

**Course Name: Programming in C (Theory)****Course Code: COM-103**

**Objectives:** The aim of this course is to introduce the rudiments of programming to the students. Students will become familiar with problem solving techniques and algorithm development using computers. This will include structured programming using C, a high-level programming language.

**Prerequisites:** None

**Contents:**

**1. Introduction to programming& Basics of C:** Concepts of Algorithm and Flowcharts, Process of compilation, Generation of languages, Basic features of C Language like Identifier, Keywords, Variable, data types, Operators and Expression. Basic screen and keyboard I/O

**2. Control Statements:** Test Conditions, Conditional execution and selection, Iteration and Repetitive Executions, Nested loops.

**3. Arrays:** Introduction to contiguous data types. One dimensional arrays, multidimensional arrays, Array as strings, multidimensional character arrays. Operations on strings.

**4. Functions:** Concept of modular programming, Using functions, Scope of data, Recursive functions. Command line arguments.

**Reference Book(s):**

1. **Programming in ANSI C**, by Balagurusamy, Tata McGraw Hill.
2. **Computer Science: A Structured Programming Approach Using C**, by Behrouz A. Forouzan & Richard F. Gilberg, Thomson Education.
3. **Programming with ANSI and Turbo C**, by Ashok N Kamthane, Pearson Education.
4. **Programming in C**, by Pradip Dey & Manas Ghosh, Oxford
5. **Mastering C**, by Venugopal & Prasad, Tata McGraw Hill.
6. **C: The Complete Reference**, by Herbert Schildt, Tata McGraw Hill.
7. **Let us C**, by Yashwant Kanitkar, BPB Publication
8. **Schaum's Outline of Programming with C**, by Byron Gottfried, Shaum Series.
9. **Programming in C**, by Juneja & Seth, CENGAGE Learning

**Accomplishments of the student after completing the course :**

After completion of the course students should become reasonably good at problem solving and algorithm development. They would become capable of solving problems using computers through C programming language.

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**Course Name: Computer Basics, Internet & Web page development (Theory)**

**Course Code: COM-101**

**Objectives:**

The purpose of this course is to present the overview of the fundamentals of computer, Internet and resources used for it, web page designing and process & storage of data in computer system. Students will be able to understand the basic activities related to Internet and basic knowledge for design of a web page / web site.

**Prerequisites:** None

**Contents:**

**1. Computer Fundamentals**

History, Characteristics and Generation of Computers, Classification of Hardware and Software, Basic knowledge about CPU, Control Unit, ALU (Concepts only), Memory: Primary memory, secondary memory, Storage devices (HDD, CD-ROM, DVD), I/O Devices: (key board, mouse, scanner, Plotter, OCR, OMR, CD-Drive), Display Devices (VDU, LCD, Touch screen, TFT), Types of printers: (Impact and non-Impact).

**2. Internet Concepts & Application**

Introduction to Internet & WWW, History of Internet services, Intranet, Extranet, Types of Computer network, Network topology, Network components, URL, Search engine, News group, E-mail – concepts, protocols & netiquettes, Web portal, Forms of chats & conferencing, Remote login, IP address & DNS, FTP, Introduction to e-commerce, e-learning, e-banking, e-governance and social networking.

**3. Introduction to HTML**

Introduction of HTML & SGML, Skeleton of HTML, Tools required for HTML, HTML tags & attributes – Basics, Formatting, List & Hyperlinks, Images and Image map in HTML.

**4. Web Page Development Using HTML**

Tables, Frames and floating frames, Forms, Audio & Video in HTML, Introduction of Dynamic HTML, Difference between HTML and DHTML, Introduction to CSS, Types of Style Sheets, Use of CSS in Web Site Development, Implementation of font, color, border and text attributes in CSS, Introduction of FrontPage, Web page / Web site development using FrontPage.

**Reference Book(s):**

- 1) **Computer Fundamentals**, by V. Rajaraman, Prentice – Hall of India.
- 2) **Inside IBM PC**, by Peter Norton, Prentice – Hall of India.
- 3) **HTML in 21 days**, SAMS publication.
- 4) **How to create Web Pages using HTML**, by K Laudon, Tata McGraw Hill
- 5) **Web Enabled Commercial Application Development using HTML, DHTML**, Ivan Bayross , BPB Publisher.
- 6) **Introduction to Internet**, by Hantani, Tata McGraw Hill .
- 7) **The Internet**, by Douglas E Comer, Prentice - Hall of India.
- 8) **Fundamentals of Internet and www**, by Greenlaw R and Hepp E , Tata McGraw Hill.
- 9) **The Complete Reference HTML**, by Thomas A Powell, Tata McGraw Hill.
- 10) **Internet and Web Design**, Doeacc “O” Level, Firewall Media.
- 11) **Mastering Microsoft Frontpage-2000**, by Daniel A. Tauber, Brenda Kienal & Molly E. Holzschlag, BPB Publication.
- 12) **Internet Technology and Web Design**, ISRD Group, Tata McGraw Hill
- 13) **World Wide Web design with HTML**, by C Xavier, Tata McGraw Hill

**Accomplishments of the student after completing the course:**

At the end of the work student will be able to

- Use internet for information retrieval & data transfer.
- Design web pages / web sites using HTML.

