention system, ethical hacking
- **Cyber Security:** Email security: PGP and SMIME, Web Security: web authentication, SSL and SET, Database Security.
- **Cyber Security Laws:** Cyber Crime, Security Assurance, Security Laws, Intellectual Property Rights, International Standards, Security Audit- Need, Importance.

**References:**


1. Computer Network -AS Tannenbum
2. Cyber Security for Beginners: Everything you need to know about it (Cyber security, Cyber war, Hacking) - Harry Colvin.
3. How NOT To Use Your Smartphone - Rodney D Cambridge.
4. Online Safety: Scams, SPAM, Viruses and Clouds (Cyber Security Community Book - A.M. Perry.
5. Cyber Security Essentials- James Graham, Richard Howard, Ryon Olson (E-book)
6. Network Security Secrets and Solutions – Stuart McClure, Joe Scambray, George Kurtz.
7. Information Assurance Handbook: Effective Computer Security and Risk Management Strategies – Corey Schou, Steven Hernandez.
8. Applied Network Security Monitoring: Collection, Detection, and Analysis – Chris Sanders, Jason Smith.
9. E-Commerce- Indian Perspective- P.T. Joseph S.J.
10. E-Commerce and Security- Kjell Orsborn (E-book)

**B.Sc. Part – II Computer Science (Optional) (Semester – IV)**

**Course Code: MJBCST24-402 Computer Science Paper – VIII**

**Course Title: Data Structure Using C++**

**Total Contact Hours: 36 Hrs Teaching Scheme:**

**Theory – 02 Lect. / Week**

**Credits: 02** **Total Marks: 40**

**Course Outcomes:**

Upon successful completion of this course, students will be able to

1. understand the basic concepts such as Abstract Data Types, Linear and Non-Linear Data structures.
2. choose appropriate data structures to represent data items in real-world problems.
3. analyze the time and space complexities of algorithms.
4. design programs using a variety of data structures such as array, stacks, queues, and linked list.
5. analyze and implement various kinds of searching and sorting techniques.

**Unit – 1: Introduction to Data Structures: Stack and Queue** **18 Hrs.**

**1.1 Concept of Abstract Data Types:**

1.1.1 Definitions, Data types, Data Object, Data structure (D-Data, A-Axioms, O-Operations),

1.1.2 Classification (Primitive, Non-Primitive: Array, Files, List: Linear, Non-Linear),

1.1.3 Basic Operations (Traversing, Searching, Insertion, Deletion, Sorting, Merging)

**1.2 Sorting**:

1.2.1 Definition

1.2.2 Stable-Unstable Sorting

1.2.3 Adaptive-Non Adaptive Sorting

1.2.4 Order of Sorting (Increasing, Decreasing, Non Increasing, Non Decreasing)

**1.3 Sorting Techniques**: Bubble sort, Selection sort, Insertion sort, Quick sort

**1.4 Searching**: Linear and Binary Search

**1.5 Stack**:

1.5.1 Definition

1.5.2 Operations (Push, Pop, Peek, Isfull, Isempty),

1.5.3 Implementation using array

**1.6 Applications of stack**: Mathematical Expressions (Well-Parentheses, Notations: Infix, Prefix, Postfix, Conversion from Infix to Postfix and Infix to Prefix)

**1.7 Queue** –

1.7.1 Definition of queue

1.7.2 Operations (Enqueue, Dequeue, Peek, Isfull, Isempty)

1.7.3 Types of queue (Linear, Circular, Priority)

1.7.4 Implementation Linear Queue using array(Compaction)

1.7.5 Applications of Queue

**Unit – 2: Linked List and Trees** **18 Hrs.**

**2.1 Linked List**:

2.1.1 Concept of linked list

2.1.2 Types Of Linked List (Singly-Doubly, Linear-Circular)

2.1.3 Implementation of Linked list

2.1.4 Operations on linear linked list (Insertion, Deletion, Display, Search)

2.1.5 Application

2.1.5.1 Implementation of stack and queue using linked list.

**2.2 Trees**:

2.2.1 Definition

2.2.2 Terminologies (Root, Child, Parent, Siblings, Descendant, Ancestor, Leaf/External node, Branch node/Internal node, Degree, Edge, Path, Level, Depth, Height of node, Height of tree, Forest)

