SRI VENKATESWARA UNIVERSITY
BCA (Big Data) – W.E.F. 2023-24
SEMESTER – II

Sl. No.	Course	Name of the Subject	Total Marks	Internal Exam	Sem. End Exam	Teaching Hours	Credits
1.	First Language	English	100	25	75	4	3
2.	Second Language	(Telugu / Hindi / Sanskrit / Tamil / Urdu)	100	25	75	4	3
3.	Skill Enhancement Course-1		50	---	50	2	2
4.	Skill Enhancement Course-2		50	---	50	2	2
5.	Major - Course 3	Fundamentals of Computers & Basics of Big Data	100	25	75	3	3
6.	Major - Course 3	Fundamentals of Computers & Basics of Big Data Practical Course	50	---	50	2	1
7.	Major - Course 4	Programming in C	100	25	75	3	3
8.	Major - Course 4	Programming in C Practical course	50	---	50	2	1
9.	Minor		100	25	75	3	3
10.	Courses with Practicals		50	---	50	2	1

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BCA (Big Data) – W.E.F. 2023-24
SEMESTER – II

(MAJOR)

Course Structure

w.e.f. A Y 2023-24

Year	Semester	Paper	Title of the Course	No. of Hrs./ Week	No. of Credits
1	II	3	Fundamentals of Computers & Basics of Big Data	3	3
			Fundamentals of Computers & Basics of Big Data Practical Course	2	1
		4	Programming in C	3	3
			Programming in C Practical Course	2	1

SRI VENKATESWARA UNIVERSITY
BCA (Big Data) – W.E.F. 2023-24
SEMESTER – II
3. Fundamentals of Computers & Basics of Big Data
(w.e.f. 2023-24)

Theory   **Credits: 3**   **3 hrs/week**

Aim and objectives of Course :
Big data refers to extremely large and diverse collections of structured, unstructured, and semi-structured data that continues to grow exponentially over time. These datasets are so huge and complex in volume, velocity, and variety, that traditional data management systems cannot store, process, and analyze them. This course will introduce students to the collection. Preparation, analysis, modelling and visualization of data, covering both conceptual and practical issues. Examples and case studies from diverse fields will be presented, and hands- on use of statistical and data manipulation software will be included.

Learning outcomes of Course:
- Understand the evolution and functionality of a Digital Computer.
- Understand hardware and software components
- Have exposure to Excel software package
- Understand various functions & formulae used in data analysis, preparing charts etc.
- Apply data analysis tools like pivot table, goal seek, scenarios etc.

UNIT I
Introduction to Computers: Characteristics and limitations of computer, types of computers, uses of computers, **Types of Hardware:** Input devices and output devices **Memories**: Primary memory, Secondary Memory, and cache memory
Software: Definition, types of Software: System software, Application software, Differences between System software and Application software
UNIT II
Basics of Operating System: Operating Systems Objectives, functions, and types of Operating Systems (Simple Batch, Multi programmed, Distributed Systems, Real-Time Systems)
DOS: Features,Internal& ExternalCommands.
MS Windows: Features of Windows OS, Components of windows (Taskbar, windows explorer, Desktop, Recycle Bin, My Computer, etc.,)

UNIT-III

Introduction to Big Data & Big Data Analytics, classification Of Digital Data--structured, unstructured, semi-structured data, characteristics of data, evaluation of big data, definition and challenges of big data , what is big data and why to use big data ?, business intelligence Vs big data. What is and isn't big data analytics? Why hype around big data analytics? Classification of analytics, top challenges facing big data, importance of big data analytics, technologies needed to meet challenges of big data.

UNIT IV

    Microsoft Excel:

Fundamentals of Excel : Features of MS-Excel, Excel Program Screen, **Components of MS-ExcelWindow** . Entering labels, values, and formulas in worksheet

Editing a worksheet: Editing cell content - cut, copy and paste in cells – Find and Replace - Undo, Inserting rows and columns, Deleting rows and columns

Formulas and Functions:Formulas: Enter and edit formula in Excel, operators used in formula, cell references in formula **Functions:** Definition, Inserting a function in Excel, **Different types of functions in Excel.**

    UNIT V

Working with Data ranges:Sorting: Sorting on single column, sorting on multiple columns, **Filtering:** Filtering data using AutoFilter

Working with Charts: Different types of charts, Creating a chart, Parts of chart, Changing chart type, changing chart options

Analyzing and Organizing Data: Subtotals, Data Validation, Lookup functions**,** Scenarios.

