Tumkur University

Tumkur

Board of Studies in Computer Science

National Education Policy-2020

Curriculum Structure and Syllabus for 1ˢᵗ and 2ⁿᵈSemesters

Bachelor of Science Programmes (Basic and Honours Degree)

With Computer Science as MAJOR and another Subject as

MAJOR &

Open Elective Courses in Computer Science

Submitted to

Tumkur

University

Tumakuru

Model Curriculum Structure

Program: BSc (Basic and Honors)   Subject: Computer Science

1. **Computer Science as MAJOR with another Subject as MINOR** (Table IIA of Model Curriculum)

Sem	Discipline Specific Core Courses (DSC)	Hour of Teaching/ Week Theory	Lab	Discipline Specific Elective Courses (DSE)/ Vocational Courses (VC)	Hour of Teaching/ Week
1	CSDSC01: Computer Fundamentals and Programming in C	4			
	CSDSC01P: C Programming Lab		4		
2	CSDSC02: Data Structures using C	4			
	CSDSC02P: Data structures Lab		4		
3	CSDSC03: Object Oriented Programming Concepts and Programming in JAVA	4			
	CSDSC03P: JAVA Lab		4		
4	CSDSC04: Database Management Systems	4			
	CSDSC04P: DBMS Lab		4		
5	CSDSC05: Programming in PYTHON	3		VC-1: Any one from Vocational Courses, Group – 1*	3
	CSDSC06: Computer Networks	3			
	CSDSC05P: PYTHON Programming lab		4		
	CSDSC06P: Computer Networks Lab		4		
6	CSDSC07: Internet Technologies	3		VC-2: Any one from Vocational Courses, Group – 2*	3
	CSDSC08: Operating System Concepts	3			
	CSDSC07P: JAVA Script, HTML, CSS Lab		4		
	CSDSC08P: C# Programming Lab		4	Internship:	2
7	CSDSC09: Computer Graphics and Visualization	3		DSE-1: Any one from Discipline Specific Elective Courses, Group – 1**	3
	CSDSC10: Design and Analysis of Algorithms	3			
	CSDSC11: Software Engineering	3			
	CSDSC09P: Computer Graphics and Visualization Lab		4	DSE-2: Any one from Discipline Specific Elective Courses, Group – 2**	3
	CSDSC10P: Algorithms Lab		4		
				Research Methodology:	3
8	CSDSC12: Artificial Intelligence and Applications	3		DSE-3: Any one from Discipline Specific Elective Courses, Group – 3**	
	CSDSC13: Computer Organization and Architecture	3			
	CSDSC14: Data Warehousing and Data Mining	3			3
	CSDSC12P: AI Lab		4	Research Project:	6

2. Computer Science as MAJOR with another Subject also as MAJOR (Table IIIA of Model Curriculum)

Sem	Discipline Specific Core Courses (DSC)	Hour of Teaching/ Week Theory	Lab	Discipline Specific Elective Courses (DSE)	Hour of Teaching/ Week
1	CSDSC01: Computer Fundamentals and Programming in C CSDSC01P: C Programming Lab	4	4		
2	CSDSC02: Data Structures using C CSDSC02P: Data structures Lab	4	4		
3	CSDSC03: Object Oriented Programming Concepts and Programming in JAVA CSDSC03P: JAVA Lab	4	4		
4	CSDSC04: Database Management Systems CSDSC04P: DBMS Lab	4	4		
5	CSDSC05: Programming in PYTHON CSDSC06: Computer Networks CSDSC05P: PYTHON Programming lab CSDSC06P: Computer Networks Lab	3 3	4 4		
6	CSDSC07: Internet Technologies CSDSC08: Operating System Concepts CSDSC07P: JAVA Script, HTML, CSS Lab CSDSC08P: C# Programming Lab	3 3	4 4		
7	CSDSC09: Computer Graphics and Visualization CSDSC10: Design and Analysis of Algorithms CSDSC11: Software Engineering CSDSC09P: Computer Graphics and Visualization Lab CSDSC10P: Algorithms Lab	3 3 3	4 4	DSE-1: Any one from Discipline Specific Elective Courses, Group – 1[**] DSE-2: Any one from Discipline Specific Elective Courses, Group – 2[**] Research Methodology:	3 3 3
8	CSDSC12: Artificial Intelligence and Applications CSDSC13: Computer Organization and Architecture CSDSC14: Data Warehousing and Data Mining CSDSC12P: AI Lab	3 3 3	4	DSE-3: Any one from Discipline Specific Elective Courses, Group – 3[**] Research Project:	3 6

