KAKATIYA UNIVERSITY, WARANGAL-506009
DEPARTMENT OF COMPUTER SCIENCE
Scheme with effect from the academic year 2025-2026

B.A/B.SC (COMPUTER APPLICATIONS) (non-mathematics students)

YEAR/ Semester	Type of Course	Paper Title	Hrs Per Week T: Theory P: Practical	No. of Credits	Max. Marks		
					Intr. Marks	External marks	Total marks
I/I	DSC-1	Fundamentals of Computers	4 (T)	4	20	80	125
	DSC-1	Fundamentals of Computers Lab	2 (P)	1	--	25	
I/II	DSC-2	Programming in C	4 (T)	4	20	80	125
	DSC-2	Programming in C Lab	2 (P)	1	--	25	
II/I	DSC-3	Object Oriented Programming with C++	4 (T)	4	20	80	125
	DSC-3	Object Oriented Programming with C++ Lab	2 (P)	1	--	25	
II/II	DSC-4	Introduction to Multimedia Systems	4 (T)	4	20	80	125
	DSC-4	Introduction to Multimedia Systems Lab	2 (P)	1	--	25	

DSC - Discipline Specific Course;

B.A/B. Sc. Compute Application
SEMESTER – I

Course type	Paper Title	Hours per week	Marks	
DSC-1	Fundamentals Of Computers	**Theory: 04**	**Internal**	**external**
		Credit: 04	**20**	**80**

Unit-I

Introduction to information technology: Development of computers - Generations of computers – An overview of computer system - Types of computers - Input & Output Devices. Looking inside the machine:Basic components of a computer system - Control unit – ALU - Input/output functions - Memory – RAM – ROM – EPROM - PROM and Other types of memory. **Operating System:** Meaning - Definition & Functions - Types of OS - Booting process - DOS – Commands (internal & external) – GUI - wild card characters – Virus & Hackers – Cryptography & cryptology. Windows: Using the Start Menu –Control Panel – Using multiple windows – Customizing the Desktop – Windows accessories (Preferably latest version of Windows or Linux Ubuntu).

Unit- II

Word processing: : Application of word processing software - Menus & Tool Bars - Opening word processor – Creating – Entering - Saving & printing the document - Editing & Formatting, Tables, Text Mail Merge and Macros (Preferably latest version of MS Word or Libre Office Writer).

Unit -III

Work sheet/spread sheet: Application of work sheet/spread sheet - Menus & Tool bars -Creating a worksheet - Entering and editing of numbers - Cell reference - Worksheet to analyse data with graphs & Charts. **Advanced tools:** Functions – Formulae – Formatting numbers - Macros – Sorting, filtering - validation & consolidation of Data (Preferably latest version of MS Excel or Libre Office Calc).

Unit IV

Presentation: Application of Presentation – Menus & Tool bars – Creating presentations – Adding - Editing and deleting slides - Templates and manually – Slide show – Saving - Opening and closing a Presentation –Types of slides - Slide Views - Formatting – Insertion of Objects and Charts in slides - Custom Animation and Transition (Preferably latest version of MS Presentation or Libre Office Impress). Internet & Browsing:Services available on internet – WWW – ISP – Browsers. **Multimedia:** Application of multimedia – Images, Graphics, Audio and Video – IT security.

Suggested Books

1 Introduction to Computers: Peter Norton, McGraw Hill.
2 Fundamentals of Information Technology: Dr. NVN Chary, Kalyani Publishers.
3 Computer Fundamental: AnithaGoel, Pearson.
4 Information Technology Applications for Business: Dr. S. Sudalaimuthu, Himalaya 5 Fundamental of Computers: Balaguruswamy, McGraw Hill.