**2.3 Binary Tree**:

2.3.1 Definition

2.3.2 Types (Full/Proper/Plane, Complete, Perfect, Skewed, Balanced)

**2.4 Binary Search Tree**:

2.4.1 Definition

2.4.2 Representation

2.4.3 Operations (Insertion, Deletion, Search, Tree Traversal: Preorder, Inorder, Postorder)

**Reference Books**


1. Data Structures Using C and C++ by Yedidyah Langsam, Aaron M. Tenenbaum
2. Data Strucure using C++ - E Balagurusamy
3. Data Structures Through C++ by Yashavant Kanetkar
4. Data Strucure Using C++ by D. S. Malik


## Paper code MJBCSP24-403

## Practical based on MJBCST24- 401 & MJBCST24-402

## Practical Based on MJBCST24-401

1. Study the steps to protect your personal computer system by creating user accounts with passwords and types of user accounts for safety and security

2. Study the steps to protect a Microsoft Words Document of different operating system

3. Study the steps to remove passwords from Microsoft Word

4. Study various methods of protecting and security database

5. Study “How to make strong passwords” and “passwords cracking techniques”

6. Study the steps to hack a strong password.

## Practical Based on MJBCST24-402

Use "Problem Solving Techniques" for the following problems. It includes: Problem Analysis, Algorithm, Flowchart, Output Tracing using Algorithm, and Source Code with Output.
Compiler: GNU g++ and Debugging using (GDB).

| Sr. No | Content |
|---|---|
| 1 | **Stack And Application:**(Using Array)<br>i) Implementation and Operations on Stack<br>ii) Check Expression is Well-Parenthesised or not "Use [,(,{ brackets"<br>iii) Conversion of infix expression to postfix and prefix "Use ( only" |
| 2 | **Queue:**(Using Array)<br>i) Implementation and Operations on Linear Queue<br>ii) Implementation and Operations on Circular Queue (Use Count) |
| 3 | **Sorting**:<br>i) Bubble sort<br>ii)Insertion sort<br>iii)Selection sort<br>iv)Quick Sort(recursive function) |
| 4 | **Searching**:<br>i) Linear Search<br>ii) Binary Search |
| 5 | **Linked List**:<br>i) Implementation and Operations on Linear Linked List<br>ii) Implementation and Operations on Circular Linked List(Use Count)<br>iii) Implementation and Operations on Circular Linked List |
| 6 | **Stack using Linked List**:<br>i) Implementation and Operations using Linear Linked List on Stack |
| 7 | **Queue using Linked List**:<br>i) Implementation and Operations using Linear Linked List on Queue<br>ii) Implementation and Operations using Circular Linked List on Circular Queue |
| 8 | **Binary Search Tree using Linked List**:<br>i) Implementation and Operations (insert, display inorder, preorder and post order with recursive function) using Linked List on BST. |

**B.Sc Part –II Computer Science (Optional) (Semester-IV)**
**Course Code : MNBCST24-401**
**Course Title : C Programming Part-II**
**Total Contact Hours : 36 Hrs**
**Teaching Scheme : Theory -02 Lect./Week**

**Credits-02** **Total Marks :40**

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**Course Outcomes:** Upon successful completion of the course students will able to:

1) Understand the concept and importance of pointers in C language.
2) Demonstrate an understanding of functions in problem solving.
3) Understand working of structure and dynamic memory allocation.
4) Apply file handling techniques using C language.

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**Unit – 1 Pointers and Functions:** **15 hrs.**

**(A) Pointers:** Pointer Data Type, Pointer Declaration, Pointer Initialization, Arrays and Pointers, Pointers and One-Dimensional Arrays, Pointers and Two-Dimensional Arrays

**(B) Programming for Functional Functions:** Introduction, Function Declaration, Function Definition, Function Call, Nested Functions ,Recursion.

