VIJAYANAGARA SRI KRISHNADEVARAYA UNIVERSITY, BALLARI

Bachelor of Computer Applications

(BCA)

Course Structure and Syllabus

With effect from the academic year 2021-22 onwards

Department of Studies in Computer Science

Semester: I

Course Code: DSC1 **Course Title: Programming in C**
Course Credits: 03 **Hours/Week: 03**
Total Contact Hours: 42
Formative Assessment Marks: 40 **Exam Marks: 60**

Course Outcomes (COs):

After completing this course satisfactorily, a student will be able to:

- Confidently operate Desktop Computers to carry out computational tasks
- Understand working of Hardware and Software and the importance of operating systems
- Understand programming languages, number systems, peripheral devices, networking, multimedia and internet concepts
- Read, understand and trace the execution of programs written in C language
- Write the C code for a given problem
- Perform input and output operations using programs in C
- Write programs that perform operations on arrays

Unit – 1

Introduction to C Programming: Overview of C; History and Features of C; Structure of a C Program with Examples; Creating and Executing a C Program; Compilation process in C.

C Programming Basic Concepts: C Character Set; C tokens - keywords, identifiers, constants, and variables; Data types; Declaration & initialization of variables; Symbolic constants. **10 hrs**

Input and output with C: Formatted I/O functions – *printf* and *scanf,* control stings and escape sequences, output specifications with *printf*functions; Unformatted I/O functions to read and display single character and a string - *getchar, putchar, gets* and *puts* functions.

Unit - 2

C Operators & Expressions: Arithmetic operators; Relational operators; Logical operators; Assignment operators; Increment & Decrement operators; Bitwise operators; Conditional operator; Special operators; Operator Precedence and Associatively; Evaluation of arithmetic expressions; Type conversion. **8 hrs**

Control Structures: Decision making Statements – Simple_if, if_else, nested if_else*,* else_if ladder, Switch Case, goto*,* break & continue statements; Looping Statements - Entry controlled and exit controlled statements, while, do-while, for loops, Nested loops.

Unit - 3

Derived data types in C: Arrays: One Dimensional arrays - Declaration, Initialization and Memory representation; Two Dimensional arrays - Declaration, Initialization and Memory representation.

Strings: Declaring & Initializing string variables; String handling functions - strlen, strcmp, strcpy and strcat; Character handling functions - toascii, toupper, tolower, isalpha, isnumeric etc.

8 hrs

Unit - 4

User Defined Functions: Need for user defined functions; Format of C user defined functions; Components of user defined functions - return type, name, parameter list, function body, return statement and function call; Categories of user defined functions - With and without parameters and return type.

8 hrs

Pointers in C: Understanding pointers - Declaring and initializing pointers, accessing address and value of variables using pointers; Pointers and Arrays; Pointer Arithmetic; Advantages and disadvantages of using pointers;

Unit – 5

User defined data types: Structures - Structure Definition, Advantages of Structure, declaring structure variables, accessing structure members, Structure members initialization, comparing structure variables, Array of Structures; Unions - Union definition; difference between Structures and Unions.

8 hrs

Text Books:

1. C: The Complete Reference, By Herbert Schildt.
2. C Programming Language, By Brain W.Kernighan
3. Kernighan & Ritchie: The C Programming Language(PHI)

References:

1. P. K. Sinha &Priti Sinha: Computer Fundamentals(BPB)
2. E. Balaguruswamy: Programming in ANSI C(TMH)
3. Kamthane: Programming with ANSI and TURBO C (Pearson Education)
4. V. Rajaraman: Programming in C (PHI –EEE)
5. S. Byron Gottfried: Programming with C(TMH)
6. YashwantKanitkar: Let us C
7. P.B. Kottur: Programming in C (Sapna Book House)

Course Code: DSC 1 | **Course Title: C Programming Lab**
Course Credits: 02 | **Hours/Week: 04**
Total Contact Hours: 52
Formative Assessment Marks: 25 | **Exam Marks: 25**

