

**Under-Graduate Programme in Bachelor of
Science (B.Sc.) (Computer Science) /
Bachelor of Arts (B.A.) (Computer Applications) /
B.Sc. (Physical Science with Computer Science)**

Scheme And Syllabus

(NEP-2020)

**Effective from
Academic Session 2025-2026**

Abbreviations Used:

L	Lectures
T	Tutorials
P	Practical
C	Credits
H	Hours
EE	External Examinations
IA	Internal Assessment
CO	Course Outcomes
UG	Undergraduate
DSC	Discipline Specific Course
AEC	Ability Enhancement Course
VAC	Value Added Course
MC	Minor Course
SEC	Skill Enhancement Course
I/A/P/C	Internship/Apprenticeship/Project/Community Outreach

Semester- I

Sr. No	Course Code	Course Type	Course Title	Contact Hrs/week				C	Semester End Marks	
				L	T	P	H		EE	IA
1.	COMP-101	DSC-A1	Fundamentals of Computers and Office Productivity Tools	4	0	0	4	4	70	30
2.		DSC-B1	To be chosen from other streams	-	-	-	-	4	70	30
3.		MC-1	To be chosen from other streams	-	-	-	-	4	70	30
4.		MDC- 1	To be chosen from corresponding Multidisciplinary pool	-	-	-	-	3	50	25
5.	COMP -151	SEC-1	Fundamentals of Computers and Office Productivity Tools - Lab	0	0	6	6	3	50	25
6.		AEC-1	To be chosen from corresponding Pool	-	-	-	-	2	35	15
TOTAL								20	345	155
									Total = 500	

Semester -II

Sr. No	Course Code	Course Type	Course Title	Contact Hrs/week				C	Semester End Marks	
				L	T	P	H		EE	IA
1.	COMP -201	DSC-A2	Internet and Web Technologies	4	0	0	4	4	70	30
2.		DSC-B2	To be chosen from other streams	-	-	-	-	4	70	30
3.		MC-2	To be chosen from other streams	-	-	-	-	4	70	30
4.		MDC- 2	To be chosen from corresponding multidisciplinary pool	-	-	-	-	3	50	25
5.	COMP -251	SEC-2	Internet and Web Technologies- Lab	0	0	6	6	3	50	25
6.		I/A/P/C-1	As per HPU Guidelines	-	-	-	-	4	70	30
7.		VAC-1	To be chosen from VAC Pool	-	-	-	-	2	35	15
TOTAL								24	415	185
									Total = 600	

- Student on exit will be awarded undergraduate certificate after securing 44 credits in semester I and II in the relevant discipline.

Fundamentals of Computers and Office Productivity Tools - Lab

COMP-151

Max Marks: 75

Credit (Practical) 3

90 Hours

Course Outcomes (COs)

After completing this course, students will be able to:

- CO1** Create, format, and enhance professional documents using word processing software, including advanced features like mail merge and document automation.
- CO2** Utilize spreadsheet software for data management and analysis by applying formulas, functions, charts, pivot tables, and conditional formatting.
- CO3** Design and deliver effective presentations using multimedia elements, slide transitions, animations, and layout customization for impactful communication.
- CO4** Apply advanced office productivity tools for document automation, data visualization, and multimedia integration.

SECTION-I

Lab 1 Introduction to Word Processing

- a. Navigating the Word interface, toolbars, and menu options.
- b. Creating, saving, and opening documents in different formats (DOCX, ODT, PDF).

Lab 2 Text Formatting and Page Layout

- a. Applying font styles, colors, and effects.
- b. Adjusting paragraph alignment, line spacing, indentation, and page breaks.

Lab 3 Working with Tables, Lists, and Columns

- a. Creating and formatting tables, bulleted and numbered lists, and multi-column layouts.

Lab 4 Inserting Objects and Hyperlinks

- a. Adding images, shapes, SmartArt, and hyperlinks.

Lab 5 Advanced Word Processing Features

- a. Using headers, footers, page numbering, and watermarks.
- b. Checking spelling, grammar, and using thesaurus tools.

Lab 6 Mail Merge and Document Automation

- a. Creating a mail merge document for letters, labels, and emails.
- b. Using Excel as a data source for merging.

SECTION-II

Lab 7 Introduction to Spreadsheets

- a. Understanding rows, columns, cells, and worksheets.
- b. Creating, saving, and opening spreadsheets.

