



**MAHARAJA SURAJMAL BRIJ UNIVERSITY
BHARATPUR**

NATIONAL EDUCATION POLICY-2020

STRUCTURE OF UG-COMPUTER SCIENCE

Three Year Under Graduate Programme in Science/Arts/Commerce

Syllabus for I & II Semesters

Examination 2025-26

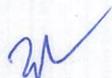
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डॉ. अरुण कुमार पाण्डेय
उपकुलसचिव
प्रभारी अकादमिक प्रथम

Course Outcomes: Computer Science

1. Discipline knowledge: Acquiring knowledge on basics of Computer Science and ability to apply to design principles in the development of solutions for problems of varying complexity.
2. Problem Solving: Improved reasoning with strong mathematical ability to Identify, formulate and analyze problems related to computer science and exhibiting a sound knowledge on data structures and algorithms.
3. Difficulty Analysis: Talent to classify, significantly evaluate and prepare complex computing problems using fundamentals of computer knowledge and request domains.
4. Design and Development of Solutions: Ability to design and development of algorithmic solutions to real world problems and acquiring a minimum knowledge on statistics and optimization problems. Establishing excellent skills in applying various design strategies for solving complex problems.
5. Accomplish Investigations of Compound Computing Troubles: Ability to invent and ways experiments interpret data and present well up to date conclusions.
6. Application Systems Knowledge: Possessing a sound knowledge on computer application software and ability to design and develop app for applicative problems.
7. Modern Tool Usage: Identify, select and use a modern scientific and IT tool or technique for modeling, prediction, data analysis and solving problems in the area of Computer Science and making them mobile based application software.
8. Mission Administration: Skill to recognize administration and computing philosophy with computing acquaintance to supervise projects in multidisciplinary environments.
9. Ethics on Profession, Environment and Society: Exhibiting professional ethics to maintain the integrality in a working environment and also have concern on societal impacts due to computer-based solutions for problems.
10. Motivation to take up Higher Studies: Inspiration to continue educations towards advanced studies on Computer Science.




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Structure for Computer Science Course

B.Sc./B.A./B.Com. Semester - I & II from Academic Session 2024-25 Onwards

Semester-wise Titles of the Papers in Computer Science						
Certificate in B.Sc./B.A./B.Com.						
Semester	Code	Paper Title	Course Type	Theory/ Practical	Teaching Hours/ Week	Credits
I	COMP- 20T-101	Computer Basics & Office Management Tools	CC	Theory	4	4
	COMP 20P-102	Computer Basics & Office Management Tools Lab	CC	Practical	4	2
			Total		8	6
II	COMP 20T-201	Programming with C	CC	Theory	4	4
	COMP 20P-202	Programming with C Lab	CC	Practical	4	2
			Total		8	6

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Course Content for Computer Science Course
B.Sc./B.A./B.Com. Semesters I and II

Semester: I

Code: COMP-20-T-101	Paper Title: Computer Basics & Office Management Tools
Credits : 04	Hours/Week: 04

Outcomes:

- Introduction to computers, classification of computers, anatomy of computer, constituents and architecture, microcontrollers
- Internet basics, features, applications, services, internet service providers, domain name system, browsing, email, searching
- Office Activities using Word Processor Software
- Office Activities using Spreadsheets Software
- Office Activities using Presentation Software
- Office Activities involving Multimedia Editing (Images, Video, Audio ...)
- Operating System Configuration, MS Configuration.

Computer Basics & Office Management Tools

Unit-I

Evolution and generations of Computers, Characteristics of Computer, Classification of Computer, Application of Computers, Block diagram of Computer and role of each block, software & hardware, relations between software & hardware, Input and Output Devices, Software: Types of Software-System Software, Application software, and utility Software; Computer Languages: Machine, Assembly, High Level; Generations of programming languages, Features of good programming language, Translators: Assemblers, Compilers and Interpreter.

Unit-II

Number System: Introduction to number system, Binary, Octal, Decimal, Hexadecimal, Conversion between number bases, Arithmetic Operations on Binary Numbers, Alphanumeric Codes-BCD, EBCDIC, ASCII, Unicode.



Primary and Secondary Memory: Memory Hierarchy, Random Access Memory(RAM), Types of RAM, ROM, Types of ROM, Start-up Process (Booting), Classification of Secondary Storage Devices, Magnetic Tape, Magnetic Disk, Optical Disk.

Unit-III

Internet Basics: Introduction, Features of Internet, Internet Applications, Services of Internet, Logical and Physical addresses, Internet Service Providers, Domain Name System.

MS Word: Word Processing, MS-Word features, Creating Saving and Opening Documents in Word, Toolbars, Ruler, Menus, Keyboard shortcuts, editing, previewing, Printing & Formatting a document, Find & Replace, Thesaurus, Mail Merge, Tables, Converting a Word document into various formats like-text, Rich Text Format, Word Perfect, etc.

Unit-IV

MS Excel: Worksheet Basics, Creating Worksheet, Entering data into Worksheet, Data, Text, Dates, Alphanumeric values saving & Quitting Worksheet, Opening and Moving around in an existing Worksheet, Toolbars and Menus, Keyboard shortcuts, Working with Formula & Cell Referencing, Auto Sum, Format Feature, Changing alignment, Character styles, Date Format, Border & Colors etc. Previewing & Printing a worksheet, Graphs and Charts.