Programming Lab

Part A:

1. Write the program for the simple, compound interest.
2. Program to read radius of a circle and to find area and circumference
3. Program to read three numbers and find the biggest of three
4. Program to demonstrate library functions inmath.h.
5. Write program that declares Class awarded for a given percentage of marks, where mark <40%= Failed, 40% to <60% = Second class, 60% to <70%=First class, >= 70% = Distinction. Read percentage from standard input.
6. Write a C program, which takes two integer operands and one operator from the user, performs the operation and then prints the result. (Consider the operators +,-,*, /, % and use Switch Statement)
7. Program to read a number, find the sum of the digits, reverse the number and check it forpalindrome
8. Program to read numbers from keyboard continuously till the user presses 999 and to find the sum of only positivenumbers
9. Program to read percentage of marks and to display appropriate message (Demonstration of else-ifladder)
10. Program to read marks scored by n students and find the average ofmarks (Demonstration of single dimensionalarray)
11. Program to perform addition and subtraction ofMatrices
12. Write a C program to find the minimum, maximum and average in an array of integers.

Part B:

1. Program to find the length of a string without using built infunction
2. Program to demonstrate string functions.
3. Program to demonstrate pointers in C
4. Program to check a number for prime by defining isprime( )function
5. Program to read, display and to find the trace of a squarematrix
6. Program to read, display and add two m x n matrices usingfunctions
7. Program to read, display and multiply two m x n matrices usingfunctions
8. Program to read a string and to find the number of alphabets, digits, vowels, consonants, spaces and specialcharacters.
9. Program to Reverse a String usingPointer
10. Program to Swap Two Numbers using Pointers
11. Program to demonstrate student structure to read & display records of n students.
12. Program to demonstrate the difference between structure &union.

Note: Student has to execute a minimum of 10 programs in each part to complete the Lab course

Course Code: DSC 2 | **Course Title: Web Designing**
Course Credits: 03 | **Hours/Week: 03**
Total Contact Hours: 42
Formative Assessment Marks: 40 | **Exam Marks: 60**

Course Outcomes (COs):

- Be familiar with different web design theories and terminology.
- Analyze a web page and identify its elements and attributes.
- Create web pages using XHTML and Cascading Style Sheets.
- Build dynamic web pages using JavaScript (Client side programming).

Unit – 1

Fundamentals: Internet, WWW, Web Browsers and Web Servers, URLs, MIME, HTTP, Security, the Web Programmers Toolbox. **8 hrs**

Introduction to XHTML: Basic syntax, Standard structure, Basic text markup, Images, Hypertext Links, Lists, Tables, Forms, Frames

Unit-2

Cascading Style Sheet (CSS): Introduction, Levels of style sheets, Style specification formats, Selector forms, Property value forms, Font properties, List properties, Color, Alignment of text, The box model, Background images, The and tags, Conflict resolution. **8 hrs**

Unit-3

The Basics of JavaScript: Overview of JavaScript, Object orientation and JavaScript, Syntactic characteristics, Primitives, operations, and expressions, Screen output and keyboard input, Control statements, Object creation and modification, Arrays, Functions, Constructors, Pattern matching using regular expressions, Errors in scripts, Examples. **10 hrs**

Unit-4

JavaScript and HTML Documents: The JavaScript execution environment, The Document Object Model, Element access in JavaScript, Events and event handling, handling events from the Body elements, Button elements, Text box and Password elements, The DOM 2 event model, the navigator object, DOM tree traversal and modification. **8 hrs**

Unit-5

Dynamic documents with JavaScript: Introduction, positioning elements, Moving elements, Element visibility, Changing colors and fonts, Dynamic content, Stacking elements, locating the mouse cursor, Reacting to a mouse click, slow movement of elements, Dragging and dropping elements. **8 hrs**

Text Books:

1. Robert W. Sebesta: Programming the World Wide Web,4th Edition, Pearson Education, 2008.

References:

1. M. Deitel, P.J. Deitel, A. B. Goldberg: Internet & World Wide Web How to Program, 4th Edition, Pearson Education, 2004.
2. Chris Bates: Web Programming Building Internet Applications, 3rd Edition, Wiley India,2007.
3. Xue Bai et al: The web Warrior Guide to Web Programming, Cengage Learning, 2003.
4. M Srinivasan: Web Technology Theory and Practice, Pearson Education,2012.

