GOVERNMENT ARTS COLLEGE (AUTONOMOUS)

KUMBAKONAM 612 002

Re - accredited With 'A' Grade by NAAC & Affiliated to Bharathidasan University

DEPARTMENT OF COMPUTER SCIENCE

(Effective for those admitted from 2017-2018 onwards)

SYLLABI

B.Sc., COMPUTER SCIENCE

GOVERNMENT ARTS COLLEGE (AUTONOMOUS), KUMBAKONAM.

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B.Sc., COMPUTER SCIENCE

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SEMESTER – I

CC 1 - PROGRAMMING IN 'C'

Subject Code: 17U1CS1	Credits: 4	External Marks: 75	Hours: 6

Objectives: *To make the students to understand the basic constructs and structures of C programming language including preliminaries, functions, statements, unions, files and pointers*

Unit I: Introduction To C - Constants, Variables, Data Types - Operators And Expressions. Type Declarations, Arithmetic Operators, Relational And Logical Operators, Type Conversions, Increment And Decrement Operators, Conditional Operators, Bitwise Operators, Assignment Operators, Expressions, Conditional Expressions, Mathematical Functions.

Unit II: Managing Input And Output Operations – Reading a Character, Writing a Character, Formatted Input –Scanf( ), Formatted Output – Printf( ) etc. Decision Making And Branching – Simple IF Statement, IF – ELSE, ELSE – IF, Switch – Case Statements, Break, Continue, GoTo and Labels. Decision Making And Looping.- The WHILE Statement, DO Statement, The FOR Statement, Jumps in Loops etc.

Unit III: Fundamentals of Arrays, Elements of Arrays, Accessing of Arrays, Retrieval Of Arrays - Along Operations in Branching And Loops. Parameter of Passing of Arrays, One Dimensional – Arrays. Two Dimensional – Arrays. Multi Dimensional Arrays. User Defined Function and Strings – Calling a Function, Called a Function, Category Of Function, Recursion, Function With Arrays. Parameter Passing Of Functions, For (;;), Void( ), Main ( ) etc.

Unit IV: Structures And Unions.- Structure Definition Giving Values To Members, Initialization, Comparison of Structure Variables, Arrays of Structures, Arrays Within Structures, Structures Within Structures, Structures And Functions. Unions.

Unit V: Pointers - File Management In C. Understanding Pointers, Accessing the Address of a Variable, Declaring, Initialising, Expressions of Pointers. Pointers And Arrays, Pointer And Functions, Pointer and Structures. Defining and Opening a File, Closing a file, I/O Operations in Files, Random Access To Files, Command Line Arguments.

Text Book:

1. Balagurusamy. E., "Programming In ANSI C", Third Edition, Tata McGraw-Hill , 2006 (ISBN –0- 07- 053477-2)

Reference Book:

1. "The C Programming Language" - Brain W Kernighan Dennis M Ritchie – Eastern Economy Edition.
2. Byron S Gottfried., ":Programming With C ", Schaum; S Outline Series- Tata McGraw Hill Publications, New Delhi.

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SEMESTER – I

AC 1 - STATISTICS FOR COMPUTER SCIENCE I

Subject Code: 17U1CSS1	Credits: 3	External Marks: 75	Hours: 6

Objectives: *To know the problem in the Measures of central tendency, Measures of Dispersion, and skewness.*
To know the basic concepts of probability and random variable.

UNIT I: Measures of Central Tendency- Mean Median, Mode, Harmonic mean, and geometric mean, - definition, merits and demerits (simple problem).

UNIT II: Measures of Dispersion- Range, co efficient of Range, Quartile Deviation, Co-efficient of Q.D, Standard deviation and Co- efficient of variation- Definition, merits and demerits. (Simple problems)

UNIT III: Skewness– Definition, Karl Pearson's Co - efficient of Skewness, Bowley's Co - efficient of Skewness – simple problems. , Kurtosis and Moments-Definition only

UNIT IV: Probability –Definition, Statistical and Mathematical Probability, Axiomatic Probability. Addition, Multiplication and Baye's theorem. (Simple problems) Boole's Inequality.-(Statement only)

UNIT V: Random Variables – Discrete and Continuous random variables (simple problems). Distribution function and its properties (no proof). Mathematical Expectation- Definition- properties. (Simple Problems).