Power Point: Creating and Viewing a Presentation, Managing Slide Shows, Navigating through a Presentation, Using Hyperlinks, Advanced navigation with action setting and Action buttons, Organizing formats with Master Slides, Applying and Modifying designs, Adding Graphics, Multimedia and Special Effects.

Recommended Books:

1. Sanjay Saxena; A First Course in Computers 2003 Edition; Vikas Pub.
2. Computer Fundamentals by P.K. Sinha, BPB Publication.
3. Computer Fundamentals and Programming in C, Reema Thareja, OXFORD University Press.
4. Microsoft; 2007/2010 Microsoft Office System; PHI.
5. Microsoft; Microsoft Office 2007/2010: Plain & Simple; PHI.
6. MS-Office, Dr. S.S. Shrivastava, Published by Laxmi Publication.
7. Office 2019: In Easy Steps, Michal Price, BPB Publication.



Code: COMP-20P-102	Paper Title: Computer Basics & Office Management Tools Lab
Credits : 02	Hours/Week: 04

Content:

Recommended Experiments

1. How to use mail merge using an Excel spreadsheet
2. How to change text format in ms word
3. How to change page margins in MS Word
4. How to add bullets in MS Word
5. How to create a graph using spreadsheets
6. How to create formulas and perform the calculation in MS Excel
7. How to demonstrate the list of functions in MS Excel
8. How to work with Master Slide
9. Create a power -point slide using various features.
10. How to apply animations and transitions effect in MS PowerPoint
11. Demonstration about various applications of Internet such as E-mail, Web-browsing etc.

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Semester: II

Code: COMP-20T-201	Paper Title: Programming with C
Credits : 04	Hours/Week: 04

Outcomes:

- Understand programming languages, number systems, peripheral devices, networking, multimedia and internet concepts
- Read, understand and trace the execution of programs written in C language
- Write the C code for a given problem
- Perform input and output operations using programs in C
- Write programs that perform operations on arrays Course Content

Programming with C

UNIT- I

Basic concepts of Programming languages, Programming Domains, Language Evaluation criteria and language categories, Evolution of major programming languages. Describing syntax and semantics, formal methods of describing syntax, Pseudo code, Design of Algorithm & Flowchart

UNIT- II

Fundamentals of C: History and importance of C, basic structure and execution of C programs, constants, variables, and data types, Various type of declarations, operators types and expressions, evaluation of expressions, operator precedence and associability. Managing input and output operations, decision making and branching. **Iteration:** while, do...while, for loop, nested loops, break & continue, goto statements.

UNIT- III

Array and String: One-dimensional array and their declaration and initialization, two-dimensional arrays and their initializations, character arrays (One and Two dimensional), reading and writing strings, string - handling functions.

Functions: Need and elements for user -defined functions, definition of functions, return values and their types, function calls and declaration, recursion, parameter passing, passing arrays and strings to functions, the scope, visibility and life time of variables.

UNIT-IV

Understanding Pointers: Accessing the address of a variable, declaration and initialization of pointer variables, accessing a variable through its pointer, pointers and arrays, pointers and function arguments, functions returning pointers.



Structures and Unions: Defining structure, declaring structure variable and accessing structure members, initialization of structure, operation on individual members, and array of structures, union, size of structure.

Recommended Books:

1. Balagurusamy E; Programming in ANSI C; Fifth Edn; Mc Graw Hill, 2011.
2. Kanetkar Y.; LET US C; X Edition, BPB, 2010.
3. Deitel HM & Deitel JP; C How to program; 5th Edn; Pearson Pub
4. Gottfried B; Programming with C: Schaum Outlines; Mc Graw Hill Edition.

Code: <u>COMP-20P-202</u>	Paper Title: Programming with C Lab
Credits : 02	Hours/Week: 04

Content :

Recommended Experiments

I. Part A:

1. Program to read radius of a circle and to find area and circumference
2. Program to read three numbers and find the biggest of three
3. Program to find the roots of quadratic equation
4. Program to generate n primes
5. Program to read a number, find the sum of the digits, reverse the number and check it for palindrome
6. Program to enter a number and check whether it is Armstrong number or not.
7. Program to read numbers from keyboard continuously till the user presses 999 and to find the sum of only positive numbers
8. Program to read percentage of marks and to display appropriate message (use of else-if ladder)
9. Program to input the electricity units consumption and compute the bill based on it.
10. Program to read marks scored by n students and find the average of marks (Demonstration of single dimensional array)
11. Program to find maximum and minimum in a single dimensional Array
12. Program to perform addition and subtraction of Matrices

II. Part B:

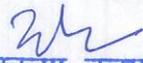
1. Program to find the length of a string without using built in function
2. Program to demonstrate string functions.
3. Program to demonstrate pointers in C

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4. Program to check a number for prime by defining isprime() function
5. Program to demonstrate the classification of functions based on arguments and return type
6. Program to read, display and multiply two $m \times n$ matrices using functions
7. Program to read a string and to find the number of alphabets, digits, vowels, consonants, spaces and special characters.
8. Program to Swap Two Numbers using Pointers
9. Program to demonstrate student structure to read & display records of n students.
10. Program to enter an array and perform sum of elements of an array using pointer

Note: Student can execute a minimum of 10 programs from part A and 8 programs from part B to complete the Lab course




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