Course Code: DSC2 **Course Title: Web Designing Lab**
Course Credits: 02 **Hours/Week: 04**
Total Contact Hours: 52 **Formative Assessment Marks: 25**
Exam Marks: 25

Part A: HTML

- Write an XHTML Program to demonstrate basic html tags.
- Write an XHTML Program to demonstrate different types of lists.
- Write an XHTML Program to demonstrate Nested list.
- Write an XHTML Program to demonstrate image tag and its attribute.
- Write an XHTML Program to create Time Table.
- Write an XHTML Program to demonstrate image as Link.
- Write an XHTML Program to demonstrate hyper link through text.
- Write an XHTML Program to create horizontal frames.
- Write an XHTML Program to demonstrate image and marquee tags.
- Write an XHTML Program to create user login form.

Part B: CSS and Java Script

- Write a Java Script Program to create application form.
- Write a Java Script Program to demonstrate Internal CSS.
- Write a Java Script Program to demonstrate external style sheets.
- Write a Java Script Program to find the factorial of a number using external java script file in the head section.
- Write a Java Script Program print the Fibonacci series up to N using java script.
- Write a Java Script Program to find reverse of given number using external java script.
- Write a Java Script Program to find the larger of 2 numbers using java script function.
- Write a Java Script Program to perform the math operations using java script.
- Write a Java Script Program to demonstrate array object methods using java script.
- Write a Java Script Program to demonstrate Event Handling - Background Color Change

NOTE: In addition to the ones listed above, universities can include other activities so as for the student to become proficient in using personal computers for multiple purposes for which modern computers can be put touse.

Course Code: DSC 3 | **Course Title: Mathematical Foundation**
Course Credits: 03 | **Hours/Week: 03**
Total Contact Hours: 42
Formative Assessment Marks: 40 | **Exam Marks: 60**

Note: The students who have studied Accountancy at PUC and ITI students have to opt Mathematical Foundation

Course Outcomes (COs):

- Study and solve problems related to connectives, predicates, and quantifiers under different situations.
- Develop basic knowledge of matrices and to solve equations using Cramer's rule.
- Know the concept of Eigen values.
- To develop the knowledge about derivatives and know various applications of differentiation.
- Verify trigonometric identities, using proper logic and use trigonometric identities to evaluate expressions.
- Solve trigonometric equations.
- Take limits of algebraic and trigonometric expressions of the form 0/0 (that simplify), non-zero number over 0, including limits that go to (positive or negative) infinity, limits that don't exist and limits that are finite.
- Differentiate and Integrate all polynomial, rational, and trigonometric functions and compositions of those functions.

Unit - 1

Mathematical logic: Introduction-statements Connectives-negation, conjunction, disjunction- statement formulas and truth tables- Conditional and Biconditional statements- tautology and contradiction- Quantifiers, negation, consequences of implication-contrapositive and converse, problems, proving a statement by the method of contradiction by giving counter example. **8 hrs**

Unit - 2

Matrix algebra: Introduction-Types of matrices-matrix operations- transpose of a matrix -determinant of matrix - inverse of a matrix- Cramer's rule, finding rank of a matrix - normal form-echelon form, Cayley Hamilton theorem-Eigen values. **8 hrs**

Unit - 3

Trigonometry: Trigonometric functions, Measuring angles in radians and in degrees and conversion from one measure to another. Definition of trigonometric functions with the help of unit circle. Truth of the identity $\sin^2 x + \cos^2 x = 1$, for all x. Expressing sin (x+ y) and cos (x + y) in terms of sin x, sin y, cos x and cos y and their simple applications. Definition of allied angles and obtaining their **10 hrs**

trigonometric ratios using compound angle formulae.Identities related to sin2x, cos2x, tan2x, sin3x, cos3x and tan3x