Working with PivotTables: Creating a PivotTable, Specifying PivotTable data, Working with PivotTable Layout

TEXT BOOKS:
1. Fundamentals Of Computers by ReemaThareja from Oxford University Press

2. Seema Acharya , SubhashiniChellappan --- Big Data And Analytics second edition, Wiley
3. Big Data, Big Analytics: Emerging Business intelligence and Analytic trends forToday's Business, Michael Minelli, Michelle Chambers, and AmbigaDhiraj, John Wiley &Sons, 2013

Reference Books
1. Rajaraman, Introduction to Information Technology, PHI
2. Peter Norton, Introduction to Computers, Sixth edition, Tata   McGraw Hill (2007).
3. Operating systems - Internals and Design Principles, W. Stallings, Pearson.
4. PC Software under Windows by Puneet Kumar And Sushil Bhardwaj From Kalyani Publishers

V. Co-Curricular Activities:

a) Suggested Co-Curricular Activities:

(Co-curricular activities shall not promote copying from textbook or from others work and shall encourage self/independent and group learning)

A. Measurable

1. Assignments (in writing and doing forms on the aspects of syllabus content and outside the syllabus content. Shall be individual and challenging)

2. Student seminars (on topics of the syllabus and related aspects (individual activity))

3. Quiz (on topics where the content can be compiled by smaller aspects and data (Individuals or groups as teams))

4. Study projects (by very small groups of students on selected local real-time problems pertaining to syllabus or related areas. The individual participation and contribution of students shall be ensured (team activity))

B. General

1. Group Discussion

2. Others

RECOMMENDED CONTINUOUS ASSESSMENT METHODS:

Some of the following suggested assessment methodologies could be adopted:

1. The oral and written examinations (Scheduled and surprise tests),
2. Closed-book and open-book tests,
3. Programming exercises,
4. Practical assignments and laboratory reports,
5. Observation of practical skills,
6. Individual and group project reports.
7. Efficient delivery using seminar presentations,
8. Viva voce interviews.
9. Computerized adaptive testing, literature surveys and evaluations,
10. Peersandself-assessment,outputsformindividualandcollaborativework

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SEMESTER – II
PRACTICAL PAPER
3. Fundamentals of Computers & Basics of Big Data

Practical s   **Credits: 1**   **2 hrs/week**

List of suggested lab experiments

1. Adding new data, editing, copying and changing column widths for customer services data
2. Applying Number formatting
3. Formatting - Changing the appearance of your workbook before printing
4. Set a print area, print titles and a header and footer for an Excel sheet
5. Cell References
6. Functions
7. Use Microsoft Excel to calculate basic statistics
8. Pie charts
9. Bar charts
10. If functions to calculate different order discounts
11. Sorting and Filtering
12. Data validations
13. Goal Seek
14. Scenarios
15. Pivot tables

SRI VENKATESWARA UNIVERSITY

BCA (Big Data) – W.E.F. 2023-24
SEMESTER – II
MODEL QUESTION PAPER
COURSE 3: FUNDAMENTALS OF COMPUTERS AND Basics of Big Data
(w.e.f. 2023-24)

Time :3Hrs   **Max Marks 75**

SECTION - A

Answer any Five of the following   **5 X 3= 15 Marks**

1. Short answer question from Unit-1
2. Short answer question from Unit-1
3. Short answer question from Unit-2
4. Short answer question from Unit-2
5. Short answer question from Unit-3
6. Short answer question from Unit-3
7. Short answer question from Unit-4
8. Short answer question from Unit-4
9. Short answer question from Unit-5
10. Short answer question from Unit-5

SECTION - B

Answer any Five of the following   **5 X 12= 60 Marks**

11. Long answer question from Unit-1
12. Long answer question from Unit-1
13. Long answer question from Unit-2
14. Long answer question from Unit-2
15. Long answer question from Unit-3
16. Long answer question from Unit-3
17. Long answer question from Unit-4
18. Long answer question from Unit-4
19. Long answer question from Unit-5
20. Long answer question from Unit-5

Note: **The question paper setter is requested to set question paper based on a model question paper and ensuring coverage across all units equally**

SRI VENKATESWARA UNIVERSITY
BCA (Big Data) – W.E.F. 2023-24
SEMESTER – II
COURSE 4. PROGRAMMING IN C
(w.e.f. 2023-24)

