



Department : Computer Science and Information Technology

Programme Name : B.Sc(CS)

Academic Year : 2018-19

List of Courses Focus on Employability/ Entrepreneurship/Skill Development

Sr. No.	Course Code	Name of the Course
	SSCICR0101(L+P)	Programming Fundamentals using C++
	SSCIGE0101(L+P)	Introduction to Programming using C
	SSCICR0203(L+P)	Programming in JAVA
	(SSCIGE0202L)	Introduction to Internet Technologies
	PCSC-302	Database Management Systems (After 2017_18)
	PCSC-501	Programming with Visual Basic (After 2015)
	PCSC-502	Object Oriented Concepts
	PCSC-503	Linux Operating System and Shell Programming
	PCSC-505	Web based Mini Project
	PCSC-601	Introduction to JAVA
	PCSC-605	Major Project

Aravind
**HEAD
DEPT OF CSIT
G.G.V. BILASPUR (C.G.)**



School of Mathematical and Computational Sciences:

B.Sc. Honours Computer Science, Department of CSIT, GGV, Bilaspur

Semester	Course Opted	Course Code	Name of the course	Credit	Hour / week
I	Core-1	(SSCICR0101L)	Programming Fundamentals using C++	4	4
	Core -1 Practical	(SSCICR0101P)	Lab Based on Programming Fundamentals using C++	2	4
	Core -2	(SSCICR0102L)	Data Structures	5	5
	Core -2 Tutorial	(SSCICR0102T)	Tutorials Based on Data Structures	1	1
	Generic Elective -1 (GE- IA)	(SSCIGE0101L)	Introduction to Programming using C	4	4
	Generic Elective - Practical	(SSCIGE0101P)	Lab Based on Introduction to Programming using C	2	4
	Ability Enhancement Compulsory Course (AECC)	(SSCICC0101L)	English Communication / MIL (Hindi Communication)	4*	4
	ECA	(SSCIEC0101)	ECA-Extracurricular activity/ Tour, Field visit/ Industrial training/ NSS/ Swachhta/ vocational Training/ Sports/ others	2	(2)
			TOTAL	24	28



Semester	Course Opted	Course Code	Name of the course	Credit	Hour / week
II	Core-3	MS/CS /C-203L (SSCICR0203L)	Programming in JAVA	4	4
	Core -3 Practical	MS/CS /C-203P (SSCICR0203P)	Lab Based on Programming in JAVA	2	4
	Core -4	MS/CS /C-204L (SSCICR0204L)	Discrete Structures	5	5
	Core -4 Tutorial	MS/CS /C-204T (SSCICR0204T)	Tutorial on Discrete Structures	1	1
	Generic Elective -2 (GE-IB)	MS/CS /GE-202L (SSCIGE0202L)	Introduction to Internet Technologies	4	4
	Generic Elective - Practical	MS/CS /GE-202P (SSCIGE0202P)	Lab Based on Internet Technologies	2	4
	Ability Enhancement Compulsory Course (AECC)	MS/CS /AE-201/ES (SSCICC0202L)	Environmental Science	4*	4
	ECA	(SSCIEC0202)	ECA-Extracurricular activity/ Tour, Field visit/ Industrial training/ NSS/ Swachhta/ vocational Training/ Sports/ others	2	(2)
		Total	24	28	
SUMMER Internship: 15 days			Swayam Swachhta / NSS / Industrial/ others	2	100



Semester	Course Opted	Course Code	Name of the course	Credit	Hour / week
III	Core-5	(SSCICR0305L)	Internet Technologies	5	5
	Core -5 Tutorials	(SSCICR0305T)	Tutorials on Internet Technologies	1	1
	Core -6	(SSCICR0306L)	Database Management Systems	4	4
	Core -6 Practical	(SSCICR0306P)	Lab based on Database Management System	2	4
	Core - 7	(SSCICR0307L)	Computer Networks	5	5
	Core – 7 Tutorial	(SSCICR0307T)	Tutorial on Computer Networks	1	1
	Generic Elective -3 (GEII-A)	(SSCIGE0303L)	Introduction to Database Systems	4	4
	Generic Elective - Practical	(SSCIGE0303P)	Lab Based on Database System	2	4
	Skill Enhancement Course (SEC - 1)	(SSCISC0301L)	A.HTML and XML Programming B. UNIX/LINUX Programming	2	2
			Total	26	30