3. Computer Science as MINOR with another Subject as MAJOR (As per Table II A of Model Curriculum)

Semester	Discipline Specific Core Courses (DSC)	Hour of Teaching/Week	
		Theory	Lab
1	CSDSC01: Computer Fundamentals and Programming in C	4	
	CSDSC01P: C Programming Lab		4
2	CSDSC02: Data Structures using C	4	
	CSDSC02P: Data structures Lab		4
3	CSDSC03: Object Oriented Programming Concepts and Programming in JAVA	4	
	CSDSC03P: JAVA Lab		4
4	CSDSC04: Database Management Systems	4	
	CSDSC04P: DBMS Lab		4
5	CSDSC05: Programming in PYTHON	3	
	CSDSC05P: PYTHON Programming lab		4
6	CSDSC06: Internet Technologies	3	
	CSDSC06P: JAVA Script, HTML, CSS Lab		4

*Vocational Courses:

Group-1:	Group-1:
• DTP, CAD and Multimedia	[Health Care Technologies
• Hardware and Server Maintenance	[Digital Marketing
• Web Content Management Systems	[Office Automation
• E-Commerce	[Multimedia Processing
• Web Designing	[Accounting Package

** Discipline Specific Elective Courses:

Group-1:	Group-2:	Group-3:
[IoT	[Information and Network Security	[Data Analytics
[Cyber Law and Cyber Security	[Data Compression	[Storage Area Networks
[Web Programming - PHP and MySQL	[Discrete Structures	[Pattern Recognition
[Clouds, Grids, and Clusters	[Opensource Programming	[Digital Image Processing
[Software Testing	[Multimedia Computing	[Parallel Programming
	[Big Data	[Digital Signal Processing

Semester: I

Course Code: CSDSC01	**Course Title: Computer Fundamentals and Programming in C**
Course Credits: 04	Hour of Teaching/Week: 04
Total Contact Hours: 52	

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

Course Content

Content	Hours
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 Operators with Truth Tables; Types of Software – System Software and Utility Software; Computer Languages - Machine Level, Assembly Level & High Level Languages, Translator Programs – Assembler, Interpreter and Compiler; Planning a Computer Program - Algorithm, Flowchart and Pseudo code with Examples.	8
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. **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.	10
Unit - 3	
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.	12

Control Structures: Decision making Statements - S*imple 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. Strings: Declaring & Initializing string variables; String handling functions - *strlen, strcmp, strcpy and strcat;* Character handling functions - *toascii, toupper, tolower, isalpha, isnumeric* etc. **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;	12
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. **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.	10

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. Byron Gottfried: Programming with C (TMH)
4. Kernighan & Ritche: The C Programming Language (PHI)
5. Yashwant Kanitkar: Let us C
6. P.B. Kottur: Programming in C (Sapna Book House)

Course Code: CSDSC01P	Course Title: C Programming Lab
Course Credits: 02	Hour of Teaching/Week: 04
Total Contact Hours: 52	

Practice Lab

The following activities be carried out/ discussed in the lab during the initial period of the semester.

1. Basic Computer Proficiency
   a. Familiarization of Computer Hardware Parts
   b. Basic Computer Operations and Maintenance.
   c. Do's and Don'ts, Safety Guidelines in Computer Lab
2. Familiarization of Basic Software – Operating System, Word Processors, Internet Browsers, Integrated Development Environment (IDE) with Examples.
3. Type Program Code, Debug and Compile basic programs covering C Programming fundamentals discussed during theory classes.

Programming Lab

Part A:

1. Write a C Program to read radius of a circle and to find area and circumference
2. Write a C Program to read three numbers and find the biggest of three
3. *Write a C Program to demonstrate library functions in math.h*
4. Write a C Program to check for prime
5. Write a C Program to generate n primes
6. Write a C Program to read a number, find the sum of the digits, reverse the number and check it for palindrome
7. Write a C Program to read numbers from keyboard continuously till the user presses 999 and to find the sum of only positive numbers
8. Write a C Program to read percentage of marks and to display appropriate message (Demonstration of else-if ladder)
9. Write a C Program to find the roots of quadratic equation (demonstration of switch-case statement)
10. Write a C program to read marks scored by n students and find the average of marks (Demonstration of single dimensional array)
11. Write a C Program to remove Duplicate Element in a single dimensional Array
12. Program to perform addition and subtraction of Matrices