Unit - 4

Differential Calculus: Functions and limits, Continuity of a function, Differentiability - Simple Differentiation of Algebraic Functions, product rule and quotient rule– Evaluation of First and Second Order Derivatives. **8 hrs**

Unit – 5

Integral Calculus: Definition, Indefinite nature of integration, standard elementary integrals, Integration by substitution, examples. Integration using trigonometric identities, examples. Integration by partial fractions and Integration by parts (simple problems), Definite Integrals and Properties of definite integrals. **8 hrs**

Textbooks:

1. Discrete Mathematics 2nd Edn. (Schaum‘s Outline Series), Seymour Lipschutz, Marc Lipson, Tata Mc-Graw Hill.
2. Shanti Narayan, A Textbook of Matrices, S. Chand Publishing N. Delhi
3. S.L Loney, Plane Trigonometry, Part 1 and 2, Arihant Publications, 2016
4. Shanti Narayan, Integral Calculus, S.Chand& Co. 1999.
5. Shanti Narayan, Differential Calculus, S.Chand& Co. 1998.

References:

1. M. Shantakumar, Engineering Mathematics – Volume I, Vasundhara Publishers, Mysore.
2. Dr.B.S. Grewal, Elementary Engineering Mathematics, Khanna Publishers, Delhi.
3. H K Das. Advanced Engineering Mathematics, S. Chand & Co., N. Delhi.2019.

Course Code: DSC 3 | **Course Title: Accountancy**
Course Credits: 03 | **Hours/Week: 03**
Total Contact Hours: 42
Formative Assessment Marks: 40 | **Exam Marks: 60**

Note: The students who have studied Mathematics at PUC or Diploma have to opt Accountancy

Course Outcomes (COs):

- Study and understand Accounting, systems of Book, Branches of accounting advantage and limitations
- Know the concept of accounting, financial and accounting process and Journalization.
- Maintenance different account book and reconciliations
- Preparations of different bills, and trial balance.

Unit – 1

Introduction: History and Development of Accounting, Meaning, Objectives and functions of Accounting, Bookkeeping V/s Accounting, Users of accounting data, systems of book keeping and accounting, branches of accounting, advantages and limitations of accounting **10 hrs**

Unit – 2

Accounting Concepts and Convention: Meaning, need and classification, accounting standards meaning, need and classification of Indian accounting standards. Accounting principles V/s accounting standard **8 hrs**

Financial Accounting Process: Classification of accounting transactions and accounts, rules of debit and credit as per Double Entry System. Journalizing and Ledger posting.

Unit – 3

Preparation of Different Subsidiary Books: Purchase Day book Sales Day Book, Purchase Returns Day Book, Sales Returns Day Book, Cash Book. **8 hrs**

Bank Reconciliation Statement: Meaning, Causes of Difference, Advantages, Preparation of Bank Reconciliation Statements.

Unit – 4

Account Procedure: Honor of the Bill, Dishonor of the Dill, Endorsement, Discounting, Renewal, and Bill for collection, Retirement of the Bill, Accommodation Bills, Bill Receivable Book and Payable Book. Preparation of Trial Balance: Rectification of errors and Journal Proper **8 hrs**

Unit – 5

Preparation of Final Accounts: Meaning, need and classification, Preparation of Manufacturing, Trading, Profit and loss account and Balance – Sheet of sale- traders and partnership firms. **8 hrs**

Text Books:

1. S. Ramesh, B.S. Chandrashekar, A Text Book ofAccountancy.
2. V.A. Patil and J.S. Korihalli, Book – keeping and accounting, (R. Chand and Co.Delhi).
3. R.S.Singhal, Principles of Accountancy,(NageenPrakashpvt.Lit.Meerut).
4. M.B.Kadkol,Book–KeepingandAccountancy,(RenukaPrakashan,Hubil)
5. Vithal, Sharma:Accounting for Management, Macmillan Publishers, Mumbai.