Semester	Course Opted	Course Code	Name of the course	Credit	Hour / week
IV	Core-8	MS/CS /C-408L (SSICR0408L)	Computer System Architecture	5	5
	Core -8 Tutorials	MS/CS /C-408T (SSICR0408T)	Tutorials on Computer System Architecture	1	1
	Core -9	MS/CS/C-409L (SSICR0409L)	Software Engineering	4	4
	Core -9 Practical	MS/CS /C-409P (SSICR0409P)	Lab Based on Software Engineering	2	4
	Core - 10	MS/CS /C-410L (SSICR0410L)	Design and Analysis of Algorithms	5	5
	Core -10 Tutorials	MS/CS/C-410T (SSICR0410L)	Tutorials on Design and Analysis of Algorithms	1	1
	Generic Elective -4 (GEII-B)	MS/CS/GE-404L (SSIGE0404L)	Multimedia and Applications	4	4
	Generic Elective - Practical	MS/CS /GE-404P (SSIGE0404P)	Lab Based on Multimedia and Applications	2	4
	Skill Enhancement Course (SEC - 2)	MS/CS/SEC-402 (SSISC0402L+P)	A.PHP Programming B.MATLAB	2	2
			TOTAL	26	30
SUMMER Internship: 15 days			Swayam Swachhta / NSS / Industrial/ others	2	100



Semester	Course Opted	Course Code	Name of the course	Credit	Hour / week
V	Core-11	MS/CS /C-511L (SSICR0511L)	Operating System	5	5
	Core -11 Tutorials	MS/CS /C-511T (SSICR0511T)	Tutorials based on Operating system	1	1
	Core -12	MS/CS /C-512L (SSICR0512L)	Theory of Computation	5	5
	Core -12 Tutorials	MS/CS /C-512T (SSICR0512T)	Tutorials on Theory of Computation	1	1
	Discipline Specific Elective (DSE-1)	MS/CS/DSE-501L(A) MS/CS/DSE-501L(B) (SSCIDS0501L)	A Information Security B Operation Research	5(A) 5(B)	5(A) 5(B)
	DSE-1 - Tutorials	MS/CS/DSEP-501T(A) MS/CS/DSET-501T(B) (SSCIDS0501T)	A Tutorials on Information Security B Tutorials on Operation Research	1(A) 1(B)	1(A) 1(B)
	Discipline Specific Elective (DSE-2)	MS/CS/DSE-502L(A) MS/CS/DSE-502L(B) (SSCIDS0502L)	A Image Processing B Soft Computing	4(A) 4(B)	4(A) 4(B)
	DSE-2 - Practical	MS/CS/DSET-502P(A) MS/CS/DSEP-502P(B) (SSCIDS0502P)	A Lab Based on Image Processing B Lab Based on Soft Computing	2(A) 2(B)	4(A) 4(B)
				TOTAL	24



Semester	Course Opted	Course Code	Name of the course	Credit	Hour / week
VI	Core-13	MS/CS /C-613L (SSCICR0613L)	Artificial Intelligence	5	5
	Core -13 Tutorials	MS/CS /C-613T (SSCICR0613T)	Tutorials on Artificial Intelligence	1	1
	Core -14	MS/CS/C-614L (SSCICR0614L)	Computer Graphics	4	4
	Core -14 Practical	MS/CS /C-614P (SSCICR0614T)	Lab based on Computer Graphics	2	4
	Discipline Specific Elective (DSE-3)	MS/CS/DSE-601L(A) MS/CS/DSE-601L(B) (SSCIDS0603L)	A Big Data Analytics B Data Mining	5(A) 5(B)	5(A) 5(B)
	DSE-3 - Tutorials	MS/CS/DSET-601T(A) MS/CS/DSET-601T(B) (SSCIDS0603T)	A Tutorials on Big Data Analytics B Tutorials on Data Mining	1(A) 1(B)	1(A) 1(B)
	Discipline Specific Elective (DSE-4) + DSE-4 – Practical Or Dissertation/ Project work followed by seminar	MS/CS/PW (SSCIDS0604)	Project work followed by seminar	4+2=6 Or 5 +1=6	8
		TOTAL	24	28	
		TOTAL CREDITS	152 + 4 (SI)		