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**Course Name: Computer Basics, Internet & Web page development (Practical)****Course Code: COM-102****Objectives:**

The purpose of this course is to present practical knowledge of Web Page / Web Site Development using HTML, CSS and FrontPage.

**Prerequisites:**

None

**List of Practical:**

- 1) Prepare a web page using all formatting tags of HTML
- 2) Prepare a web page using marquee tag of HTML
- 3) Prepare a web page using ordered list in HTML ( At least 3 Programs)
- 4) Prepare a web page using un-ordered list in HTML (At least 3 Programs)
- 5) Prepare a web page using Nested list in HTML (At least 5 Programs)
- 6) Prepare a web page using Definition list in HTML (At least 2 Programs)
- 7) Prepare a web page using nested list in a table in HTML
- 8) Prepare a web page using Hyperlink in HTML
- 9) Prepare a web page using Image Map in HTML
- 10) Design a web page using images in HTML
- 11) Design a web page using Hyperlinks in HTML
- 12) Design a web page using image as a Hyperlink in HTML
- 13) Design a web page using audio tag to include audio in HTML
- 14) Design the following Tables using HTML

**Exercise - I.**

A	B	C
D	E	F

**Exercise - II**

A	D
B	E
C	F

**Exercise - III**

Title goes here		
A	C	E
B	D	F

**Exercise - IV**

Title goes here	A	D
	B	E
	C	F

**Exercise - V**

Title goes here	A	D
	B	E
	C	F

**Exercise - VI**

Title goes here	A	D
	B	E
	C	F

**Exercise - VII**

Title goes here		A	B	
C	D	E	F	G
	H	I		J
	K	L	M	
N	O			

**Exercise - VIII**

Members	Game	Team	Goals (us/them)
Ricardo (captain) Jorge Max Fernando Diego Rocky Enrique Philip Hernando Constantine	1	Lightning	3/2
	2	Fireballs	1/5
	3	Tornadoes	2/2
	4	Fireballs	4/0
	5	Lightning	5/3
	6	Tornadoes	1/1

**Exercise - IX**

File Name	Description	Due Date	Lab Status
<a href="#">Integer Processing:</a>	<ul style="list-style-type: none"> <li>Integer Storage</li> <li>Size of Integers</li> <li>Consequences</li> </ul>	<b>Friday, January 30</b>	Under development
<a href="#">Image Processing:</a>	<ul style="list-style-type: none"> <li>RGB scales</li> <li>GIF and JPEG pormats</li> <li>Image processing with GIMP</li> </ul>	<b>Wednesday, February 4</b>	Draft available
<a href="#">A Photo Album:</a>	<ul style="list-style-type: none"> <li>Image file formats</li> <li>Image size</li> <li>Image quality</li> </ul>	<b>Monday, February 9</b>	Draft available
<a href="#">Run-time Experiments:</a>	<ul style="list-style-type: none"> <li>Linear Search</li> <li>Binary Search</li> </ul>	<b>Wednesday, February 25</b>	Draft available
<a href="#">More Run-time Experiments:</a>	<ul style="list-style-type: none"> <li>Insertion Sort</li> <li>Quicksort</li> <li>Permutation Sort</li> </ul>	<b>Friday, February 27</b>	Draft available

**Exercise - X**

<i>My tech stock picks</i>					
NAME	SYMBOL	CURRENT	52WK HI	52WK LO	P/E RATIO
Microsoft	MSFT	86-3/8	119-15/16	75-1/2	56.09
Cisco Systems	CSCO	72-1/8	82	24-13/16	400.69
America Online	AOL	63	95-13/16	38-15/32	350.00
Quest Communications	Q	44-7/16	66	25-3/4	74.06
Dell Computers	DELL	53-59/64	59-11/16	31-3/8	86.97

- 15) Prepare a web page using a Frame (At least 3 Programs)  
 16) Prepare a web page using an inline frame in HTML  
 17) Prepare a web page using target frame in HTML (At least 3 programs)  
 18) Design the following Forms using HTML

**Exercise - I**

The screenshot shows a Microsoft Internet Explorer browser window displaying an HTML form. The form contains the following elements:

- Name**: A text input field.
- Age**: A text input field.
- Gender**: Radio buttons for "Male" and "Female".
- Birhdate**: Three dropdown menus for "DD" (value 1), "MM" (value 1), and "YY" (value 1992).
- Hobbies**: Checkboxes for "Sports", "Dancing", "Reading", "Watching TV", "Cooking", and "Chatting".
- Address**: A text input field.
- City**: A dropdown menu with "Ahmedal" selected.
- Email**: A text input field.
- Submit** and **Clear** buttons at the bottom.

