KAKATIYA UNIVERSITY
FACULTY OF SCIENCE
B.A./B.Sc. Life Science (Computer Applications)
CBCS Pattern with Effect from the Academic Year 2019-2020

Structure of Curriculum

Course Title	Hours/Week		Credits
	Theory	Practical	
Semester –I			
Programming in C	4	3	4+1=5
Semester –II			
Programming in C++	4	3	4+1 = 5
Semester –III			
Relational Data Base Management Systems	4	3	4+1 = 5
Semester –IV			
Multi Media Systems	4	3	4+1 = 5
Semester –V			
Mobile Applications	4	3	4+1 = 5
Semester –VI			
Web Technologies	4	3	4+1 = 5

AECC		
Semester -I	Hours/Week	Credits
	Theory	
Fundamentals of Computer	2	2
Semester -II	Hour/Week	
Office Automation	2	2
SEC		
Semester -III		
Python - I (Sec –I)	2	2
Sci Lab - I (Sec –II)	2	2
Semester -IV		
Python - II (Sec –III)	2	2
Sci Lab - II (Sec –IV)	2	2
Generic Elective (GE)		
Semester -IV		
Information Technologies	4	4
Project/Optional		
Semester -VI		
Information Security and Cyber Laws	Theory 3 / Practical 3	3+1=4

D. Ramesh

Chairperson Board of Studies in Computer Science, KU

Programming in C

Theory	4 Hours/Week	4 Credit	Internal marks = 20
Practical	3 Hours/Week	1 Credit	External Marks = 80

Unit – I

Computer Fundamentals: Introduction of Computers, Classification of Computers, Anatomy of a Computer, Memory Hierarchy, Introduction to OS, Operational Overview of a CPU.

Program Fundamentals: Generation and Classification of Programming Languages, Compiling, Interpreting, Loading, Linking of a Program, Developing Program, Software Development.

Algorithms: Definitions, Different Ways of Stating Algorithms (Step-form, Pseudo-code, Flowchart), Strategy for Designing Algorithms, Structured Programming Concept.

Basics of C: Overview of C, Developing Programs in C, Parts of Simple C Program, Structure of a C Program, Comments, Program Statements, C Tokens, Keywords, Identifiers, Data Types, Variables, Constants, Operators and Expressions, Expression Evaluation–precedence and associativity, Type Conversions.

Unit – II

Input-Output: Non-formatted and Formatted Input and Output Functions, Escape Sequences,

Control Statements: Selection Statements – if, if-else, nested if, nested if-else, comma operator, conditional operator, switch; Iterative Statements–while, for, do-while; Special Control Statement–goto, break, continue, return, exit.

Arrays and Strings: One-dimensional Arrays, Character Arrays, Functions from ctype.h, string.h,

Unit – III

Functions: Concept of Function, Using Functions, Call-by-Value Vs Call-by-reference, Passing Arrays to Functions, Score of Variables, Storage Classes, Inline Functions, and Recursion.

Pointers: Introduction, Address of Operator (&), Pointer, Uses of Pointers, Arrays and Pointers, Pointers and Strings, Dynamic Memory Allocation.

Unit – IV

User-defined Data Types: Declaring a Structure (Union) and its members, Initialization Structure (Union), Accessing members of a Structure (Union), Structures verses Unions, Enumeration Types.

Files: Introduction, Using Files in C, Working with Text Files and Binary Files, Other File Management Functions.

Textbook: Pradip Dey, Manas Ghosh, Computer Fundamentals and Programming in C (2e)
References:
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

Programming in C Lab

Practical   3 Hours/Week   1 Credit   Marks: 50

Note:
- Programs of all the Concepts from Text Book including exercises must be practice and execute.
- Faculty must take care about UG Standard Programs.
- In the external lab examination student has to execute two programs with compilation and deployment steps are necessary. Write the Pseudo Code and draw Flow Chart for the programs.
- Recommended to use Open Source Software: GCC on Linux; DevC++ (or) CodeBlocks on Windows10.
- External Vice-Voce is compulsory.

1. Write a program to find the largest two numbers using if and conditional operator.
2. Write a program to calculate arithmetic operations of two numbers using switch.
3. Write a program to print the reverse of a given number.
4. Write a program to print whether the given number is a prime or not.
5. Write a program to find largest and smallest elements in a given list of numbers
6. Write a program to find the sum of two matrices
7. Write a program to find the product of two matrices.
8. Write a program to print reverse of the string
9. Write a program to find the factorial of a Positive integer Using iteration and recursion
10. Write a program to find the GCD of two positive integers using iteration and recursion.
11. Write a program to demonstrate the call by value and the call by reference concepts.
12. Write a program to illustrate the use of Enumeration data type.
13. Write a program to illustrate the use of structure concept.
14. Write a program to illustrate the use of union concept.
15. Write a program to write content into a file and display contents of a file
16. Write a program to copy content of one file into another file and display the content of new file.

