SRI VENKATESWARA UNIVERSITY

B.A. / B.Sc COMPUTER APPLICATIONS

III SEMESTER

(Under CBCS W.E.F. 2021-22)

PROGRAMMING WITH C & C++

(Five units with each unit having 12 hours of class work)

Model Outcomes:

At the end of the course, the students is expected to DEMONSTRATE the following cognitive abilities (thinking skill) and psychomotor skills.

A. *Remembers and states in a systematic way (Knowledge)*
   1. Develop programming skills
   2. Declaration of variables and constants use of operators and expressions
   3. learn the syntax and semantics of programming language
   4. Be familiar with programming environment of C and C++
   5. Ability to work with textual information (characters and strings) & arrays

B. *Explains (Understanding)*
   6. Understanding a functional hierarchical code organization
   7. Understanding a concept of object thinking within the framework of functional model
   8. Write program on a computer, edit, compile, debug, correct, recompile and run it

C. *Critically examines, using data and figures (Analysis and Evaluation)*
   9. Choose the right data representation formats based on the requirements of the problem
   10. Analyze how C++ improves C with object-oriented features
   11. Evaluate comparisons and limitations of the various programming constructs and choose correct one for the task in hand.

D. Working in 'Outside Syllabus *Area' under a Co-curricular Activity* (Creativity)

Planning of structure and content, writing, updating and modifying computer programs for user solutions

E. Exploring C programming and Design C++ classes for code reuse (Practical skills***)

PROGRAMMING WITH C & C++

SYLLABUS

Unit

I **Introduction and Control Structures:**

History of 'C' - Structure of C program – C character set, Tokens, Constants, Variables, Keywords, Identifiers – C data types - C operators - Standard I/O in C - Applying if and Switch Statements

II **Loops And Arrays:**

Use of While, Do While and For Loops - Use of Break and Continue Statements - Array Notation and Representation - Manipulating Array Elements - Using Multi Dimensional Arrays

III **Strings and Functions:**

Declaration and Initialization of String Variables - String Handling Functions - Defining Functions - Function Call - Call By Value, Call By Reference – Recursion

IV **Classes and Objects**

Introduction to OOP and its basic features - C++ program structure - Classes and objects - Friend Functions- Static Functions –Constructor – Types of constructors – Destructors - Unary Operators

V **Inheritance:**

Inheritance - Types of Inheritance -Types of derivation- Public – Private - Protected Hierarchical Inheritance - Multilevel Inheritance – Multiple Inheritance - Hybrid Inheritance

Learning Resources (Course 3C: : Programming with C & C++)

References:

(1) E. Balagurusamy "Object oriented programming with C++

(2) R.Ravichandran "Programming with C++"

(3) **Mastering C by K R Venugopal and Sudeep R Prasad, McGraw Hill**

(4) Expert C Programming: Deep Secrets Kindle Edition Peter van der Linden

(5) Let Us C YashavantKanetkar

(6) The C++ Programming Language Bjarne Stroustrup

(7) C++ Primer Stanley B. Lippman, Josée Lajoie, Barbara E. Moo

Online Resources:

https://www.tutorialspoint.com/cprogramming/index.html

https://www.learn-c.org/

https://www.programiz.com/c-programming

https://www.w3schools.in/c-tutorial/

https://www.cprogramming.com/tutorial/c-tutorial.html

https://www.tutorialspoint.com/cplusplus/index.html

https://www.programiz.com/cpp-programminghttp://www.cplusplus.com/doc/tutorial/

https://www.learn-cpp.org/

https://www.javatpoint.com/cpp-tutorial

Practical Component: @ 2 hours/week/batch

1. Write C programs for
   a. Fibonacci Series
   b. Prime number
   c. Palindrome number
   d. Armstrong number.
2. 'C' program for multiplication of two matrices

3. 'C' program to implement string functions
4. 'C' program to swap numbers
5. 'C' program to calculate factorial using recursion
6. 'C++' program to perform addition of two complex numbers using constructor
7. Write a program to find the largest of two given numbers in two different classes using friend function
8. Program to add two matrices using dynamic contructor
9. Implement a class string containing the following functions:
   a. Overload + operator to carry out the concatenation of strings.
   b. Overload == operator to carry out the comparison of strings.
10. Program to implement inheritance.

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)

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. Field studies (individual observations and recordings as per syllabus content and related areas (Individual or team activity)
5. 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))

General

Group Discussion

Visit to Software Technology parks / industries

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. Coding 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. Peers and self-assessment, outputs form individual and collaborative work

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B.A. / B.Sc., DEGREE COURSE IN COMPUTER APPLICATIONS

III SEMESTER - W.E.F. 2021-22

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MODEL QUESTION PAPER

Time: 3 hours Marks: 75 marks

Note: This question paper contains two parts A and B.
Part A is compulsory which carries 25 marks. Answer any five of the following questions in Part A.
Part B consists of 5 Units. Answer any one full question from each unit. Each question carries 10 marks

PART – A

Answer any *Five* of the following question. (5X5=25M)

1.	
2.	
3.	
4.	
5.	
6.	
7.	
8.	
9.	
10.	

PART – B

Answer All The Questions. Each question carries 10 marks (5X10= 50M)

11.	(A) OR (B)
12.	(A) OR (B)
13.	(A) OR (B)
14.	(A) OR (B)
15.	(A) OR (B)