**Exercise - II**

Household / Adult Primary Contact		
<b>* Relationship to Participants:</b>		
<input type="radio"/> Self		
<input type="radio"/> Mother		
<input type="radio"/> Father		
<input type="radio"/> Guardian		
<input type="radio"/> Other <input type="text"/>		
<b>* First Name</b>	<b>* Last Name</b>	
<input type="text"/>	<input type="text"/>	
<b>* Address 1</b>		
<input type="text"/>		
<b>Address 2</b>		
<input type="text"/>		
<b>* City</b>	<b>* State</b>	<b>* Zip</b>
<input type="text"/>	<input type="text"/>	<input type="text"/>
<b>Phone</b>	<b>Alternate Phone</b>	
<input type="text"/>	<input type="text"/>	
<b>* Email Address</b>		
<input type="text"/>		
Payment Information		
<b>* Method of Payment:</b>		
<input type="radio"/> I am sending a check (Camp Fun, 123 Main Street, Anytown, XX 123456)		
<input type="radio"/> Please use credit card info below		
<b>* Name on Credit Card</b>	<b>* Credit Card</b>	
<input type="text"/>	<input type="text"/>	
<b>* Card Number</b>	<b>* Expiration</b>	
<input type="text"/>	<input type="text"/>	
<small>* Indicates Response Required</small>		

**Exercise – III**

Print your Electric or phone bill using HTML.

**Exercise - IV**

Gmail webpage ([www.gmail.com](http://www.gmail.com))

**Exercise – V**

**Tell about your friend**

First Name	<input type="text"/>	Last Name	<input type="text"/>
Birthdate (MM/DD/YYYY)	<input type="text"/>		
Email address	<input type="text"/>		
<b>Rapid Fire</b>			
	Ok Good Best		
Q.1 How he/she is looking?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Q.2 His/Her habits are?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Q.3 Nature of Helping towards other is:	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Q.4 How he/she is in study?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="button" value="Submit Query"/>		<input type="button" value="Reset"/>	

- 19) Demonstrate the use of CSS in web site development.  
 20) Design web pages using FrontPage (At least 5 Programs).

**Reference Book(s):**

- 1) **HTML in 21 days**, SAMS publication.
- 2) **How to create Web Pages using HTML**, BY K Laudon, Tata McGraw Hill.
- 3) **Web Enabled Commercial Application Development using HTML, DHTML**, by Ivan Bayross, BPB Publication.
- 4) **Introduction to Internet**, by Hantani, Tata McGraw Hill.
- 5) **The Internet**, by Douglas E Comer, Prentice - Hall of India.
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**Accomplishments of the student after completing the course:**

At the end of the work student will be able to

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- Design web pages / web sites using HTML.

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**Course Name: Programming in C (Practical)**

**Course Code: COM-104**

**Objectives:**

The purpose of this course is to develop programming skills.

**Prerequisites:**

None

**Contents:**

- Basic C Programs
- Programs based on constants, variable and diff data types.
- Programs based on Operator and Expression
- Programs based on Decision Making and Branching
- Use of Do While loop, for loop, while loop, if loop, if else if ladder, switch, go to
- Programs based on one dimensional and two dimensional array.
- Programs based on character array and String manipulation functions.
- Programs based on user-defined functions

**List of Practical (Sample Guide line):**

- 1) Write a program to print “Hello World” message.
- 2) Write a program to print Name, Address and Birth Date.
- 3) Write a program to add, multiply and divide two integers and float numbers.
- 4) Write a program to convert Rupees (float) to paisa (int).
- 5) Write a program to accept number of days and print year, month and remaining days.
- 6) Write a program to determine the maximum of given 3 Numbers.
- 7) Write a program to check whether the entered number is prime or not.
- 8) Write a program to check whether the entered number is even or odd.
- 9) Admission to a professional course is subject to the following conditions:
  - (a) Marks in mathematics  $\geq 60$
  - (b) Marks in physics  $\geq 50$
  - (c) Marks in chemistry  $\geq 40$
  - (d) Total in all three subjects  $\geq 200$  or total in mathematics and physics  $\geq 150$Given the marks in the three subjects, write a program to process the applications to list an eligible candidate.
- 10) Write a program to calculate the area of circle/rectangle/triangle. Determine whose area is to be calculated by accepting the code from the user. Use switch case
  - c indicate circle ,
  - r indicate rectangle,
  - t indicate triangle.Use symbolic constant to define the value of pie
- 11) Write a program to calculate the average of a set of n given numbers.
- 12) Write a program to swap the values of two variables.

