S. Y. B.Sc. (Computer Application) 2025-26

	Semester III Subjects	Credits		Semester IV Subjects	Credits
Major **BCP301** **BCD302** **BCPP303** **BCDP304**	Python Programming Data Structure Python Programming Practical Data Structure Practical	2 2 2 2	**Major** **BCA401** **BCC402** **BCAP403** **BCCP404**	Artificial Intelligence Computer Graphics Artificial Intelligence Practical Computer Graphics Practical	2 2 2 2
Minor **BCO305** **BCOP306**	Operating System Operating System Practical	2 2	**Minor** **BCR405** **BCRP406**	Research Methodology Research Methodology Practical	2 2
OE **BCF307** **BCA307**	Fundamental of Stock Market Data Analysis with Excel - I	2	**OE** **BCN407** **BCM407** **BCD407**	Numerical Methods Basics of Marketing Data Analysis with Excel - II	2
VSC **BCP308**	PHP Programming	2	**SEC** **BCP408**	PL/ SQL	2
AEC **BCH309/BCM309**	Hindi/Marathi	2	**AEC** **BCH409/BCM409**	Hindi/Marathi	2
FP **BCP310**	FP	2	**CEP** **BCP410**	CEP	2
CC **BCN311/BCY311**	NSS/ Sports/ Cultural/ Yoga	2	**CC** **BCN411/BCY411**	NSS/ Sports/ Cultural/ Yoga	2
	Total	**22**			**22**

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Proramme Name**: S.Y.B.Sc(Computer Application)** **Semester: III**	
Course Category: Major	
Name of the Dept: **Science and Technology**	
Course Title: Python Programming	
Course Code: **BCP301** Course Level: 5.0	
Type: Theory	
Course Credit: 02	
Hours Allotted: 30 Hours	
Marks Allotted: 50 Marks	
Course Objectives: 1. To provide a strong foundation in Python programming by covering fundamental concepts such as variables, expressions, control structures, functions, and data structures. 2. Determine the methods to create and manipulate Python programs by utilizing the data structures like lists, dictionaries, tuples.	
Course Outcomes: OC1 . Students will be able to understand and apply fundamental Python programming concepts, including variables, expressions, control structures, functions, and data structures. OC2 . To develop the ability to work with file handling, exceptions, and object-oriented programming to build efficient Python applications.	
Description the course:	This course provides a comprehensive introduction to Python programming, covering fundamental concepts such as variables, control structures, functions, and data structures. It also explores file handling, exception handling, and object-oriented programming to develop problem-solving skills and practical coding proficiency.

Syllabus: NEP 2020 w.e.f 2025-26

Unit No.	Content	Hours
I	**Introduction**: The Python Programming Language, History, features, The Difference Between Brackets, Braces, and Parentheses **Variables and Expressions:** Values and Types, Variables, Variable Names and Keywords, Type conversion, Operators and Operands, **Conditional and Looping Statements**: if, if-else, nested if –else Looping: for, while. **Functions:** Function Calls, Type Conversion Functions, Math Functions, Definitions and Uses, Flow of Execution, Parameters and Arguments, Variables and Parameters Are Local, Composition Importing with from, Return Values. **Strings and lists :** A String Is a Sequence, Traversal with a for Loop, String Slices, Strings Are Immutable, Searching, Looping and Counting, String Methods, The in Operator, String Comparison, String Operations. Values and Accessing Elements, Lists are mutable, traversing a List, Deleting elements from List, Built-in List Operators, Concatenation, Repetition, In Operator, Built-in List functions and methods.	15
II	**Tuples and Dictionaries:** Tuples, Accessing values in Tuples, Tuple Assignment, Tuples as return values, Variable-length argument tuples, Basic tuples operations, Concatenation, Repetition, in Operator, Iteration, Built-in Tuple Functions Creating a Dictionary, Accessing Values in a dictionary, Updating Dictionary, Deleting Elements from Dictionary, Properties of Dictionary keys, Operations in Dictionary, **Files:** Text Files, The File Object Attributes, Directories **Exceptions:** Built-in Exceptions, Handling Exceptions, Exception with Arguments, User-defined Exceptions **Classes and Objects:** Overview of OOP (Object Oriented Programming), Class Definition, Creating Objects, Instances as Arguments, Instances as return values, Built-in Class Attributes, Inheritance, Method Overriding, Data Encapsulation.	15
	Total Hours	30

Books and References:

Sr.No.	**Title**	**Author/s** **Publisher**	**Publisher**	**Edition**	**Year**
1	Think Python	Allen owney	O'Reilly	1st	2012
2	Introduction to Problem Solving with Python	E. Balagurusamy	TMH	1st	2016
3	Object-oriented Programming in Python	Michael H. Goldwasser, David Letscher	Pearson Prentice Hall	1st	2008

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Programme Name: **S.Y.B.Sc (Computer Application)**	**Semester:III**
Course Category: Major	
Name of the Dept: **Science and Technology**	
Course Title: Data Structures	
Course Code: **BCD302**	Course Level:5.0
Type : Theory	
Course Credit: 02	
Hours Allotted: 30 Hours	
Marks Allotted: 50 Marks	

Course Objectives:

- Introduction to the fundamental concepts of data structures and their importance such as arrays, linked lists, stacks, queues, trees, graphs.
- Understand how the choice of data structures and the algorithm design methods impact

the performance of programs.

Course Outcomes:

After the completion of the course, the learners would be able to:

CO1 . Identify and distinguish data structures classification, Implementing array, linked list and various sorting and searching techniques .

CO2 . Implement stack,Queue,Tree and graph and their applications.

Description the course:	Data structures provide ways to organize and store data efficiently, which allows algorithms to process data faster. This can lead to optimized solutions for complex problems.

Syllabus: NEP 2020 w.e.f 2025-26

Unit No.	Content	Hours
I	**Introduction:** Data and Information, Data Structure, Classification of Data Structures, Primitive Data Types, Abstract Data Types, Data structure vs. File Organization, Operations on Data Structure, **Array:** Introduction, Memory Representation of Arrays ,operations performed on Arrays, **Sorting and Searching Techniques :** Sorting :Bubble, Selection, Insertion, Merge Sort. Searching: Sequential Search, Binary Search **Linked List:** Linked List, One-way Linked List, Traversal of Linked List, Searching, Memory Allocation and De-allocation, Insertion in Linked List, Deletion from Linked List, Copying a List into Other List, Merging Two Linked Lists, Splitting a List into Two Lists, Reversing One way linked List, Circular Linked List, Applications of Circular Linked List, Two way Linked List, Traversing a Two way Linked List, Searching in a Two way linked List, Insertion of an element in Two way Linked List, Deleting a node from Two way Linked List, Header Linked List, Applications of the Linked list, Representation of Polynomials, Storage of Sparse Arrays, Implementing other Data Structures.	15
II	**Stack:** Introduction, ,Memory Representation of Stack, Operations on the Stack Array Representation of Stack, Applications of Stack, Evaluation of Arithmetic Expression, Matching Parenthesis, infix and postfix operations, Recursion. **Queue:** Introduction, Operations on the Queue, Memory Representation of Queue, Array representation of queue, Linked List Representation of Queue, Circular Queue, Some special kinds of Queues : Deque, Priority Queue, Applications of Queues. **Tree:** Tree, Binary Tree, Properties of Binary Tree, Memory Representation of Binary Tree, Operations Performed on Binary Tree, Reconstruction of Binary Tree from its Traversals, Binary Search Tree, Operations on Binary Search Tree, Heap, Memory Representation of Heap, Operation on Heap. **Graph:** Introduction, Graph Terminology, Memory Representation of Graph, Adjacency Matrix Representation of Graph, Operations Performed on Graph,Applications of the Graph: Reachability, Shortest Path Problems, Spanning Trees.	15
	Total Hours	30

Books and References:

Sr. No	Title	Author/s	Publisher	Edition	Year
1.	A Simplified Approach to Data Structures	Lalit Goyal, Vishal Goyal, Pawan Kumar	SPD	1st	2014
2.	An Introduction to Data Structure with Applications	Jean – Paul Tremblay and Paul Sorenson	Tata MacGraw Hill	2nd	2007
3.	Data Structure and Algorithm	Maria Rukadikar	SPD	1st	2014

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Programme Name: **S.Y.B.Sc(Computer Application)** **Semester: III**	
Course Category: Major	
Name of the Dept: **Science and Technology**	
Course Title: Python Programming Practical	
Course Code: **BCPP303**	Course Level: 5.0
Type: Practical	
Course Credit: 2 credits	
Hours Allotted: 60 Hours	
Marks Allotted: 50 Marks	
Course Objectives(CO): 1. To learn python programming concepts and problem-solving techniques through hands-on Coding exercises. 2. To develop skills in data manipulation, file handling, and object-oriented programming.	
Course Outcomes (OC): OC 1. Demonstrate proficiency in Python programming by solving problems using functions, Loops, recursion, and data structures. OC 2. Apply object-oriented programming concepts and file handling techniques to develop efficient and maintainable Python applications.	
Description the course:	Python Programming Practical focuses on hands-on learning where students apply theoretical concepts to solve real-world problems. It involves writing, testing, and debugging Python code to work with data structures like lists, tuples, and dictionaries, as well as performing file handling tasks.