Part B:

1. Write a C Program to find the length of a string without using built in function
2. Write a C Program to demonstrate string functions.
3. Write a C Program to demonstrate pointers in C
4. Write a C Program to check a number for prime by defining *isprime( )* function
5. Write a C Program to read, display and to find the trace of a square matrix
6. Write a C Program to read, display and add two m x n matrices using functions
7. Write a C Program to read, display and multiply two m x n matrices using functions
8. Write a C Program to read a string and to find the number of alphabets, digits, vowels, consonants, spaces and special characters.
9. Write a C Program to Reverse a String using Pointer
10. Write a C Program to Swap Two Numbers using Pointers
11. Write a C Program to demonstrate student structure to read & display records of n students.
12. Write a C 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: CSDSC02	**Course Title: Data Structures using C**
Course Credits: 04	Hour of Teaching/Week: 04
Total Contact Hours: 52	

Course Outcomes (COs):

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

- Describe how arrays, records, linked structures, stacks, queues, trees, and graphs are represented in memory and used by algorithms
- Describe common applications for arrays, records, linked structures, stacks, queues, trees, and graphs
- Write programs that use arrays, records, linked structures, stacks, queues, trees, and graphs
- Demonstrate different methods for traversing trees
- Compare alternative implementations of data structures with respect to performance
- Describe the concept of recursion, give examples of its use
- Discuss the computational efficiency of the principal algorithms for sorting and searching

Course Content

Content	Hours
Unit - 1	
Introduction to data structures: Definition; Types of data structures - Primitive & Non-primitive, Linear and Non-linear; Operations on data structures. Algorithm Specification, Performance Analysis, Performance Measurement Recursion: Definition; Types of recursions; Recursion Technique Examples - Fibonacci numbers, GCD, Binomial coefficient $^{n}C_{r}$, Towers of Hanoi; Comparison between iterative and recursive functions.	10
Unit - 2	
Arrays: Basic Concepts – Definition, Declaration, Initialisation, Operations on arrays; Types of arrays; Arrays as abstract data types (ADT); Representation of Linear Arrays in memory; Traversing linear arrays; Inserting and deleting elements; Sorting – Selection sort, Bubble sort, Quick sort, Selection sort, Insertion sort; Searching - Sequential Search, Binary search; Iterative and Recursive searching; Multidimensional arrays; Representation of multidimensional arrays; Sparse matrices.	10
Unit - 3	
Dynamic memory allocation: Static & Dynamic memory allocation; Memory allocation and de- allocation functions - *malloc*, *calloc*, *realloc* and *free*. Linked list: Basic Concepts – Definition and Representation of linked list, Types of linked lists - Singly linked list, Doubly liked list, Header liked list, Circular linked list; Representation of Linked list in Memory; Operations on Singly linked lists – Traversing, Searching, Insertion, Deletion; Memory allocation; Garbage collection,	12

Unit - 4	
Stacks: Basic Concepts – Definition and Representation of stacks; Operations on stacks; Applications of stacks; Infix, postfix and prefix notations; Conversion from infix to postfix using stack; Evaluation of postfix expression using stack; Application of stack in function calls. Queues: Basic Concepts – Definition and Representation of queues; Types of queues - Simple queues, Circular queues, Double ended queues, Priority queues; Operations on Simple queues;	10
Unit - 5	
Trees: Definition; Tree terminologies –node, root node, parent node, ancestors of a node, siblings, terminal & non-terminal nodes, degree of a node, level, edge, path, depth; Binary tree: Type of binary trees - strict binary tree, complete binary tree, binary search tree and heap tree; Array representation of binary tree. Traversal of binary tree; *preorder, inorder* and *postorder* traversal; Reconstruction of a binary tree when any two of the traversals are given.	10

Text Books

1. Satraj Sahani: Fundamentals of Data Structures

References

1. Tanenbaum: Data structures using C (Pearson Education)
2. Kamathane: Introduction to Data structures (Pearson Education)
3. Y. Kanitkar: Data Structures Using C (BPB)
4. Kottur: Data Structure Using C
5. Padma Reddy: Data Structure Using C
6. Sudipa Mukherjee: Data Structures using C – 1000 Problems and Solutions (McGraw Hill Education, 2007))

Course Code: CSDSC02P	**Course Title: Data Structures Lab**
Course Credits: 02	Hour of Teaching/Week: 04
Total Contact Hours: 52	

Programming Lab

Part A:

1. Write a C Program to find GCD using recursive function
2. Write a C Program to display Pascal Triangle using binomial function
3. Write a C Program to generate n Fibonacci numbers using recursive function.
4. Write a C Program to implement Towers of Hanoi.
5. Write a C Program to implement dynamic array, find smallest and largest element of the array.
6. Write a C Program to create two files to store even and odd numbers.
7. Write a C Program to create a file to store student records.
8. Write a C Program to read the names of cities and arrange them alphabetically.
9. Write a C Program to sort the given list using selection sort technique.
10. Write a C Program to sort the given list using bubble sort technique.