**Unit – 2 Structures:** **15 hrs.**

**(A) Structure and Dynamic Memory Allocation:** User-Defined Data Types, Defining Structure, Nesting of Structure, Dynamic Memory Allocation,.

**Unit – 3 File Handling:** **06 hrs.**

**(B) File Handling:** Defining and opening a file, File opening modes- read, write, append, closing a file, Input/Output Operations on file: getc(), putc(), getw(), putw(), fprintf(), fscanf(), ftell(), fseek(), rewind().

**Reference Books:**

Programming in C by E Balgurusamy

C How To Program by Paul Deitel and Harvey Deitel

C : The Complete Reference by Herbert Schildt

## Practical Based on MNBCST24-401

1. Write a menu driven program to convert the given temperature from Fahrenheit to Celsius and vice versa depending upon user's choice.
2. WAP to calculate total marks, percentage and grade of a student. Marks obtained in each of the three subjects are to be input by the user. Assign grades according to the following criteria:

   Grade A: Percentage >=80
   Grade B: Percentage>=70 and <80 Grade C: Percentage>=60 and <70 Grade D: Percentage>=40 and <60 Grade E: Percentage<40
3. Write a menu-driven program, using user-defined functions to find the area of rectangle, square, circle and triangle by accepting suitable input parameters from user.
4. WAP to display the first n terms of Fibonacci sequence.
5. WAP to print palindrome numbers between given range.
6. WAP to find sum of the following series for n terms: 1 – 2/2! + 3/3! -------n/n!
7. WAP to sort given array in ascending as well as descending order.
8. WAP to calculate the sum and product of two compatible matrices.
9. WAP to check whether a given number is prime or not using nested function by introducing factorial function."P is prime number if and only if (P-1)! + 1 is divisible by P".
10. WAP to calculate factorial of given number using recursive function.
11. WAP to dynamically allocate memory of n items to an integer pointer, display their sum and average.
12. WAP to swap two numbers using function (call by reference).
13. WAP to dynamically allocate memory of n items to a character array, end it with '\0' and count number of vowels, consonants and spaces in it.
14. WAP to using user defined data type structure to store information of a student rollno, name, percentage. Create array of 10 students and display students having percentage > 70.
15. WAP to copy contain of text file into another text file.
16. WAP to count number of lines and characters of given text file.

**B.Sc Part –II Computer Science (Optional) (Semester-IV)**
**Course Code : MNBCST24-402**
**Course Title : Web Technology Part-II**
**Total Contact Hours : 36 Hrs**
**Teaching Scheme : Theory -02 Lect./Week**

**Credits-02** **Total Marks :40**

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**Course Outcomes:** Upon successful completion of this course, the students will be able to:

1. Apply knowledge of client side scripting.
2. Develop web application using PHP.
3. Design web application using MVC and Angular JS.
4. Demonstrate use of server side technologies.
5. Explore newer tools for web development.

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**UNIT-1:**

**Front End Web Designing HTML and CSS:**

HTML Design Patterns: HTML Structure, XHTML, DOCTYPE, Header Elements, Conditional Style Sheet, Structural Block Elements, Terminal Block Elements, Multipurpose Block Elements, Inline Elements, Class and ID Attributes, HTML Whitespaces CSS Selector and Inheritance: Type, Class and ID Selector, Position and Group Selectors, Attribute Selectors, Pseudo-element Selectors, Pseudo-class Selectors, Subclass Selector, Inheritance, Visual Inheritance, and Bootstrap

**UNIT-2:**

**Javascript Basics:**

Introduction to javascript, Basic program of javascript, variables, functions, conditions, loops and repetition, Function, Arrays – DOM, Built-in Objects, Regular Expression,
Exceptions, Event handling In Javascript, Validating HTML form data using javascript, Validation- AJAX - JQuery

**UNIT-3:**

**Angular Node JS:**

Angular - Web Application architecture, MVC and MVVM design pattern, Angular architecture, Angular building blocks, Forms implementation, Filters, Services, Consuming REST Web Services, Modules: Built-in and custom, Directives: Built-in and custom, Routing and Navigation, Animations, Testing Angular application.