Syllabus: NEP 2020 w.e.f 2025-26

Sr. No.	Content	Hours
1	a. Enter the number from the user and depending on whether the number is even or odd, print out an appropriate message to the user. b. Write a program to generate the Fibonacci series. c. Write a function that reverses the user defined value. e. Write a function to check the input value is Armstrong and also write the function for Palindrome. d. Write a recursive function to print the factorial for a given number.	
2	a. Write a function that takes a character (i.e. a string of length 1) and returns True if it is a vowel, False otherwise. b. Define a function that computes the length of a given list or string. c. Define a procedure histogram() that takes a list of integers and prints a histogram to the screen. For example, histogram([4, 9, 7]) should print the following: **** ********* *******	
3	Take a list, say for example this one: a = [1, 1, 2, 3, 5, 8, 13, 21, 34, 55, 89] and write a program that prints out all the elements of the list that are less than 5	
4	A pangram is a sentence that contains all the letters of the English alphabet at least once, for example: The quick brown fox jumps over the lazy dog. Your task here is to write a function to check a sentence to see if it is a pangram or not.	
5	a. Write a program that takes two lists and returns True if they have at least one common member. b. Write a Python program to print a specified list after removing the 0th, 2nd, 4th and 5th elements. c. Write a Python program to clone or copy a list	
6	a. Write a Python script to sort (ascending and descending) a dictionary by value. b. Write a Python script to concatenate following dictionaries to create a new one. Sample Dictionary : dic1={1:10, 2:20} dic2={3:30, 4:40} dic3={5:50,6:60} Expected Result : {1: 10, 2: 20, 3: 30, 4: 40, 5: 50, 6: 60} c. Write a Python program to sum all the items in a dictionary.	
7	a. Write a Python program to read an entire text file. b. Write a Python program to append text to a file and display the text. c. Write a Python program to read last n lines of a file.	
8	a. Design a class that store the information of student and display the same b. Implement the concept of inheritance using python	
		60

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Programme Name: **S.Y.B.Sc (Computer Application)** **Semester:III**	
Course Category: Major	
Name of the Dept: **Science and Technology.**	
Course Title: Data structures Practical	
Course Code: **BCDP304** Course Level:5.0	
Type : Practical	
Course Credit: 02	
Hours Allotted: 60 Hours	
Marks Allotted: 50 Marks	
Course Objectives: 1. To improve coding ability by teaching you how to write cleaner, more efficient, and scalable code as well as to tackle problems that require more than basic programming skills. 2. To understand the concepts of dynamic memory allocation and deallocation, particularly in the context of linked data structures.	
Course Outcomes: After the completion of the course, the learners would be able to: OC1 . Implement and manipulate various data structures (linked lists, stacks, queues using C/C++/ Java/python) OC2 . Apply different algorithms for searching, sorting, and tree traversal to solve practical problems.	
Description the course: **(Including but not limited to)**	Provide hands-on experience in implementing various data structures using programming languages such as C, C++, Java, or Python.

Syllabus: NEP 2020 w.e.f 2025-26

List of Practical	
1.	Implement the following:
A.	Write a program to store the elements in 1-D array and perform the operations likes searching, sorting and reversing the elements. [Menu Driven]
B.	Write a program to perform the Matrix addition, Multiplication and Transpose Operation. [Menu Driven]
2.	Implement the following for one way Linked List:
A.	Write a program to create a single linked list and display the node elements .
B.	Write a program to search the elements in the linked list and display the same
3.	Implement the following for two way Linked List:
A.	Write a program to create double linked list and display the elements in the linked list.
B.	Write a program to search the element in list and display the same
4.	Implement the following for circular Linked List:
A.	Write a program to create a list and display the node elements .
B.	Write a program to search the element in list and display the same.
5	Implement the following for Stack and Queue:
A.	Write a program to implement the concept of Stack with Push, Pop, Display and Exit operations.
B.	Write a program to implement the concept of Queue with Insert, Delete, Display and Exit operations.
6.	Implement the following sorting techniques:
A.	Write a program to implement selection sort.
B.	Write a program to implement insertion sort.
7.	Implement the following searching techniques:
A.	Write a program to search the element using sequential search.
B.	Write a program to search the element using binary search
8.	Implement the following for Tree:
A.	Write a program to construct the binary tree and display its inorder, postorder and preorder traversal .
B.	Write a program to insert the element into maximum heap.
9.	Implement the following data structure techniques:
A.	Write a program to implement the collision technique.
B.	Write a program to implement the concept of linear probing.
10.	Implement the following data structure techniques:
A.	Write a program to generate the adjacency matrix.
B.	Write a program for shortest path diagram.