13) Consider the following foreign currencies and their equivalents to one U.S. dollar :

British Pound	0.6 Pounds per U.S. Dollar
Canadian Dollar	1.3 Dollars per U.S. Dollar
Dutch Guilder	2.0 Guilders per U.S. Dollar
French Franc	6.0 Francs per U.S. Dollar
Italian Lira	1250 Lira per U.S. Dollar
Japanese Yen	140 Yen per U.S. Dollar
Mexican Peso	1600 pesos per U.S. Dollar
Swiss Franc	1.4 Francs per U.S. Dollar
German Mark	1.7 Marks per U.S. Dollar

Write an interactive menu driven program that will accept two different currencies and return the value of the second currency per one unit of the first currency.

14) Print the following triangle.

```

a b c d e
  a b c d
    a b c
      a b
        a

```

15) Generate the following "pyramid" of digits, using nested loops

```

1
232
34543
4567654
567898765
67890109876
7890123210987
890123454321098
90123456765432109

```

16) Write a program to generate the following

```

A B C D E F G H G F E D C B A
A B C D E F G   G F E D C B A
A B C D E F     F E D C B A
A B C D E       E D C B A
A B C D         D C B A
A B C           C B A
A B             B A
A               A

```

17) A professor generates grades using following table

%	Grade
0-60	F
61-70	D
71-80	C
81-90	B
91-100	A

Given a numeric grade, print the letter.

18) Modify the previous program to print a + or - after the letter grade, based on the last digit of the score. The modifiers are listed below.

Last Digit	Modifier
1-3	-
4-7	Blank
8-0	+

For Example 81 = B+ , 94=A, 62= D-

Note: f is only f. There is no f- or f+.

19) Write a program that converts numbers to words. For example, 895 should result in " eight nine five".

20) Write a program to find the smallest divisor of an integer.

21) Write a program to find the greatest common divisor of two integers.

22) Write an interactive 'c' program that will convert a date, entered in the form mm-dd-yy (example: 4-12-1996) into an integer that indicates the number of days beyond January 1, 1990.

23) Write a program to add first n natural numbers.

24) Print series 2, 4, 16,.....n\*n using shorthand operator and while loop.

25) Write a program to generate Fibonacci series.

26) Write a program to print the multiplication table.

27) Write a program to find a factorial of the entered number.

28) Write a program to print all the numbers and sum of all the integers that are greater than 100 and less than 200 and are divisible by 7.

29) Write a program to find the roots of an equation  $ax^2 + bx + c = 0$ .

30) Write a program to find maximum element from 1-Dimensional array.

31) Write a program to sort given array in ascending order.

32) Given the two 1-D arrays A and B, which are sorted in ascending order. Write a program to merge them into a single sorted array C that contains every item from arrays A and B, in ascending order.

33) Write a program to add two matrices.

34) Write a program to find string length.

35) Write a program to print size of int, float, double variable.

- 36) Write a program that appends the one string to another string.
- 37) Write a program that finds a given word in a string.
- 38) Write a program to evaluate  
 $f(x) = x - x^3/3! + x^5/5! - x^7/7! + \dots$
- 39) Write a function prime that returns 1 if its argument is a prime no. and returns 0 otherwise.
- 40) Write a function which returns 1 if the given number is palindrome otherwise returns 0.
- 41) Write a function that will scan a character string passed as an argument and convert all lower-case character into their upper-case equivalent.
- 42) Write a function to reverse the string.
- 43) Write a program that search an item from array of string.
- 44) Write a program to find the smallest divisor of an integer.
- 45) Write a program to find the greatest common divisor of two integers.
- 46) Write a 'c' program that reads in two matrices and multiply them. Display the resultant matrix.
- 47) Write a 'c' program that reads in two matrices and add them. Display the resultant matrix.
- 48) Write a program to read a matrix and determine the following :
- (1) Whether the given matrix is upper triangular or not
  - (2) Whether the given matrix is lower triangular or not
  - (3) Whether the given matrix is diagonal matrix or not
- 49) The annual examination results of 100 students are tabulated as follows

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Roll no.	Subject1	subject2	subject3
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Write a program to read the data and determine the following:

- (1) Total marks obtained by each student.
  - (2) The highest marks in each subject and the roll no. of the student who secured it.
  - (3) The student who obtained the highest total marks.
- 50) Write a program to remove the duplicates from an ordered array.

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