Node, NodeJsarchitecture ,Modules: Built-in and custom, Event loop, Asynchronous application , Events, Listeners, Timers, and Callbacks in Node.js. Testing node application. Introduction to Mongo DB- Accessing MongoDB from Node.js.

**UNIT-4:**

**PHP basic:**

PHP Basics: Embedding PHP code in Your Web Pages, Commenting Your Code, Outputting Data to the Browser, PHP supported Data Types, Identifiers, Variables, Constants, Expressions, String Interpolation, and Control Structures Functions: Invoking a Function, Creating a Function, Function Libraries

Array: What is Array?, Creating an array, outputting an Array,
Merging, slicing, splicing and Dissecting Arrays, Other useful Array, Functions.

**PHP session management (state management):**

Session Handlers: What Is Session Handling, Configuration Directives, Working with Sessions, Practical Session-Handling Examples, Creating Custom Session Handlers, PHP cookies,
Uploading Files with PHP

**Experiment List**

1. Create html pages for website like login, registration and about us pages.
2. Apply and design the created HTML pages using CSS
3. Write a program demonstrating javascript functions and different validations.
4. Write a program to read and write HTML contents with JQuery.
5. Create a simple Testing Angular application.
6. Write a program demonstrating NodeJs application.
7. Write a program to handle the error in NodeJs..
8. Write a study experiment for Installing Apache and PHP on Linux, Configuring PHP at Build Time on Linux. Or Installation of XAMPP.
9. Hello world Program-Embedded HTML with PHP.
10. Program based on PHP variables, Expression, arrays, control structure.
11. Experiment Based on OOP and Advance OOP PHP
12. Form validation using PHP using regular expressions
13. Upload various types of file from client side to server with validation
14. Write a program to create and handle a session, cookie in PHP
15. Insert user entered data in form to MySQL database using PHP
16. Update user's data stored in MySQL database using PHP
17. Write a program to manage session in PHP having login facility in any web application
18. Write a program to show stored cookies, update, retrieve and delete from browser.

**Reference Books**

**1.** Pro HTML5 and CSS3 Design Patterns - Michael Bowers, Dionysios Synodinos and Victor Sumner - Apress edition
**2.** Web Development with Node and Express- Ethan Brown- Published by O'Reilly Media

**B.Sc Part –II Computer Science (Optional) (Semester-IV)**
**Course Code : OECSOO24-301**
**Course Title : Fundamental of Computer Part - II**
**Total Contact Hours : 36 Hrs**
**Teaching Scheme : Theory -02 Lect./Week**

**Credits-02** **Total Marks :50**

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**Course Outcomes:** Upon successful completion of the course students will able to:

1. Understand the structure and functioning of the Internet and the World Wide Web (WWW)
2. Communicate using e-mail services while following ethical practices and standard conventions.
3. Explain the need for and types of computer networks, and identify common networking technologies.
4. Design and develop simple web pages using HTML and CSS.

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**UNIT-1:** **10 hrs.**

**Internet, World Wide Web:** Introduction to Internet, Internet Access, Internet Basics, Protocols-TCP/IP,HTTP,FTP, Addressing, World Wide Web(WWW), Web Pages & HTML, Web browsers, Searching for information-search engines. Internet chat. Applications of Internet. Advantages and Disadvantages of Internet.

**UNIT-2:** **10 hrs.**

**E-mail:** Introduction to e-mail, Mailing basics, e-mail ethics, creating an e-mail id, spanning, composing a mail, receiving and replying the mail, Advantages and Disadvantages of e- mail services, Mailing lists, News groups

**UNIT-3:** **16 hrs.**

**Networking& web Designing:** The need and use of Computer Networks. Concepts of Networking-LAN, WAN, MAN. ISP's in India and their responsibilities. Video Conference, downloading and uploading files. Introduction to HTML, Basic tags, Formatting tags, Style sheets, Table handling, Lists, Hyperlinks in HTML.