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<table>
<tr><td colspan="2">Programme Name: S.Y.B.Sc(Computer Application) Semester:III</td></tr>
<tr><td colspan="2">Course Category: Minor</td></tr>
<tr><td colspan="2">Name of the Dept: Science and Technology</td></tr>
<tr><td colspan="2">Course Title: Operating System</td></tr>
<tr><td colspan="2">Course Code: BCO305 Course Level:5.0</td></tr>
<tr><td colspan="2">Type : Theory</td></tr>
<tr><td colspan="2">Course Credit: 02</td></tr>
<tr><td colspan="2">Hours Allotted: 30 Hours</td></tr>
<tr><td colspan="2">Marks Allotted: 50 Marks</td></tr>
<tr><td colspan="2">Course Objectives:
1. Learners must understand proper working of operating system.
2. To provide a sound understanding of Computer operating system, its structures, functioning and algorithms.</td></tr>
<tr><td colspan="2">Course Outcomes:
After the completion of the course, the learners would be able to:
OC1 : To provide a understanding of operating system, its structures and functioning
OC2 : Develop and master understanding of algorithms used by operating systems for various purposes.</td></tr>
<tr><td>Description the course:
(Including but not limited to)</td><td>Introduction, relevance, Usefulness, Application, interest, connection with other courses, demand in the industry, job prospects etc.</td></tr>
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Syllabus: NEP 2020 w.e.f 2025-26

Unit No.	Content	Hours
I	**Introduction and Operating-Systems Structures:** Definition of Operating system, Operating System's role, Operating-System Operations, Functions of Operating System, Computing Environments, Operating-System Structures: Operating-System Services, User and Operating-System Interface, System Calls **Processes:** Process Concept, Process Scheduling, Operations on Processes, Interprocess Communication **Threads:** Overview, Multicore Programming, Multithreading Models **Process Synchronization:** General structure of a typical process, race condition, The Critical-Section Problem, Peterson's Solution, Synchronization Hardware, Mutex Locks, Semaphores, Classic Problems of Synchronization, Monitors	15
II	**CPU Scheduling:** Basic Concepts, Scheduling Criteria, Scheduling Algorithms **Deadlocks:** System Model, Deadlock Characterization, Methods for Handling Deadlocks, Deadlock Prevention, Deadlock Avoidance, Deadlock Detection, Recovery from Deadlock **Main Memory:** Background, Logical address space, Physical address space, MMU, Swapping, Contiguous Memory Allocation, Segmentation, Paging, Structure of the Page Table **Virtual Memory** **Mass-Storage Structure:** Overview, Disk Structure, Disk Scheduling, Disk Management **File-System Interface: File** Concept, Access Methods, Directory and Disk Structure, File-System Mounting, File Sharing **File-System Implementation:** File-System Structure, File-System Implementation	15
	Total Hours	30

References:

1. Abraham Silberschatz, Peter Galvin, Greg Gagne, Operating System Concepts, Wiley,8th Edition

Additional Reference(s):