Lab 8 Data Entry, Formatting, and Editing

- a. Entering and formatting text, numbers, and dates.
- b. Using cell styles, themes, and conditional formatting.

Lab 9 Basic Formulas and Functions

- a. Performing arithmetic operations in spreadsheets.
- b. Using basic functions: SUM, AVERAGE, MAX, MIN, COUNT.

Lab 10 Data Sorting, Filtering, and Validation

- a. Sorting and filtering data using AutoFilter and advanced filters.
- b. Applying data validation (drop-down lists, input restrictions).

Lab 11 Working with Charts and Graphs

- a. Creating bar, line, pie, and scatter charts.
- b. Customizing chart styles, labels, and colors.

Lab 12 Pivot Tables and Data Analysis

- a. Creating and modifying pivot tables.
- b. Performing basic data analysis using pivot charts.

Lab 13 Importing, Exporting, and Printing

- a. Importing data from CSV, text files, and databases.
- b. Exporting data to different formats (PDF, CSV).
- c. Adjusting print settings: margins, headers, footers, and page layout.

SECTION-III

Lab 14 Introduction to Presentation Software

- a. Navigating the PowerPoint/Google Slides interface.
- b. Creating and managing slides.

Lab 15 Formatting and Customizing Presentations

- a. Applying themes, slide layouts, and background styles.
- b. Using font and paragraph formatting options.

Lab 16 Inserting and Managing Multimedia

- a. Adding images, tables, charts, SmartArt, and shapes.
- b. Inserting audio and video clips.

Lab 17 Animations and Slide Transitions

- a. Applying animations to text and objects.
- b. Using slide transitions for visual effects.

Lab 18 Custom Slide Shows and Slide Master

- a. Using the Slide Master view for design consistency.
- b. Creating custom slide shows and presenter notes.

Lab 19 Finalizing and Exporting Presentations

- a. Printing handouts and notes.
- b. Exporting presentations in different formats (PPTX, PDF, video).

Text Book:

1. Peter Weverka, “Microsoft Office 2021 All-in-One for Dummies”, Wiley, 2023.

Reference Book:

1. Joan Lambert, Curtis Frye, “Microsoft Office Step by Step (Office 2021 and Microsoft 365)”, Pearson, 2023.

Note:

1. For being Practical exam there will be no external paper setting by the Examination Branch.
 2. There will be 4 Parts (A, B, C, D) and the examiner shall set 7 questions in total from all the Sections/Blocks (I, II, III) of the syllabus in total.
- Part A will have 2 questions of 12 marks each from Section/Block I of the syllabus and students have to attempt any one.

- Part B will have 2 questions of 12 marks each from Section/Block II of the syllabus and students have to attempt any one.
- Part C will have 2 questions of 12 marks each from Section/Block III of the syllabus and students have to attempt any one.
- Part D will have 10 short answer questions of 2 marks each from all the three Sections/Blocks (I, II, III) of the syllabus and the students shall have to attempt 7 in total.

Internet and Web Technology - Lab

COMP-251

Max Marks: 75

Credit (Practical) 3

90 Hours

Course Outcomes (COs)

After completing this course, students will be able to:

- CO1 Develop interactive and responsive web pages using HTML for structure and CSS for styling and layout design.
- CO2 Implement dynamic web applications using PHP with variables, functions, control structures, and form handling techniques.
- CO3 Integrate PHP with MySQL databases to perform CRUD operations while ensuring data security and efficiency.
- CO4 Apply advanced PHP concepts such as file handling, session management, OOP, and security measures to build scalable web applications.

Section I

Lab 1: Introduction to HTML

- Basic HTML document structure
- Understanding tags, elements, attributes
- Formatting text (headings, paragraphs, bold, italic, underline)
- **Exercise:** Create a simple webpage with headings and paragraphs

Lab 2: Working with Lists, Tables, and Forms

- Ordered, unordered, and definition lists
- Creating tables (rows, columns, headers, merging cells)
- HTML Forms (text inputs, radio buttons, checkboxes, select dropdowns, textarea, buttons)
- **Exercise:** Build a Contact Form with validation

Lab 3: Inserting Images, Links, and Comments

- Adding images (tag, alt attributes)
- Internal & external links ()
- Adding comments (<!-- comment -->)
- **Exercise:** Create an Image Gallery with navigation

Lab 4: Introduction to CSS

- CSS Selectors (id, class, element)
- External, internal, and inline CSS
- Styling text (fonts, colors, sizes)
- **Exercise:** Style a webpage with different fonts and colors