Part B:

1. Write a C Program to sort the given list using insertion sort technique.
2. Write a C Program to sort the given list using quick sort technique.
3. Write a C Program to sort the given list using merge sort technique.
4. Write a C Program to search an element using linear search technique.
5. Write a C Program to search an element using recursive binary search technique.
6. Write a C Program to implement Stack.
7. Write a C Program to convert an infix expression to postfix.
8. Write a C Program to implement simple queue.
9. Write a C Program to implement linear linked list.
10. Write a C Program to display traversal of a tree.

Open Electives in Computer Science:

(For BA, BSc, BCom, BSW, BBA, BBM students studying Core Courses other than Computer Science/ Computer Applications)

- Office Automation
- C Programming Concepts
- Multimedia Processing
- Python Programming Concepts
- R Programming
- E-Content Development
- E-Commerce
- Web Designing
- Computer Animation
- Accounting Package

Open Electives in Computer Science:

(For BA, BSc, BCom, BSW, BBA, BBM students studying Core Courses other than ComputerScience/ComputerApplications)

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- C Programming Concepts
- Multimedia Processing
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- R Programming
- E-Content Development
- E-Commerce
- Web Designing
- Computer Animation
- Accounting Package

Selected List of Open Electives in Computer Science:

Sem	Subjects	Hr/week
I	CSOEC01: Tally and GST	3
I	CSOEC02: Office Automation	3
II	CSOEC03: C - Programming Concepts	3
II	CSOEC04: Web Designing	3

TALLY AND GST

I SEMESTER

Course Code: CSOEC01	Course Title: TALLY AND GST
Course Credits: 03	Hour of Teaching/Week: 03
Total Contact Hours: 42	

3 Hrs/week   **Total : 42 Hours**

UNIT 1: Basics of Accounting and Tally   10 Hrs

Type of Accounts, Golden Rules of Accounting, Accounting Principles, Concepts and Conventions, Double Entry System of Book Keeping mode of accounting, Financial Statements, Transactions, Recording Transaction. Introduction to Tally, Versions of Tally. Accounting Groups-Primary groups are Capital Account, Current Assets, Current Liabilities, Fixed Assets, Investments, Loans (Liability), Suspense Account, Misc. Expenses, Sales Account, Purchase Account, Direct Income, Indirect Income, Direct Expenses, Indirect Expenses, Branch/Divisions. Secondary Groups are , Reserves & Surplus, Bank Account, Cash-in-hand, Deposits (Asset), Loans and Advances, Stock-in- hand, Sundry Debtors, Duties and Taxes, Provisions, Sundry Creditors, Bank OD Account, Secured Loans, Unsecured Loans.

UNIT 2: Company Info Menu   10 Hrs

Select Company, Shut Company, Create Company, Alter Company, Security control, Backup, Restore. Accounting Information- Accounting Configuration & Features, Group Creation, Multiple Group Creation, Ledger Creation, Multiple Ledger Creation, Advance Ledger Creation. Inventory Information-Inventory configuration &features, Inventory info. Menu, Stock groupsStock categories, Stock item, Unit of measurement, Bills of materials, Locations / Godowns

UNIT 3: Voucher Entry and Invoicing   09 Hrs

Introduction Voucher Type, Creating a Voucher Type, Displaying a Voucher Type, Altering a Voucher Type Accounting Vouchers, Receipt Voucher, Payment Voucher,

Contra Voucher, Journal Voucher, Purchase Invoice, Purchase Voucher, Sales Invoice, Sales Voucher, Debit Note, Credit Note Inventory Vouchers, Purchase Order, Sales Order, Delivery Note Voucher, Physical Stock Voucher.