1. Achyut S. Godbole, Atul Kahate, Operating Systems, Tata McGraw Hill

2. Naresh Chauhan, Principles of Operating Systems, Oxford Press

3. Andrew S Tanenbaum, Herbert Bos, Modern Operating Systems, 4e Fourth Edition, Pearson Education, 2016

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<table>
<tr><td colspan="2">Programme Name: S.Y.B.Sc(Computer Application) Semester:III</td></tr>
<tr><td colspan="2">Course Category: Minor</td></tr>
<tr><td colspan="2">Name of the Dept: Science and Technology</td></tr>
<tr><td colspan="2">Course Title: Operating System Practical</td></tr>
<tr><td colspan="2">Course Code: BCOP306 Course Level: 5.0</td></tr>
<tr><td colspan="2">Type : Practical</td></tr>
<tr><td colspan="2">Course Credit: 02</td></tr>
<tr><td colspan="2">Hours Allotted: 60 Hours</td></tr>
<tr><td colspan="2">Marks Allotted: 50 Marks</td></tr>
<tr><td colspan="2">Course Objectives:
1. Learners must understand proper working of Linux commands, DOS Commands, virtual machine software.
2. To provide practical knowledge of OS, installation of utility software on Linux and windows.</td></tr>
<tr><td colspan="2">Course Outcomes:
After the completion of the course, the learners would be able to:
OC1 : To provide a understanding of Linux commands, DOS Commands, virtual machine software.
OC2 : Develop and master understanding of algorithms used by operating systems for various purposes.</td></tr>
<tr><td>Description the course:
(Including but not limited to)</td><td>Introduction, relevance, Usefulness, Application, interest, connection with other courses, demand in the industry, job prospects etc.</td></tr>
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Syllabus: NEP 2020 w.e.f 2025-26

List of Practical	
1.	Installation of virtual machine software.
2.	Installation of Linux operating system (RedHat / Ubuntu) on virtual machine.
3.	Installation of Windows operating system on virtial machine.
4.	**Linux commands: Working with Directories:**
a.	pwd, cd, absolute and relative paths, ls, mkdir, rmdir,
b.	file, touch, rm, cp. mv, rename, head, tail, cat, tac, more, less, strings, chmod
5.	**Linux commands: Working with files:**
a.	ps, top, kill, pkill, bg, fg,
b.	grep, locate, find, locate.
c.	date, cal, uptime, w, whoami, finger, uname, man, df, du, free, whereis, which.
d.	Compression: tar, gzip.
6.	**Windows (DOS) Commands – 1**
a.	Date, time, prompt, md, cd, rd, path.
b.	Chkdsk, copy, xcopy, format, fidsk, cls, defrag, del, move.
7.	**Windows (DOS) Commands – 2**
a.	Diskcomp, diskcopy, diskpart, doskey, echo
b.	Edit, fc, find, rename, set, type, ver
8.	**Working with Windows Desktop and utilities**
a.	Notepad
b.	Wordpad
c.	Paint
d.	Taskbar
e.	Adjusting display resolution
f.	Using the browsers
g.	Configuring simple networking
h.	Creating users and shares
9.	**Working with Linux Desktop and utilities**
a.	The vi editor.
b.	Graphics
c.	Terminal
d.	Adjusting display resolution
e.	Using the browsers
f.	Configuring simple networking
g.	Creating users and shares
10.	**Installing utility software on Linux and Windows**

References:

1. Abraham Silberschatz, Peter Galvin, Greg Gagne, Operating System Concepts, Wiley,8th Edition

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<table>
<tr><td colspan="2">Programme Name: S.Y.B.Sc(Computer Application) Semester: III</td></tr>
<tr><td colspan="2">Course Category/Vertical: Open Elective</td></tr>
<tr><td colspan="2">Name of the Dept: B.Com (Accounting & Finance)</td></tr>
<tr><td colspan="2">Course Title: Fundamental of Stock Market</td></tr>
<tr><td colspan="2">Course Code: BCF307 Course Level: 5.0</td></tr>
<tr><td colspan="2">Type: Theory</td></tr>
<tr><td colspan="2">Course Credit: 2 credits</td></tr>
<tr><td colspan="2">Hours Allotted: 30 Hours</td></tr>
<tr><td colspan="2">Marks Allotted: 50 Marks</td></tr>
<tr><td colspan="2">Course Objectives(CO): (List the course objectives)
1. To introduce students to the structure and functioning of stock markets.
2. To provide knowledge of different stock market instruments and SEBI regulations and investor protection measures</td></tr>
<tr><td colspan="2">Course Outcomes (OC): (List the course outcomes)
OC1. Inculcate knowledge of corporate governance, financial regulations, and ethical investment Practice
OC 2. Help students understand global financial markets, economic indicators, and international trade impact on investments</td></tr>
<tr><td>Description the course: (Including but not limited to)</td><td>The Course provide a strong foundation in investment principles if Capital Market .It also inculcate knowledge of asset allocation, and risk-return trade-offs It enables learner to analyze securities, construct efficient portfolios, and apply modern portfolio theory and to equip students with tools for portfolio construction, diversification, and risk management. The learner will understand Global SEBI regulation</td></tr>
</table>