Reference Books

1. Ivor Horton, Beginning C
2. Ashok Kamthane, Programming in C
3. Herbert Schildt, The Complete Reference C
4. Paul Deitel, Harvey Deitel, C How to Program
5. Byron S. Gottfried, Theory and Problems of Programming with C
6. Brian W. Kernighan, Dennis M. Ritchie, The C Programming Language
7. B. A. Forouzan, R. F. Gilberg, A Structured Programming Approach Using C

Course type	Paper Title	Hours per week	Marks	
DSC-1	Fundamentals Of Computers Lab	**Practical: 02**	**Internal**	**external**
		Credit: 01	**--**	**25**

Lab Experiments:

1. Identify and classify different types of computers (Micro, Mini, Mainframe, and Supercomputer) and specify their uses.
2. Open the system unit and list the major hardware components (Motherboard, RAM, CPU, ROM, SMPS, HDD, etc.).
3. Demonstrate basic DOS commands like DIR, COPY, DEL, MD, CD, TYPE, DATE, TIME, and differentiate between internal & external commands.
4. Perform basic cryptography using any tool or online method – Encrypt and decrypt a short message using substitution or Caesar cipher.
5. Demonstrate navigation in Windows OS or Ubuntu Linux: Customize the desktop, create folders, use Control Panel/Settings, and navigate using the Start Menu.
6. Create a formal letter/document using formatting tools (font styles, sizes, line spacing, bullets, numbering).
7. Use Mail Merge to send an invitation to a list of people using a sample address list.
8. Create and run a Macro that automates formatting (e.g., bold, font size 14, center-align).
9. Insert and format images, tables, and hyperlinks in a document.
10. Demonstrate use of Headers, Footers, Page Numbering and print preview before printing a document.
11. Create a mark sheet using a spreadsheet and calculate total, average, grade using formulas and conditional formatting.
12. Apply sorting and filtering on a sample data of students with name, marks, and grade.
13. Create charts (bar, line, pie) to visually represent sales or performance data.
14. Use data validation to restrict data entry (e.g., marks between 0 to 100).
15. Record and run a macro to automate formatting or repetitive calculations in a spreadsheet.
16. Create a 5-slide presentation on any topic using different slide layouts and themes.
17. Insert multimedia elements such as images, videos, and audio clips into slides.
18. Apply custom animations and transitions to slides and run the slideshow.
19. Use charts and Smart Art to represent data in a visually engaging format.
20. Save the presentation in different formats (PPTX, PDF) and demonstrate how to open, edit, and close the file.
21. Browse using different search engines (Google, Bing, DuckDuckGo) and bookmark useful pages.
22. Demonstrate how to send an email with attachments using Gmail or any mail client.
23. Download and insert multimedia (image/audio/video) in a Word or PowerPoint file.
24. Demonstrate how to check for viruses and use antivirus software (Windows Defender or Avast).
25. Visit 3 websites using a browser and list features like hyperlinks, multimedia content, and form fields.

B.A/B. Sc. Compute Application
SEMESTER – II

Course type	Paper Title	Hours per week	Marks	
DSC-2	**Programming in C**	**Theory: 04**	**Internal**	**external**
		Credit: 04	**20**	**80**

UNIT–I

Introduction: Types of Languages – History of C language – Basic Structure – Creating – Compiling - Linking and Executing the C Program - Pre-processors in "C". **Types and I/O operations**: Keywords & Identifiers – Constants – Variables - Scope and Life of a Variable - Data types - Storage classes - Reading a character or values - Writing a character or value - Formatted Input and Output operations, **Operators**: Introduction – Arithmetic – Relational – Logical – Assignment - Conditional - Special operators – Expressions: Arithmetic – Evaluation - Type conversions.

UNIT-II

Decision Making & Looping: Introduction - If statements - If-else statements - Switch statements - Conditional statements - While statements - Do statements - For Statements. **Arrays**: Introduction - Defining an array - Initializing an array - One dimensional array – Two-dimensional array - Dynamic array**. Strings**: Introduction - Declaring and initializing string variables - Reading and Writing strings - String handling functions.

UNIT-III

Built–in functions: Mathematical functions - String Functions - Character functions - Date functions. **User defined functions**: Introduction - Need for user defined functions - Elements of functions - Return values and their types - Function declaration - Function calls - Recursive functions.

UNIT-IV

Introduction, Address of Operator (&), Pointer, Uses of Pointers, Arrays and Pointers, Pointers and Strings, Dynamic Memory Allocation. Structures: Introduction - Declaring structures variables - Accessing structure members - Functions and Structures - Array of structures - Enumerated Data types - Introduction to Unions.