References:

1. B.S. Raman, Accountancy, (United Publishers,Mangalore).
2. Tulsian, Accouning and Finacial Management – I: Financial Accounting – PersonEducation.

Open Elective courses offered by the Department of Computer Science

Semester – 1

Course Code:
Course Credits: 03
Total Contact Hours: 42
Exam Marks: 60

Course Title: C Programming Concept
Hour of Teaching/Week: 03
Formative Assessment Marks: 40

Course Outcomes (COs):

After completing this course satisfactorily, a student will be able to:

- Confidently operate Desktop Computers to carry out computational tasks
- Understand working of Hardware and Software and the importance of operating systems
- Understand programming languages, number systems, peripheral devices, networking, multimedia and internet concepts
- Read, understand and trace the execution of programs written in C language
- Write the C code for a given problem
- Perform input and output operations using programs in C
- Write programs that perform operations on arrays

Unit – 1

Fundamentals of Computers: Introduction to Computers - Computer Definition, Characteristics of Computers, Evolution and History of Computers, Types of Computers, Basic Organisation of a Digital Computer; Number Systems – different types, conversion from one number system to another; Computer Codes – BCD, Gray Code, ASCII and Unicode; Boolean Algebra – Boolean OperatorswithTruthTables;TypesofSoftware–SystemSoftwareandUtilitySoftware;Computer Languages - Machine Level, Assembly Level & High Level Languages, Translator Programs – Assembler,InterpreterandCompiler;PlanningaComputerProgram-Algorithm,FlowchartandPseudo code with Examples. **8 hrs**

Unit – 2

Introduction to C Programming: Over View of C; History and Features of C; Structure of a C Program with Examples; Creating and Executing a C Program; Compilation process in C. **10 hrs**

C Programming Basic Concepts: C Character Set; C tokens - keywords, identifiers, constants, and variables; Data types; Declaration & initialization of variables; Symbolic constants.

Input and output with C: Formatted I/O functions - printf and scanf, control stings and escape sequences, output specifications with printf functions; Unformatted I/O functions to read and display single character and a string - getchar, putchar, gets and puts functions.

Unit – 3

C Operators & Expressions: Arithmetic operators; Relational operators; Logical **8 hrs**

operators; Assignment operators; Increment & Decrement operators; Bitwise operators; Conditional operator; Special operators; Operator Precedence and Associatively; Evaluation of arithmeticexpressions; Type conversion.

Control Structures: Decision making Statements - Simple if, if_else, nested if_else, else-if ladder,Switch-case, goto, break & continue statements; Looping Statements - Entry controlled and Exit controlled statements, while, do-while, for loops, Nested loops.

Unit - 4

Arrays: One Dimensional arrays - Declaration, Initialization and Memory representation; Two Dimensional arrays - Declaration, Initialization and Memory representation. **8 hrs**

Strings:Declaring&Initializingstringvariables;Stringhandlingfunctions-strlen,strcmp,strcpyand strcat; Character handling functions - toascii, toupper, tolower, isalpha, isnumericetc.

Unit – 5

User Defined Functions: Need for user defined functions; Format of C user defined functions; Components of user defined functions - return type, name, parameter list, function body, return statement and function call; Categories of user defined functions - With and without parameters and return type. **8 hrs**

Text Books:

1. Pradeep K. Sinha and Priti Sinha: Computer Fundamentals (Sixth Edition), BPB Publication
2. E. Balgurusamy: Programming in ANSI C (TMH)

References:

1. Kamthane: Programming with ANSI and TURBO C (Pearson Education)
2. V. Rajaraman: Programming in C (PHI – EEE)
3. S. ByronGottfried: Programming with C (TMH)
4. Kernighan &Ritche: The C Programming Language (PHI)
5. YashwantKanitkar: Let us C
6. P.B. Kottur: Programming in C (Sapna Book House)