Syllabus: NEP 2020 w.e.f 2024-25

Unit No.	Content	Hours
I	**Unit 1: Introduction to Stock Market** • Basics of Financial Markets (Primary & Secondary Markets) • Role of Stock Exchanges (NSE, BSE, NYSE, etc.) • Key Market Participants (Investors, Traders, Brokers, Regulators) • SEBI and Regulatory Framework • How the Stock Market Works	15
II	**Unit 2: Financial Instruments & Risk Management** • Equity Shares (Common & Preferred) and IPO • Bonds & Debentures • Mutual Funds & ETFs • Derivatives (Futures & Options - Basics) • Risk Management -Meaning, Features and Importance • Types of Risks (Financial, Operational, Strategic, Compliance)	15
	Total Hours	30

Books and References:

- Risk Management-Manan prakasha
- Risk Management in Forex market-Dalnani Publication
- Risk Mangement - Vipul Prakashan
- Risk Management - Himalaya Publication
- Portfolio Management for New Products (Robert G. Cooper, Scott J. Edgett, and Elko J. Kleinschmidt)
- The Elements of Investing (Charles D. Ellis and Burton G. Malkiel)

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Programme Name**: B.Sc. (Computer Application)**	**Semester: IV**
Course Category/Vertical: OE	
Name of the Dept: **Science and Technology**	
Course Title: Data Analysis with Excel-I	
Course Code**: BCA307**	Course Level: 5.0
Type: Practical	
Course Credit: 2 credits	
Hours Allotted: 60 Hours	
Marks Allotted: 50 Marks	

Course Objectives(CO): (List the course objectives)

1. To familiarize students with the basic functionalities of Excel and the essential tools for performing data analysis, including data manipulation, visualization, and basic statistical techniques.
2. To equip students with advanced Excel tools and techniques for deeper data analysis, including pivot tables, advanced functions, and more sophisticated data visualizations.

Course Outcomes (OC): (List the course outcomes)

OC 1: Students will be able to navigate the Excel interface, perform basic data entry and management tasks, apply fundamental statistical techniques (like mean, median, and standard deviation), and create simple charts and data visualizations to analyze and present data effectively.

OC 2: Students will be proficient in using advanced Excel functions (e.g., VLOOKUP, INDEX, MATCH), building and customizing pivot tables and pivot charts, creating interactive dashboards.

Description of the course:
(Including but not limited to)

This course on **Data Analysis with Excel** is designed to equip students with essential skills for performing data analysis using Excel, ranging from basic to advanced techniques. The first module focuses on the fundamental tools in Excel, including data entry, basic statistical functions, and simple data visualizations like charts and graphs. Students will learn how to manage data effectively, use functions like SUM and AVERAGE, and understand basic descriptive statistics. The second module introduces more advanced techniques, including advanced Excel functions like VLOOKUP and INDEX, as well as the creation of pivot tables and charts for deeper data analysis.

Syllabus: NEP 2020 w.e.f 2025-26

Unit No.	Content	Hours

I	**Module I: Introduction to Excel and Basic Data Analysis**
	• **Introduction to Excel**
	  • Overview of Excel interface
	  • Basic functions (SUM, AVERAGE, COUNT, etc.)
	  • Formatting cells, rows, and columns
	• **Data Entry and Management**
	  1.1 Data types, importing/exporting data
	  1.2 Sorting and filtering data
	  1.3 Using tables and ranges
	• **Basic Statistical Functions**
	  1.1 Mean, median, mode, variance, standard deviation
	  1.2 Basic descriptive statistics
	• **Data Visualization**
	  1.1 Creating and customizing charts (bar, line, pie charts)
	  1.2 Introduction to conditional formatting
	  1.3 Creating dashboards for data visualization
		15

II	**Module II: Advanced Data Analysis Techniques in Excel**
	• **Advanced Excel Functions**
	  2.1 Lookup functions (VLOOKUP, HLOOKUP, INDEX, MATCH)
	  2.2 Nested functions and array formulas
	  2.3 IF, COUNTIF, SUMIF, and other conditional formulas
	• **Pivot Tables and Pivot Charts**
	  2.1 Creating and customizing pivot tables
	  2.2 Analyzing large datasets with pivot charts
	  2.3 Grouping data in pivot tables
	• **Advanced Data Visualization**
	  2.1 Using advanced chart types (scatter plot, histograms, etc.)
	  2.2 Creating interactive dashboards with slicers
	  2.3 Using sparklines for data trends
		15