SUGGESTED READINGS:

1. Programming in ANSCI C: Balaguruswamy, McGraw Hill.
2. Let Us C: Y.Kanetkar, BPB.
3. Programming in C: Ashok Kamthane, Pearson.
4. C How to Program: P.J. Deitel& H.M. Deitel, Pearson & PHI.
5. Programming in C: K.S. Kahlon, Kalyani Publishers.
6. Fundamental of C: Dr. N. Guruprasad, Himalaya Publishing House.
7. C: Learning and Building Business and System Applications: Susant Rout, PHI.
8. Mastering C: K.R. Venugopal, McGraw Hill.
9. Programming in C: J.B. Dixit, Firewal Media.
10. The C Programming Language: B.W.Kernighan&D.M.Ritehie, PHI.
11. C: The Complete Reference: H.Schildt, McGraw Hill.

Course type	Paper Title	Hours per week	Marks	
DSC-2	**Programming in C Lab**	**Practical: 02**	**Internal**	**external**
		Credit: 01	**--**	**25**

1. Write a C program to display your name, roll number, and branch using basic structure and printf().
2. Write a C program to demonstrate the use of all basic data types (int, float, char, double) and display their sizes using sizeof().
3. Write a C program to accept two integers from the user and perform all arithmetic operations on them.
4. Write a program to demonstrate the use of different operators: relational, logical, and assignment.
5. Write a program to evaluate an arithmetic expression using type conversions (e.g., integer to float) and explain the result.
6. Write a C program to find the greatest of three numbers using if-else and conditional operator.
7. Write a program that uses a loop to print the factorial of a given number (use for, while, or do-while).
8. Write a program to input and store 5 student marks in a one-dimensional array and calculate the average.
9. Write a program to perform matrix addition (2D array).
10. Write a program to read a string, count vowels, and display the reversed string.
11. Write a program to calculate the square root and power of a number using math functions (sqrt(), pow()).
12. Write a program to demonstrate built-in string functions like strlen(), strcpy(), strcat(), and strcmp().
13. Write a program that converts a lowercase string to uppercase using character functions like toupper() from ctype.h.
14. Write a user-defined function to check whether a given number is prime or not.
15. Write a recursive function to calculate the Fibonacci series up to ‘n’ terms.
16. Write a program to demonstrate pointer declaration, initialization, and printing the address and value of a variable using & and *.
17. Write a program that uses pointers to access and modify array elements.
18. Write a program to read and print a string using a pointer.
19. Write a program using structures to store and display student details (name, roll number, marks).
20. Write a program to create an array of structures for employees with fields (ID, name, salary) and display all records.

B.A/B. Sc. Compute Application
SEMESTER – III

Course type	Paper Title	Hours per week	Marks	
DSC-3	**Object Oriented Programming with C++**	**Theory: 04**	**Internal**	**external**
		Credit: 04	**20**	**80**

Unit-I

Principles of Objective Oriented Programming Object Oriented Programming Paradigm, Basic Concepts of Object Oriented Programming, Benefits of Object Oriented Programming, Object Oriented Languages, Applications of Object Oriented Programming, Beginning with C++. **Token Expressions & Control Structures:** Tokens, Keywords, Identifiers and Constants, Data Types, Type Compatibility, Variables, Operators in C++, Implicit Conversions, Operator Overloading, Operator Precedence, Control Structures.

Unit-II

Functions in C++, Classes & Objects: The Main Function, Function Prototyping, Call by Reference, Return by Reference, Inline Functions, Function Overloading, Friend and Virtual Functions. Specifying a class, Member Functions, Arrays with in a class, Static Member Functions, Arrays of Objects, Friendly Functions.

Unit-III

Constructors & Destructors, Operator Overloading, Inheritance: Constructors Parameterized Constructors, Copy Constructors, Dynamic Constructors, Destructors, Defining Operator Overloading, Overloading Operators, and Rules for Overloading Operators, Type Conversions. Inheritance: Single Inheritance - Multilevel Inheritance - Multiple Inheritance - Hierarchical Inheritance - Hybrid Inheritance.

Unit-IV

Pointers, Virtual Functions & Polymorphism, Working with Files, Exception handling Pointers, Pointers to Objects, this pointer, Pointer to Derived Classes, Virtual Functions, Classes for File Stream Operations, Opening and Closing a File, File Modes, File Pointers, Input Output Operations, Updating a File.