Theory   Credits: 3   3 hrs/week

I.   **Learning Outcomes:** Upon Successful Completion of The Course, A Student Will Be Able to:

   1. Understand the evolution and functionality of a Digital Computer.

   2. Apply logical skills to analyse a given problem

   3. Develop an algorithm for solving a given problem.

   4. Understand "C" language constructs like Iterative statements, Array processing, Pointers, etc.

   5. Apply "C" language constructs to the algorithms to write a "C" language program.

II Syllabus
UNIT I
Introduction to Algorithms and Programming Languages: Algorithm – Key features of Algorithms, Flow Charts, Programming Languages – Generations of Programming Languages – Programming methodologies(paradigms) -
Introduction to C: Introduction– features of C – Structure of C Program – Writing the first C Program – Files used in C Program – Compiling and Executing C Programs.
UNIT II
Programming Constructs: Tokens – Using Comments – Basic Data Types in C – Variables – I/O Statements in C - Operators in C- Programming Examples.
Decision Control and Looping Statements: Introduction to Decision Control Statements– Conditional Branching Statements – Iterative Statements – Nested Loops – Break and   Continue Statement – Goto Statement
UNIT III
Arrays: Introduction – Declaration of Arrays – Accessing elements of the Array – Storing Values in Array– Operations on Arrays – one dimensional, two dimensional and multidimensional arrays.
Strings: Declaring and Initializing string variables, character and string handling functions.
UNIT IV
Functions: Introduction – Function declaration/ prototype – Function definition – function call – return statement – Categories of functions - Recursion - Parameter Passing techniques - Scope of variables – Storage Classes.
Pointers: Introduction to Pointers – declaring and initializing pointer Variables – accessing values using pointers - Pointer Arithmetic – Dynamic Memory Allocation.
UNIT V
Structures and Unions: Introduction – Structure definition - accessing structure members – Array of Structures - union definition – difference between structures and unions, Enumerated Data types.
Files: Introduction to Files – Using Files in C – Reading Data from Files – Writing Data to Files – Detecting the End-of-file – Command Line Arguments.

III. References:

1. E Balagurusamy – Programming in ANSIC – Tata McGraw-Hill publications.
2. Brain W Kernighan and Dennis M Ritchie - The „C" Programming language" - Pearson publications.
3. Ashok N Kamthane: Programming with ANSI and Turbo C, Pearson Edition Publications.
4. YashavantKanetkar - Let Us „C" – BPB Publications.

IV. Recommended Co-Curricular Activities:

(Co-curricular activities shall not promote copying from textbook or from others work and shall encourage self/independent and group learning)

A. Measurable

1. Assignments (in writing and doing forms on the aspects of syllabus content and outside the syllabus content. Shall be individual and challenging)
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4. Study projects (by very small groups of students on selected local real-time problems pertaining to syllabus or related areas. The individual participation and contribution of students shall be ensured (team activity

B. General

1. Group Discussion
2. Try to solve MCQ"s available online.
3. Others

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SEMESTER – II
<u>4. Programming in C</u>

PRACTICAL S   Credits:1   **2 hrs/week**

List of suggested programs :

1. Write a program to check whether the given number is Armstrong or not.
2. Write a program to find the sum of individual digits of a positive integer.
3. Write a program to generate the first n terms of the Fibonacci sequence.
4. Write a program to find both the largest and smallest number in a list of integer values
5. Write a program to demonstrate reflection of parameters in swapping of two integer values using **Call by Value &Call by Address**
6. Write a program that uses functions to add two matrices.
7. Write a program to calculate factorial of given integer value using recursive functions
8. Write a program for multiplication of two M X N matrices.
9. Write a program to perform various string operations.
10. Write a program to search an element in a given list of values.
11. Write a program to sort a given list of integers in ascending order.
12. Write a program to calculate the salaries of all employees using *Employee (ID, Name, Designation, Basic Pay, DA, HRA, Gross Salary, Deduction, Net Salary)* structure.
    a. DA is 30 % of Basic Pay
    b. HRA is 15% of Basic Pay
    c. Deduction is 10% of (Basic Pay + DA)
    d. Gross Salary = Basic Pay + DA+ HRA
    e. Net Salary = Gross Salary - Deduction
13. Write a program to illustrate pointer arithmetic.
14. Write a program to read the data character by character from a file.
15. Write a program to create *Book (ISBN, Title, Author, Price, Pages, Publisher)* structure and store book details in a file and perform the following operations
    a. Add book details
    b. Search a book details for a given ISBN and display book details, if available
    c. Update a book details using ISBN
    d. Delete book details for a given ISBN and display list of remaining Books

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SEMESTER – II
MODEL QUESTION PAPER
COURSE 4: PROGRAMMING IN C
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SECTION - B

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