	Total Hours	**30**

References:

1. Walkenbach, John. Excel 2019 Bible, Wiley.
2. Harvey, Greg. Excel for Dummies (Excel 2021 or latest edition), Wiley.
3. Simon, Jinjer L. Excel Data Analysis: Your visual blueprint for analyzing data, charts, and PivotTables, Wiley.
4. McFedries, Paul. Microsoft Excel Data Analysis and Business Modeling, Microsoft Press.
5. Murdick, Robert G., & Ross, J. W. Information Systems for Managers: With Excel Applications, Pearson.
6. G., & Ross, J. W. Information Systems for Managers: With Excel Applications, Pearson.

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Programme Name: **S.Y.B.Sc(Computer Application)**	**Semester: III**
Course Category/Vertical: VSC	
Name of the Dept: **Science and Technology**	
Course Title: PHP Programming	
Course Code: **BCP308**	Course Level:5.0
Type: Practical	
Course Credit: 2	
Hours Allotted: 60 Hours	
Marks Allotted: 50 Marks	

Course Objectives (CO): (List the course objectives)

1. Understanding and implementing fundamental understanding of PHP, including syntax, control structures, form handling, file management, database connectivity, and basic security to build dynamic web applications.
2. Understanding and implementing advanced PHP functionalities to enhance proficiency in PHP by implementing Object-Oriented Programming, handling sessions and cookies, working with validation, and developing dynamic, secure, and scalable web applications.

Course Outcomes (OC): (List the course outcomes)

After completion of the course, learners would be able to:

OC1: Learner is able to Demonstrate basics of PHP like the syntax, control structures, form handling, file management, database connectivity, and basic security to build dynamic web applications.

OC2: Learner is able to Demonstrate advanced PHP functionalities.

Description of Course	This course introduces students to PHP (Hypertext Preprocessor), a powerful server-side scripting language used to develop dynamic and interactive web applications. Through hands-on projects and practical exercises, students will learn how to integrate PHP with HTML, manage form data, work with MySQL databases, and build functional web applications. The course covers key concepts such as PHP syntax, control structures, functions, session management, and file handling. Emphasis is placed on writing clean, secure, and efficient code, along with basic debugging and troubleshooting techniques.

Syllabus: NEP 2020 w.e.f 2025-26

Sr. No.	Content	Hours
1	**Basic Programs**	
a	Write a program to print “Welcome to PHP”.	
b	Write a simple PHP program using expressions and operators.	
2	**Write a PHP program to demonstrate the use of Decision-making control structures.**	
a	While statement	
b	Do-while statement	
c	For statement	
d	Foreach statement	
3	**Write a PHP program to demonstrate the use of Conditional Statements.**	
a	If statement	
b	If-else statement	
c	Switch statement	
4	**Write a 0050HP program for creating and manipulating**	
a	Indexed array	
b	Associative array	
c	Multidimensional array	
4	**Write a PHP program for String**	
a	Count the number of words in string without using string functions	
b	Write a simple PHP program to demonstrate use of various built-in string functions.	
5	**Write a PHP program for creating and manipulating-**	
a	Indexed array	
b	Associative array	
c	Multidimensional array	
6	**Write a PHP program to**	
a	Inherit members of super class in subclass.	

b	Create constructor to initialize object of class by using object oriented concepts.	
7	**Write simple PHP program to**	
a	Set cookies and read it.	
b	Demonstrate session management.	
8	**Design a web page using following form controls:** a. Text box, b. Radio button, c. Check box, d. Buttons	
9	**Design a web page using following form controls:**	
a	List box	
b	Combo box	
c	Hidden field box	
10	**Write a PHP program to**	
a	Develop web page with data validation.	
b	for sending and receiving plain text message (email).	
c	Develop a simple application to – a) Enter data into database b) Retrieve and present data from database	
d	Develop a simple application to Update, Delete table data from database.	

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Thane (W)

Programme Name: S.Y. B.Sc. (Computer Application)	**Semester:III**
Course Category: CC	
Name of the Department: **Sociology**	
Course Title: Fundamentals of Social Service and Volunteering	
Course Code: **BCN311**	Course Level: 5.0
Type: Theory / Practical	
Course Credit: 2 credits	
Hours Allotted: 30 Hours	
Marks Allotted: 50 Marks	

Course Objectives:

1. To introduce students to the fundamental principles of social service and volunteering.
2. To develop a sense of social responsibility and commitment to community development.