**REFERENCES:**


1. Microsoft Office 2007 Training Guide, BPB Publications-2010
2. Fundamentals of Internet & WWW, Greenlaw & Hepp, Tata McGraw Hill 2002
3. Fundamentals of Computers,V Rajaraman 6th edition PHI Learning Private Limited 2014
4. Sanjay Saxena: A First Course in Computers. Vikas Publishing House.
5. HTML 4 for Dummies, Ed Tittel 5th edition


**Experiment List**

1. Demonstrate how to create email-id and uploading and downloading files
2. Illustrate the booting procedure (using windows and linux)
3. Demonstrate installation of application software (in windows and linux)
4. Identify various computer languages
5. Differentiate the compiler and interpreters
6. State computer networks and internet**.**
7. Compose and send an email with the subject "Assignment Submission" and attach a file.
8. Explain and demonstrate the difference between uploading and downloading a file using Google Drive. Attend or schedule a video conference using Zoom/Google Meet and record the session (with permission).
9. Create a table using HTML to display your weekly class timetable.
10. Develop a simple "About Me" webpage using HTML and CSS.

**B.Sc Part –II Computer Science (Optional) (Semester-IV)**
**Course Code : SECII-CSP24- 401**

**Course Title : Practical on PHP Programming**
**Total Contact Hours : 36 Hrs (45 Lectures of 48 Min. )**
**Teaching Scheme : Practical -01 Practical/ Week**

**Credits-02** **Total Marks :50**

**Course Outcomes :**

Upon Successful Completion of this course , student will be able to

1. Understand the basic concepts of PHP.
2. To acquire programming skills in PHP.
3. To acquire Object Oriented Skills in PHP.
4. Design a web page to interact with user.
5. Handle different events like mouse, key, focus for user interaction

**Unit-I Introduction to PHP.**

What is PHP?, Advantages and Disadvantages of PHP, PHP Basic syntax, Variables, Data types,PHP Constant, PHP Operators, Benefits of using PHP MYSQL, Embed PHP in HTML/HTML inPHP, First PHP Program.

**Control Flow Statement and Array:**Decision making statement: If Statement, IF…….Else Statement, if… if else Statement ,Nested if Statement.

**Looping Statement:** For loop, While loop, Do….while loop, for each loop.

**Branching Statement:** Switch case Statement Arrays:PHP Enumerated Arrays, Associative Arrays, Arrays Iteration, PHP Multi-dimensional Arrays, Arrays Functions.

**Unit-II: PHP OOPS And My SQL (18.Hrs)**

**PHP OOPs:**

Introduction, Declaring class, objects, constructor, destructor, Inheritance, Polymorphism, Abstract methodand class, Interface.**MySQL:**Introduction to Databases, Installation, Connection with MySQL, Create MySQL database, Creating database, Creating tables, Inserting values in table, Displaying, changing, searching, deleting recordsfrom the table

**Reference Books:**


1. PHP and MySQL By Dreamtech Publications
2. PHP 5.1 for Beginners – By Ivan Bayross and Sharanam Shah(Shroff Publishers & Distributors)
3. Beginning PHP 6, Apache, MySQL Web Development- By Timothy Boronczyk, ElizabethNaramore, Jason Gerner, Yann Le Scouarnec, Zeremy Stolz, Michael K. Glass


**Practical based on PHP Programming SECII-CSP24- 401**

1. Write a php program to addition , subtraction, multiplication, division.
2. Write a php program for factorial of given number.
3. Write a php program for swapping two numbers.
4. Write a php program for prime or not prime.
5. Write a php program for reverse number.
6. Write a php program to find the area of triangle using function
7. Write a php program to find area of circle and rectangle using function
8. Write a php program to adding two numbers using user input.
9. Write a php program to a conditional statements.
10. Write a php program to a looping statements.
11. Write a php program to a switching statements.
12. To create a simple web page using php.
13. Write a php program for get and post methods