Reference Text Books:

1. Statistical (Theory and Practice) R.S.N. Pillai and V.Bagavathi- Chand & company LTD, New Delhi. (UNIT-I,II&III)

2. Fundamentals of Mathematical Statistics – Gupta S.C. and Kapoor V.K, Sultan & Sons, New Delhi.(UNIT-IV&V)

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SEMESTER – I

CP 1 – LAB - I 'C' PROGRAMMING

Subject Code: 17U1CSP1	Credits: 3	External Marks: 60	Hours: 4

Objectives: *To make the students understand the basic constructs and structures of C programming language including preliminaries, functions, statements, unions, files and pointers in practical way through programs using these items and to create excellent programs with various aspects of C Language.*

1. To create Temperature conversion – from Fahrenheit to Celsius & Celsius to Fahrenheit.
2. To explain the solutions of a Quadratic equation in all cases.
3. To explain the sum of series by using math functions in Sine, Cosine, Tangent and Exponential etc.
4. To Read and Print the characters and strings by using scanf ( ), printf ( ) format codes of I/O functions.
5. To create Pay bill calculations by using Switch – Case Expressions, etc.
6. To create an Illustration of Nested Loops along with Break and Continue.
7. To create an Ascending & Descending order of Numbers by using Arrays.
8. To create a program for Sorting of Names in the Alphabetical order.
9. To create matrix - Array of Addition – subtraction – multiplication by using various functions.
10. To create a program using Arrays within the Structure.
11. To create a program using Structures as Function Parameters.
12. To create a program for Book shop Inventory.
13. To create a program using Accessing Addresses of variables.
14. To create a program for Pointers as Function Parameters.
15. Writing - Reading from a File operation in the C language.

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SEMESTER – II

CC 2 – JAVA PROGRAMMING

Subject Code: 17U2CS2	Credits: 4	External Marks: 75	Hours: 6

Objectives: *To understand the basic concepts of Object Oriented Programming with Java language.*

Unit I: Fundamentals of Object Oriented Programming: Basic Concepts- Constants - Integer Constants - Real Constants-Single Character Constants - String Constants – Variables - Data types - Declaration of Variables - Giving values to Variables - Scope of Variables - Type Casting. Operators - Arithmetic Operators - Relational Operators - Logical Operators -Assignment Operators - Increment and Decrement Operators - Conditional Operators - Bitwise Operators - Special Operators.

Unit II: Decision Making and Branching**:** Decision Making with if Statement - Simple if Statement - The if…else Statement - Nesting of if…else Statement - The else if Ladder - The Switch Statement - The Conditional Operator. Decision Making and Looping: Introduction - The While Statement - The do Statement - The For Statement - Additional features of for loop-Nested of for loops - Jump in Loops - Jumping out of a loop - Skipping a part of a loop.

Unit III: Classes, Objects and Methods: Defining a Class - Adding Class Members - Accessing Class Members – Constructors - Methods Overloading - Static Members - Nesting of Methods –Inheritance - Overriding Methods - Final Variable and Methods - Final Variable and Methods -Final Classes - Abstract Methods and Classes - Array and String - Arrays - One Dimensional Arrays - Two Dimensional Arrays - String Arrays.

Unit IV: Interfaces, Multiple Inheritance - Defining Interfaces - Extending Interfaces - Implementing Interfaces - Accessing Interface Variables - Packages - Java API Packages - Using System Packages - Creating and Accessing Packages - Adding class to a Packages - Multi Threaded Programming - Creating Threads - Extending the thread class - Stopping a thread -blocking a thread - Life cycle of a thread.

Unit V: Managing Errors and Exceptions - Types Of Errors - Exceptions - Syntax of Exception handling code - Multiple Catch Statements - Using Finally Statement - Throwing Own Exceptions. Applet Programming - Local and Remote Applets - Building Applets Code - Applet Life cycle designing a Web Page - Adding applet of Html File - Running the applet - Managing Input/Output files in Java - Stream Classes - Byte Stream Classes - Character Stream Classes -Creation of Files - Reading/Writing Characters - Reading/Writing Bytes.