UNIT 4: Taxation   05 Hrs

What is GST,CGST SGST,GST on Purchase invoice, GST on Sales invoice, IGST on Sales, other States, GST on Expenses, GST on Fixed Assets, GST on Buying or Servicing, Debit Note : Purchase Returns, Credit Note : Sales Returns, Day Book Report print

UNIT 5: Payroll Systems   08 Hrs

Industries or organization Payroll Management, Employee Groups Creations, Department wise Groups, Employees Creations with Name or Designations, Account Department, Admin Department, Purchase Department, Sales Department, Worker Department, Employees payment Units Types, Attendance / Production Types, Attendance leave with pay, leave without pay, Production Hrs.Pay Heads creations, Basic salary, HRA, DA, TA, PF,Employee allowances or Deductions, Maintain employees salary Details or Rate, Creating payroll vouchers, employee attendance sheet, present or leave, overtime manage, print all employee Salary, print Salary Slip.

Reference Books:

1. Tally Technology-"The Complete Reference"

2. Official guide to financial accounting using Tally ERP 9 with GST, Tally Education P.Ltd.

OFFICE AUTOMATION
I SEMESTER

Course Code: CSOEC02	Course Title: **OFFICE AUTOMATION**
Course Credits: 03	Hour of Teaching/Week: 03
Total Contact Hours: 42	

3 Hrs / Week   **Total Hrs :42**

UNIT 1: Introduction to Computer and Windows   08 Hrs

Introduction, History of computer, Block diagram of a computer, Generation of computer, Classification of computers, Characteristics of computer, Applications of computer.

Windows concepts, general features of windows, different parts of windows screen, Setting the date and time, Icon explanation, paint, notepad, calculator, control panel, mouse properties, multitasking, my computer, folder creation, use of recycle bin and task bar.

UNIT 2: Word Processing - MS-Word   08 Hrs

Introduction to MS Word, parts of MS- word, Parts of MS-Word screen, Backstage view, editing the text, formatting the text, Text effects, Bullets add numbering, Paragraph formatting, Borders & Shadings, Text styles, Table formatting, Picture, clipart and shapes adding, SmartArt representing, Screenshot explanation, Header & Footer, Word art, Drop cap, Page setup, Watermark, Mail merge, Auto correct, Word count, Spell check & grammar check, Commenting, Restrict editing, Document views, Zoom options, Arranging & Splitting word screen, Printing document, Exit from MS Word.

UNIT 3: Spread Sheet   12 Hrs

Introduction to MS-excel screen, Parts of MS-excel screen, Worksheet basic, creating worksheet, entering text, Dates, alphanumeric and values, conditional formatting, table formatting, Cell styles, Auto sum, Sorting & Filtering, Editing the table, explaining / types of charts, Page setup, print area, Sheet options, statistical, mathematical formulae, insert functions, protecting sheet & workbook, workbook views, exiting excel.

UNIT 4: Presentation Graphics - MS-Power Point   06 Hrs

Introduction to MS-Power point screen, Parts of MS-Power point screen, New slide & Layout options, editing text, Images & Illustrations, Photo album, Page setup, Slide Themes, Background styles & Graphics, Slide Transition effects, Sound effects for text and images, new animation effects, Order & Reordering animation.

UNIT 5: Internet and ICT Tools   08 Hrs

Definition, Internet, Intranet, Search engine, video conference, web browsers, online forms, drive, spread sheet, presentation slides, docs and classroom platform, Visualization tools.

Reference Books:

1. Microsoft Office 2020 -: Belton, Claire, John Walkenbach, Herb Tyson, Michael R Groh, Faithe Wempen.
2. Microsoft Office 2010 for windows : Joe Habraken.

COMPUTER SCIENCE OPEN ELECTIVE

C-PROGRAMMING CONCEPTS

II SEMESTER

Course Code: CSOEC03	**Course Title: C**-Programming concepts
Course Credits: 03	Hour of Teaching/Week: 03
Total Contact Hours: 42	

UNIT I : Introduction to Programming: **9 Hrs**

Importance of C: Basic Structure of C Programs, Programming Style, Executing a C Program. Character Set ,C Tokens, Keywords and Identifiers ,Constants, Variables, Data Types ,Declaration of Variables, Assigning Values to Variables, Defining Symbolic Constants.

Managing Input and Output Operations: Reading a Character, Writing a Character, Formatted Input, Formatted Output.

Operators and Expressions: Introduction, Arithmetic Operators, Relational Operators, Logical Operators, Assignment Operators, Increment and Decrement Operators, Conditional Operator, Bitwise Operators, Special Operators, Arithmetic Expressions, Evaluation of Expressions, Precedence of Arithmetic Operators, Type Conversions in Expressions, Operator Precedence and Associativity.