Course Outcomes:

OC1. Gain an understanding of the significance of social service in nation-building.
OC2. Develop an appreciation for volunteerism and its role in addressing social issues.

Introduction: Social service and volunteering are essential aspects of a responsible and engaged society. They provide individuals with opportunities to contribute to the well-being of their communities while fostering personal growth and social awareness. This course aims to instill a spirit of volunteerism and service in students by equipping them with theoretical knowledge and practical experience in social service initiatives.

Relevance and Usefulness:

In today's world, social inequalities, environmental concerns, and community challenges require active engagement from individuals. Volunteering bridges the gap between the privileged and the underprivileged, offering solutions to pressing social issues. Through structured participation in social service activities, students develop empathy, teamwork, and leadership skills, making them responsible citizens and change-makers.

Interest and Connection with Other Courses:

This course complements various disciplines such as sociology, social work, public administration, psychology, and political science. The knowledge and skills gained through social service and volunteering enhance students' understanding of social structures, human behavior, and policy-making. Additionally, it fosters civic engagement, making it valuable for students aspiring to careers in social work, public service, or non-governmental organizations (NGOs).

Syllabus: NEP 2020 w.e.f 2025-26

Unit No.	Content	Hours
I	**UNIT I: Introduction to Social Servicing and Volunteering** A. Meaning and Importance of Social Service B. Role of Youth in Social Service C. Challenges and Ethical Considerations in Voluntary Word	15
II	**UNIT II: Community Engagement and Social Change** A. Different Forms of Community Service (Health, Education, Environment, Disaster Relief) B. Government and Non-Government Organizations in Social Service C. Impact of Volunteerism on Society	15
	Total Hours	30

References:

• National Service Scheme Manual (Revised) 2006, Government of India, Ministry of Youth Affairs and Sports, New Delhi.

• University of Mumbai National Service Scheme Manual 2009.

• http://nss.nic.in

• https://www.rccmindore.com/wp-content/uploads/2023/04/NSS-Notes-II.pdf

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Programme Name: S.Y. B. Sc (Computer Application)	**Semester: III**
Course Category: CC	
Name of the Dept: **Psychology**	
Course Title: Yoga	
Course Code: **BCY311**	Course Level: 5.0
Type: Theory / Practical	
Course Credit: 2 credits	
Hours Allotted: 30 Hours	
Marks Allotted: 50 Marks	
Course Objectives: 1. To impart to the students the knowledge of teachings and philosophy of yoga tradition. 2. To provide the knowledge of various Yoga therapy practices like asana (posture), pranayama (voluntarily regulated breathing techniques).	
Course Outcomes : OC 1. Students will be able to understand the basic principles and applications of Yoga. OC 2. Students will be able to use the Practical knowledge in their day to day life.	
Description the course: **(Including but not limited to)**	Yoga practices will be important for the upcoming lifestyle hence students can seek a career in the same. Students will understand the importance of yoga in life. Students will be having practical exposure. Hence, practicing yoga will help students to maintain their health.

Unit No.	Content	Hours
I	**Theory of Yoga** A) Yogic Sanchalan (Yogic Movements), Kapalbhati (Cleansing Breath Technique), Suryanamaskar (Sun Salutation) B) Chandrabhedan Pranayama (Left Nostril Breathing), Surya Bhedana Pranayama (Right Nostril Breathing), Sakshi Bhav (Witness Consciousness)	**15**
II	**Practical** A) Padmasana (Lotus Pose), Parvatasana (Mountain Pose), Janushirasana (Head-to-Knee Forward Bend), Ustrasana (Camel Pose), Veerbhadrasana (Warrior Pose), Trikonasana (Triangle Pose), Vrikshasana (Tree Pose), Ardha Naukasana (Half Boat Pose) B) Ardha Shalabhasana (Half Locust Pose), Makarasana (Crocodile Pose), Ardha Dronasana (Half Warrior Plank), Ardha Pavanmuktasana (Half Wind-Relieving Pose), Utthita Ekpadasana (Extended One-Leg Pose)	**15**
	Total Hours	**30**

References:

1. G. V Kadam - Yoga Life Sutra, Girish Vasant Kadam (2012)
2. ajayoga - Swami Vivekananda - Ramakrishna Ashrama Publications
3. C.D. Sharma: Critical Survey of Indian Philosophy, Motilal Banarsidass Publications 2003