Theory	4 Hours/Week	4 Credit	Internal marks = 20
Practical	3 Hours/Week	1 Credit	External Marks = 80

Unit – I

Introduction to C++: Applications, Example Programs, Tokens, Data Types, Operators, Expressions, Control Structures, Arrays, Strings, Pointers, Searching and Sorting Arrays.

Functions: Introduction, Prototype, Passing Data by Value, Reference Variables, Using Reference Variables as Parameters, Inline Functions, Default Arguments, Overloading Functions, Passing Arrays to Functions.

Unit – II

Object Oriented Programming: Procedural and Object-Oriented Programming, Terminology, Benefits, OOP Languages, and OOP Applications.

Classes: Introduction, Defining an Instance of a Class, Why Have Private Members? Separating Class Specification from Implementation, Inline Member Functions, Constructors, Passing Arguments to Constructors, Destructors, Overloading Constructors, Private Member Functions, Arrays of Objects, Instance and Static Members, Friends of Classes, Member-wise Assignment, Copy Constructors, Operator Overloading.

Unit – III

Inheritance: Introduction, Protected Members and Class Access, Base Class Access Specification, Constructors and Destructors in Base and Derived Classes, Redefining Base Class Functions, Polymorphism and Virtual Member Functions, Abstract Base Classes and Pure Virtual Functions, Multiple Inheritance.

C++ Streams: Stream Classes, Unformatted I/O Operations, Formatted I/O Operations.

Unit – IV

Exceptions: Introduction, Throwing an Exception, Handling an Exception, Object-Oriented Exception Handling with Classes, Multiple Exceptions, Extracting Data from the Exception Class, Re-throwing an Exception.

Templates: Function Templates–Introduction, Function Templates with Multiple Type, Overloading with Function Templates, Class Templates – Introduction, Defining Objects of the Class Template, Class Templates and Inheritance.

Textbook: Tony Gaddis, Starting out with C++: from control structures through objects (7e)
References:

1. B. Lippman, C++ Primer
2. Bruce Eckel, Thinking in C++
3. K.R. Venugopal, Mastering C++
4. Herbert Schildt, C++: The Complete Reference
5. Bjarne Stroustrup, The C++ Programming Language
6. Sourav Sahay, Object Oriented Programming with C++TEXT BOOK:

Programming in C++ Lab

Practical   3 Hours/Week   1 Credit   Marks: 50

Note:

- Programs of all the Concepts from Text Book including exercises must be practice and execute.
- Faculty must take care about UG Standard Programs.
- In the external lab examination student has to execute two programs with compilation and deployment steps are necessary. Write the Pseudo Code and draw Flow Chart for the programs.
- Recommended to use Open Source Software: GCC on Linux; DevC++ (or) CodeBlocks on Windows10.
- External Vice-Voce is compulsory.

1. Write a program to print the sum of digits of a given number
2. Write a program to check whether the given number is Armstrong or not
3. Write a program to check whether the given string is Palindrome or not
4. Write a program to read student name, roll no, marks and display the same using class and object
5. Write a program to find area of a rectangle, circle, and square using class and object
6. Write a program to implement inline function inside and outside of a class for
   a. Finding the area of a square
   b. Finding the area of a cube

7. Write a program to implement friend function and friend class
8. Write a program to implement constructor and destructor with in a class
9. Write a program to demonstrate hierarchical inheritance.
10. Write a program to demonstrate multiple inheritances.
11. Write a program to demonstrate the constructor overloading.
12. Write a program to demonstrate static polymorphism
13. Write a program to demonstrate dynamic polymorphism.
14. Write a program to implement polymorphism using pure virtual functions
15. Write a program to demonstrate the function templates and class templates
16. Write a program to demonstrate exception handling using try, catch and finally.

Model Question Paper

3 Hours   Max Marks -80   Credits -4

PART -A   **Answer any eight questions in part –A   8X4 M = 32 Marks**

UNIT- I   1
           2
           3

UNIT- II   4
            5
            6

UNIT- III   7
            8
            9

UNIT- IV   10
           11
           12

Part – B   **Answer all Questions 12MX4 = 48 Marks**

UNIT- I   13
           Or
           14

UNIT- II   15
            Or
            16

UNIT- III   17
            Or
            18

UNIT- IV   19
            Or
            20

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<p align="center" style="color:red">Practical Question Paper</p>

3 Hours   Max Marks -50   Credits -1

Answer any Two   15MX2 = 30 MARKS

UNIT – I   1 Program

UNIT- II   1 Program

UNIT-III   1 Program

UNIT -IV   1 Program

Viva -   10 Marks

Record – 10 Marks