UNIT II   : Decision Making and Branching: **9 Hrs**

Introduction, Decision Making with IF Statement, Simple IF Statement, the IF .... ELSE Statement, Nesting of IF..... ELSE Statements, The ELSE IF Ladder, The Switch statement. Simple programs from program list.

Decision Making and Looping: The WHILE Statement, The DO-WHILE Statement, the FOR Statement, Jumps in LOOPS. Simple Programs from program list.

UNIT III : Arrays: **9 Hrs**

One-dimensional Arrays, Declaration of One-dimensional Arrays, Initialization of One-dimensional Arrays, Example programs- Linear search, Binary search, Bubble sort. Two-

dimensional Arrays, Declaration of Two-dimensional Arrays, Initialization of Two dimensional Arrays. Simple Programs from program list.

UNIT IV : Character Arrays and Strings: 7 Hrs

Declaring and Initializing String Variables ,Reading Strings from Terminal ,Writing Strings to Screen , String-handling Functions (strlen(), strcpy(), strcmp(), strcat(), strrev()), Example Programs (with and without using built-in string functions). Simple Programs from program list

UNIT V : User-defined Functions: 8 Hrs

Elements of User-defined Functions, Definition of Functions, Return Values and their Types, Function Calls, Function Declaration, Category of Functions, No Arguments and no Return Values, Arguments but no Return values, Arguments with Return Values, No Arguments but Returns a Value. Recursion - Factorial of an integer, Fibonacci series. Simple Programs from program list.

TEXT BOOKS:

1. E. Balagurusamy Programming in ANSI C, 5th Edition, Tata McGraw-Hill Publications
2. P B Kottur Computer Concepts and C Programming

REFERENCE BOOKS:

1. Kerningham Dennis Ritchie The C programming language (ANSI C version), 2 nd Edition, PHI India
2. Jeri R Hanly Elliot B Koffman Problem solving and program design in C Person Addison Wesley 2006
3. Yashwant Kanetkar Let us C, 6th Edition , BPB publication

C- Programs list for Practice

Programs List:

1. Program to calculate total marks, percentage and grade of a student. Marks obtained in each of the three subjects are to be input by the user. Assign grades according to the following criteria:
   Grade A: Percentage >=80
   Grade B: Percentage>=70 and =60
   Grade C: Percentage>=60 and =40 and

Grade D: Percentage>=40 and <40

Grade E: Percentage<40

2. Develop a C Program to implement a simple calculator to perform addition, subtraction, multiplication and division operations using switch construct. Display appropriate messages for invalid operator.

3. Develop a C Program to generate the Prime numbers between the ranges m & n using nested for loop construct.

4. Develop a C Program to find the GCD & LCM of two integers using Euclid's algorithm.

5. Develop a C program to read n elements into an integer array and sort the array using Bubble sort technique. Print the input array and the resultant array with suitable messages.

6. Develop a C Program to conduct Binary search for a key element over an array of n integer elements. Report success or failure with appropriate messages.

7. Develop a C program to print addition of two matrices.

8. Develop a C program to print product of two matrices.

9. Develop a C program to count the vowels & consonants in a given string.

10. Develop a recursive C function to find the factorial of a number.

COMPUTER SCIENCE OPEN
ELECTIVE

WEB DESIGNING

II SEMESTER

Course Code: CSOEC04	**Course Title: Web Designing**
Course Credits: 03	Hour of Teaching/Week: 03
Total Contact Hours: 42	

UNIT 1 : Fundamentals of web   06 Hrs

Internet, Intranet, WWW, web browsers, web servers, Search engines, DNS, URLs, MIME, HTTP, CGI, Internet Security.

UNIT 2 : Introduction to HTML   07 Hrs

Introduction, History and versions of HTML, Advantages & Disadvantages of HTML,Hypertext and Hypertext Markup Language, Why HTML, Prerequisites. Basic structureof HTML, HTML comments.

UNIT 3 :Tags and Elements of HTML documents: 09 Hrs

Definition of tag, HTML Element, different types of tags: container tag and empty tag, Basic text markup: title tag, head tag, body tag, Paragraphs <p>,Headings <h1>......<h6>, preserving white space <pre>tag, Line break
, <hr>, Presentation elements:<i>,<b>,<u>,<sup>,<sub>,<s>,<tt>,<big>,<small>,Phrase elements:<em>,<strong>,<meta> tag, Character entities.