Text Book:

Programming with JAVA, E.BALAGURUSAMY, Tata McGraw-Hill Publishing Company Limited, New Delhi.

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SEMESTER - II
AC 2 - STATISTICS FOR COMPUTER SCIENCE II

Subject Code: 17U2CSS2	Credits: 4	External Marks: 75	Hours: 6

Objectives: To know the basic special discrete and continuous probability distribution. To understand the problem in correlation, regression and Association of Attributes.

UNIT I: Discrete distributions –Binomial, Poisson, Geometric and Negative Binomial distributions-Definitions, mean, variance, mgf and characteristic function. (Derivation only)

UNIT II: Continuous distributions –Normal, Uniform and Exponential distribution, and Gamma distribution - Definitions, mean variance, mgf and characteristic function (Derivation only).

UNIT III: Correlation –Definition, Types, methods-scatter diagram, Karl – Pearson's co – efficient of correlation, Rank correlation. (Simple problems)

UNIT IV : Regression –Definition, properties of Regression co-efficient, Regression equations (two variables- Simple problems). Difference between Correlation and Regression.

UNIT V: Association of Attributes – Class frequencies – Order of frequencies –(2X2) Contingency table – Finding missing frequencies – Yule's coefficient of Association and Coefficient of Colligation. (Simple problems)

Reference Text Books:

1. Fundamentals of Mathematical Statistics, Gupta S.C. and V.K. Kapoor Sultan & Sons, New Delhi. (UNIT-I, II)

2. Statistics (Theory and Practice) R.S.N. Pillai and V. Bagavathi - Chand& company LTD, New Delhi. (UNIT-III, IV&V)

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CP 2 – LAB - II JAVA PROGRAMMING

Subject Code: 17U2CSP2	Credits: 3	External Marks: 60	Hours: 4

Objectives: *To impart Practical Training in Java Programming Language.*

1. Write a program to sort the given numbers using Arrays.

2. Write a program to implement the FIND and REPLACE operations in the given multiple text.

3. Write a program to implement a calculator to perform basic Arithmetic Operations.

4. Write a program to find the area of a rectangle using Constructor.

5. Write a program to find the student's percentage and grade using Command Line Arguments.

6. Write a program to draw circle or triangle or square using Polymorphism and Inheritance.

7. Implement multiple inheritance concepts in java using Interface, you can choose your own example of a company or education institution or a general concept which requires the use of Interface to solve a particular problems.

8. Write a program to create threads and assign priorities to them.

9. Write a program to develop an applet to play multiple audio clips using Multithreading.

10. Write a program to create a window with three check boxes called red, green and blue.

    The applet should change the colors according to the selection.

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SEMESTER - II
AP 1 - STATISTICS FOR COMPUTER SCIENCE PRACTICAL

Subject Code: 17U2CSSP1	Credits: 4	External Marks: 60	Hours: 4

Objectives: *To know the problem in the Measures of central tendency and Measures of Dispersion, the basic concepts of probability and random variable.*
To understand the problem in correlation, regression, Association of Attributes

Unit I: Measures of central tendency - Arithmetic Mean, Median, Mode, Geometric Mean, Harmonic Mean. (Numerical problems only).

Unit II: Measures of Dispersion -Quartile Deviation, Mean Deviation, Standard Deviation and Co-efficient of variation. (Numerical problems only)

Unit III: Karl Pearson's and Bowley's Co-efficient of Skewness, Probability and Random variables (Numerical problems only)

Unit IV: Fitting of Binomial and Poisson distributions. Fitting of Normal distribution (Area method only)

Unit V: Karl Pearson's co-efficient of correlation, Spearman's rank correlation co-efficient, Regression lines, Association of Attributes (Numerical problems only)

Reference Text Books

1. Fundamentals of Mathematical Statistics, Gupta S.C. and V.K. Kapoor Sultan & Sons, New Delhi

2. Practical statistics -R.S.N. Pillai and V. Bagavathi - -Chand& Co