Lab 5: Styling with CSS

- Box model (margin, padding, border)
- Background images and colors
- CSS positioning (relative, absolute, fixed, sticky)
- **Exercise:** Create a webpage layout using div and span

Lab 6: Responsive Design & Mini Project

- Media queries for responsive design
- Creating a mobile-friendly layout
- **Mini-Project:** Personal Portfolio Website

Section II

Lab 7: Introduction to PHP & Setup

- Install XAMPP/WAMP

- Running PHP scripts (.php file)
- PHP Syntax, Echo & Print
- **Exercise:** Print "Hello, World!" using PHP

Lab 8: Variables, Data Types, and Operators

- Declaring variables
- Data types (string, integer, float, boolean, array)
- Operators (arithmetic, comparison, logical)
- **Exercise:** Create a basic calculator

Lab 9: Conditional Statements & Loops

- If, else, elseif, switch-case
- Loops (for, while, do-while, foreach)
- **Exercise:** Display even and odd numbers using loops

Lab 10: Functions and Arrays

- Creating and using functions
- Passing arguments, returning values
- Arrays (indexed, associative, multidimensional)
- **Exercise:** Store student marks in an associative array and calculate total and average

Lab 11: Superglobals & Form Handling

- \$_GET, \$_POST, \$_SESSION, \$_COOKIE
- Handling form submission
- Sanitizing user input
- **Exercise:** Create a login form with \$_POST method

Lab 12: Form Validation & Mini-Project

- Validating required fields, email, numbers
- Displaying validation errors
- **Mini-Project:** User Registration Form with validation

Section III

Lab 13: File Handling

- Reading and writing files
- Uploading and processing files
- **Exercise:** Create a profile upload system

Lab 14: Sessions and Cookies

- Creating and managing sessions
- Setting and retrieving cookies
- **Exercise:** Build a simple e-commerce cart system

Lab 15: Error Handling and Debugging

- Using try-catch
- Logging errors to a file
- **Exercise:** Implement custom error handling

Lab 16: Object-Oriented PHP (OOP)

- Classes, objects, constructors
- Inheritance, encapsulation
- **Exercise:** Build a user management system with OOP

Lab 17: Connecting PHP with MySQL (CRUD Operations)

- Database connection (mysqli & PDO)
- Performing CRUD (Create, Read, Update, Delete)
- **Mini-Project:** Student Record Management System

Lab 18: Security Measures & Final Project

- Preventing SQL Injection with prepared statements
- Cross-site scripting (XSS) protection
- **Final Project:** Blog System with Authentication & CRUD

Text Books:

1. Raj Kamal, Internet and Web Technologies, Tata McGraw-Hill.
2. Ramesh Bangia, Multimedia and Web Technology, Firewall Media.

Reference Books:

1. Naveen Kumari, Internet Technologies, Eagle Prakashan, 2015.
2. Uttam K. Roy, Web Technologies, Oxford University Press.
3. Steven Holzner, The Complete Reference PHP, Tata McGraw-Hill.
4. A.S. Godbole & A. Kahate, Web Technologies, 3rd Edition, Tata McGraw-Hill, 2017.
5. R. Greenlaw & E. Hepp, Fundamentals of Internet and WWW, 2nd Edition, Tata McGraw-Hill, 2007.
6. B. Patel & L.B. Barik, Internet & Web Technology, Acme Learning Publisher.
7. Jackson, Web Technologies, Pearson Education, 2008.
8. Wendy Willard, HTML Beginner's Guide, Tata McGraw-Hill.
9. Ivan Bayross, Web Technologies Part II, BPB Publications.
10. Ivan Bayross, Web Enabled Commercial Application Development Using HTML, JavaScript, DHTML, and PHP, 4th Edition, BPB Publications, 2013.
11. Kogent Learning, Web Technologies: HTML, JavaScript, PHP, Java, JSP, AJAX Black Book, Wiley India Pvt. Ltd.
12. Naramore & Boronczyk, Beginning PHP, Apache, MySQL Web Development, Wiley India Pvt. Ltd.

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 - Part C will have 2 questions of 12 marks each from Section/Block III of the syllabus and students have to attempt any one.
 - Part D will have 10 short answer questions of 2 marks each from all the three Sections/Blocks (I, II, III) of the syllabus and the students shall have to attempt 7 in total.