UNIT 4 : Lists , Images and Hyper Linking in HTML: 08 Hrs

Lists: Ordered lists, Unordered lists and Definition lists, adding images using <img> tags and setting an image as background, embedding a multimedia on to a web page: Inserting audio files and video <marquee> behaviour, types of Hyperlinks: Internal Links, Local links, External Links, anchor <a> tag, links with text and images.

UNIT 5 : Tables, Forms and Frames in HTML: 12 Hrs

Creating and managing tables: Defining border,<tr>,<th> and <td> tags, cellspacing and cell padding attributes, rowspan and colspan attributes,<Caption> tag and its attributes, Managing Forms: creating interactiveforms, Different types of Form Controls:Text Input Controls, Checkboxes Controls, Radio Box Controls, Select Box Controls, File Select boxes, Hidden Controls, Clickable Buttons,Menus and buttons, action controls: submit and reset,Using Frames:<frameset> and <frame>, nested frames

Reference Books:

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

2. Thomas A. Powell, HTML & CSS: The Complete Reference, Fifth Edition

CSSEC01: Basics of Computers

1ˢᵗ Semester

2Hrs/week   **Total: 28 hrs**

Unit 1: COMPUTER BASICS   **5 hrs**

Evolution of computers, characteristics of computer, computer generations: first generation, second generation, third generation, fourth generation and fifth generation computers. Classification of computers: based on working principle, size and capability, computer applications: data processing, commercial, office automation, industry and engineering, healthcare, education, graphics and multimedia applications.

Unit 2: COMPUTER ORGNIZATION   **5hrs**

Block diagram of computer, computer memory: primary memory: Read Only Memory and Random Access Memory. Secondary memories- hard disk, floppy disk, compact disk, blue ray disk, pen drive, memory cord. Input devices: key board, mouse, OMR, OCR, MICR, BCR and scanner. Output devices: monitor (CRT ,LCD, LED), printers: impact and non impact printers, plotters.

Unit 3: NUMBER SYSTEM   **3 hrs**

Introduction to number systems, positional and non positional number systems. Decimal, binary, octal and hexa decimal number systems and their conversation.

Unit 4: COMPUTER HARDWARE AND SOFTWARE   **5 hrs**

Computer hardware, computer software-types of software: system software, application software, programming languages, low level and high level languages. Program translators: assemblers, compilers, interpreters. Problem solving techniques: steps in problem solving techniques, algorithm: characteristics, examples, flowchart: flowchart symbols, examples.

Unit 5: COMPUTER NETWORKS AND INTERNET APPLICATIONS   3 hrs

Introduction, Types of Networks, Network Topology. LAN, WAN, MAN, Intranet and Internet, Internet applications, WWW, E-mail, browsing and searching. Search engines. Computer virus antivirus and surfing.

Unit 6: OPERATING SYSTEM   2 hrs

Introduction to OS, functions of OS, different views of OS, type of OS, DOS :   internal and external commands.

Unit 7: MS-OFFICE   5hrs

MS Word: Introduction to MS-Word, Editing a document, Formatting a document, Preview document, Printing a document, Find and Replace, Checking the grammar and Spelling , Word count, Header and footer, Auto correct and auto text, Drawing and insert objects, Table generation. MS Excel: Worksheet basic, Creating worksheet, Entering text, Dates, alphanumeric and values, Tool bars and menus, Applying different formulas, Creating charts, Formatting of work sheet. MS Power Point: Need of power point, Creating slides, Entering text, graphics, pictures and other objects, Tool bars and menus, Custom animation, Creating charts, Formatting of presentation.

 Reference Books:

1. Introduction to computer concepts: Pearson publication.

2. Computer Fundamentals : Anita Goel, Pearson publication.

3. Fundamentals of Computers, - V. Rajaraman.: PHI (EEE)

4. Microsoft office 2010: John Walkenbach, Herb Tyson, Michael R Groh, FaitheWempen. 6. Microsoft office 2010 for windows : Steve Schwartz.

CSSEC02: Hardware Maintenance

Course Code: CSSEC02	Course Title: Hardware Maintenance
Course Credits: 02	Hour of Teaching/Week: 02
Total Contact Hours: 28	

UNIT I

1. **Basics of Computer and Hardware :**   5Hrs

Introduction and Functional block diagram of pc with its internal Working, Introduction to computer parts: SMPS, Motherboard, Processor, Ram, Hard disk, Optical drive, Cabinet, Keyboard, Mouse, Monitor, Add-On Cards.