Reference Books:

1. Object Oriented Design by Rumbaugh (Pearson publication)
2. Object-oriented programming in Turbo C++ By Robert Lafore ,Galgotia Publication.
3. Object-oriented programming with C++ by E.Balagurusamy, 2ndEdition, TMH.

Course type	Paper Title	Hours per week	Marks	
DSC-3	**Object Oriented Programming with C++ Lab**	**Practical: 02**	**Internal**	**external**
		Credit: 01	**--**	**25**

1. Write a Program to find the sum of two numbers using function.
2. Write a Program to find Simple Interest and Compound Interest.
3. Write a Program to demonstrate the working of following Loops: While, Do While, For, If-Else, switch
4. Write a Program to find greatest of three numbers.
5. Write a Program to check whether a number is even or odd.
6. Write a Program to check whether a year is leap year or not.
7. Write a Program to add and subtract two matrices.
8. Write a Program to display elements of an array.
9. Write a Program to calculate Sum and Average of an array.
10. Write a Program to sort elements of an array using Bubble sort.
11. Write a Program to calculate Factorial of a number.
12. Write a Program to check whether a given number is Prime or not.
13. Write a Program to generate Fibonacci series.
14. Write a Program to show function Overloading.
15. Write a Program to create a class and access member function of a class
16. Write a program to show Constructor and Destructor in a class
17. Write a program to convert the temperature in Fahrenheit to Celsius and vice-a-verse
18. Write a program to show the concept of Single inheritance in classes.

B.A/B. Sc. Compute Application
SEMESTER – IV

Course type	Paper Title	Hours per week	Marks	
DSC-4	**Introduction to Multimedia Systems**	**Theory: 04**	**Internal**	**external**
		Credit: 04	**20**	**80**

Unit-I

Multimedia- Definitions, Use of Multimedia, Introduction To Making Multimedia: The Stages of a Multimedia Project, Need, Creativity, Organization, Communication. Text-About Fonts and Faces, Cases, Serif Versus Sans Serif, Using Text in Multimedia, Computers and Text, Font editing and design tools, Hypermedia and Hypertext. Designing for the World Wide Web-Developing for the Web, Text for the Web, Images for the Web, Sound for the Web, Animation for the Web.

Unit - II

Images: Making Still Images, Bitmaps, Vector Drawing, 3-D Drawing and Rendering, Color, Understanding Natural Light and Color, Computerized Color, Color Palettes, Image File Formats.

Unit-III

Image Editing software: selection tools, working with layers, masks and channels, correcting and enhancing photographs, typographic design and vector drawing, working with 3D images, producing files for the web.

Unit-IV

Animation-Principles of Animation, Animation by Computer, Animation Techniques, Animation File Formats, Making Animations that Work, a Rolling Ball, a Bouncing Ball, Creating an Animated Scene; Installing and using animation software (Flash or Blender), adding animation, tweening, morphing; Interactive navigation-working with sound and video.

Textbook:

1. Tay Vaughan, Multimedia: Making it Work (Seventh Edition) (2010). McGraw Hill Professional.

References Books:

1. Juan Manuel Ferreyra , GIMP 6 cookbook, 2011 .
2. Roland Hess, Blender Foundations: The Essential Guide to Learning Blender 2.6.2010.

Student friendly video lecturers pertaining to this course are available at http://spoken-tutorial.org/

Course type	Paper Title	Hours per week	Marks	
DSC-4	**Introduction to Multimedia Systems Lab**	**Practical: 02**	**Internal**	**external**
		Credit: 01	**--**	**25**

Image Editing:

1. Getting to know the Software interface. Get a photograph of yourself and scan it. Enhance the background and use clone, patch and healing brush tools to retouch the digital image.
2. Create a composite image out of 3 images from other photographs using selection tools. Use at least three layers.
3. Experiment with adding a gradient, changing the opacity, applying filters, etc.
4. Create a composite image using layer masks and channels.
5. Designing a book cover or CD cover using the techniques learnt. Animation-2D:
6. Installing animated software and getting to know the interface.
7. Create a simple animation sequence using motion tweening.
8. Dynamic content - bouncing ball, adding sound.
9. Create Animated Text.
10. Designing a Project: Create an online content-rich media using multimedia applications on a topic of your choice.