UNIT II

1. **Assembling and Setting BIOS of computer**   5Hrs

Assembling of Personal Computer components, Cable Connection and power Connections.

CMOS Setup**,** formatting of Hard Disk, Disk Management Procedure, Bios Password Setting and Recovery in PC and Laptops. Perform repairs to personal computers

UNIT III

1. **Installation of Operating System and Application Software**   8Hrs

Operating System Installations and Booting Procedures of Windows, Linux, Ubuntu and Drivers, office automation software, compression software, media players, Page Maker, Corel Draw, Kannada Nudi software and Typing.

UNIT IV

1. **Installation of Peripherals devices and Antivirus**   8Hrs

Installation of peripheral Parts of computer like Printer, Scanner, Web Camera.

Installation of Antivirus software and Activation like NPAV, Updating, Scanning. Configure Internet and Email

Reference Book
1. R. K. Sharma- Computer Hardware, Himalaya Publishing House, Mumbai.

CSSEC03: Networking

Course Code: CSSEC03	**Course Title: Networking**
Course Credits: 02	Hour of Teaching/Week: 02
Total Contact Hours: 26	

UNIT I

Basics of Computer Networks   5Hrs

Introduction and classification of Network, Functional block diagram of Network. Introduction and Identification of Network Parts: Cable, Switch, Router, Connector, Network Tools, Wall Rack, Modem, Wi-Fi Dongle, Add-On Cards.

UNIT II

Installation of computer Network   10Hrs

Building your own Network with all parts, Network Topology, Cable Crimping, Connections, IP Address Setting, Domain Creation, LAN Creation, Connecting to Internet, Testing of connectivity, Sharing Device and Data, Remote Access, Uses of sharing Software with internet, Remote installation

UNIT III

Information of CCTV Network   8Hrs

Introduction and classification of CCTV Network, Functional block diagram of CCTV Network Identification of CCTV Network Parts, Types of Cable, DVR, NVR, Mouse, Monitor, HDD, Power and Video Connectors and other. Installation CCTV Setup, Installation of Online and offline setup, Security of CCTV Network.

UNIT IV

Troubleshooting

Fault Finding and Troubleshooting of Network and CCTV Network   3Hrs

Reference Book
1. R. K. Sharma- Computer Hardware, Himalaya Publishing House, Mumbai.

CSSEC03: DIGITAL MARKETING

Course Code: CSSEC04	Course Title: DIGITAL MARKETING
Course Credits: 02	Hour of Teaching/Week: 02
Total Contact Hours: 28	

DIGITAL MARKETING INTRODUCTION   **8 Hrs**

What is marketing, What is Digital Marketing, Understanding Marketing Process Understanding Digital Marketing Process, Increasing Visibility, What is visibility, Types of visibility, Examples of visibility, Visitors Engagement, What is engagement?, Why it is important Examples of engagement, Bringing Targeted Traffic, Inbound and outbound marketing, Converting Traffic into Leads, Types of Conversion , Understanding Conversion Process, Tools Needed.

DIGITAL MARKETING VS. TRADITIONAL MARKETING   **6 Hrs**

What's the difference between digital marketing and traditional marketing, and why does it matter? Benefits of Traditional Marketing, The Downside to Traditional Marketing Benefits of Digital Marketing Why Digital Marketing Wins Over Traditional Marketing? Tools of Digital Marketing How We Use Both Digital & Traditional Marketing.

WEBSITE PLANNING PROCESS   **6 Hrs**

What is Internet?, Understanding domain names & domain extensions, Different types of websites Based on functionality, Based on purpose Planning & Conceptualising a Website, Booking a domain name & web hosting, Adding domain name to web Server, Adding webpages & content, Adding Plugins, Building website using CMS in Class, Identifying objective of website, Deciding on number of pages required, Planning for engagement options Landing Pages & Optimization, Creating blueprint of every webpage, Best & Worst Examples.

SOCIAL MEDIA MARKETING   **8 Hrs**

What is social media? (Face book, LinkedIn and Google) Understanding the existing Social Media paradigms & psychology, how social media marketing is different than, others Forms of Internet marketing, Social Media marketing & Understanding Social Media marketing, Creating Social Media page Uploading contacts for invitation Exercise on fan page wall posting Increasing fans on fan page How to do marketing on fan page (with examples). Fan engagement Important apps to do fan page marketing Social Media advertising, Types of Social Media advertising, best practices for Social Media advertising, Digital Marketing Tool Demo.