As per UGC CBCS guidelines, University / departments have liberty to offer GE and SEC courses offered by any department to students of other departments. The No. of GE course is four. One GE course is compulsory in first 4 semesters each. In present scheme it is proposed to have minimum two GE courses (from one subject) in first two semester after which student shall change two GE for another subject in IIIrd and IVth semester, so that the entire student can have exposure of one additional subject. **(Subject to approval by the competent authority)**



COMPUTER SCIENCE (CORE-I): Programming Fundamentals using C/C++ (SSICR0101L)

Theory: 60 Lectures

1. Introduction to C and C++ (3 Lectures)

History of C and C++, Overview of Procedural Programming and Object-Oriented Programming, Using main() function, Compiling and Executing Simple Programs in C++.

2. Data Types, Variables, Constants, Operators and Basic I/O (5 Lectures)

Declaring, Defining and Initializing Variables, Scope of Variables, Using Named Constants, Keywords, Data Types, Casting of Data Types, Operators (Arithmetic, Logical and Bitwise), Using Comments in programs, Character I/O (getc, getchar, putc, putcharc), Formatted and Console I/O (printf(), scanf(), cin, cout), Using Basic Header Files (stdio.h, iostream.h, conio.hetc).

3. Expressions, Conditional Statements and Iterative Statements (5 Lectures)

Simple Expressions in C++ (including Unary Operator Expressions, Binary Operator Expressions), Understanding Operators Precedence in Expressions, Conditional Statements (if construct, switch-case construct), Understanding syntax and utility of Iterative Statements (while, do-while, and for loops), Use of break and continue in Loops, Using Nested Statements (Conditional as well as Iterative)

4. Functions and Arrays (10 Lectures)

Utility of functions, Call by Value, Call by Reference, Functions returning value, Void functions, Inline Functions, Return data type of functions, Functions parameters, Differentiating between Declaration and Definition of Functions, Command Line Arguments/Parameters in Functions, Functions with variable number of Arguments.

Creating and Using One Dimensional Arrays (Declaring and Defining an Array, Initializing an Array, Accessing individual elements in an Array, Manipulating array elements using loops), Use Various types of arrays (integer, float and character arrays / Strings) Two-dimensional Arrays (Declaring, Defining and Initializing Two Dimensional Array, Working with Rows and Columns), Introduction to Multi-dimensional arrays

5. Derived Data Types (Structures and Unions) (3 Lectures)

Understanding utility of structures and unions, Declaring, initializing and using simple structures and unions, Manipulating individual members of structures and unions, Array of Structures, Individual data members as structures, Passing and returning structures from functions, Structure with union as members, Union with structures as members.

6. Pointers and References in C++ (7 Lectures)

Understanding a Pointer Variable, Simple use of Pointers (Declaring and Dereferencing Pointers to simple variables), Pointers to Pointers, Pointers to structures, Problems with Pointers, Passing pointers as function arguments, Returning a pointer from a function, using arrays as pointers, Passing arrays to functions. Pointers vs. References, Declaring and initializing references, Using references as function arguments and function return values



7. Memory Allocation in C++

(3 Lectures)

Differentiating between static and dynamic memory allocation, use of malloc, calloc and free functions, use of new and delete operators, storage of variables in static and dynamic memory allocation

8. File I/O, Preprocessor Directives

(4 Lectures)

Opening and closing a file (use of fstream header file, ifstream, ofstream and fstream classes), Reading and writing Text Files, Using put(), get(), read() and write() functions, Random access in files, Understanding the Preprocessor Directives (#include, #define, #error, #if, #else, #elif, #endif, #ifdef, #ifndef and #undef), Macros

9. Using Classes in C++

(7 Lectures)

Principles of Object-Oriented Programming, Defining & Using Classes, Class Constructors, Constructor Overloading, Function overloading in classes, Class Variables & Functions, Objects as parameters, Specifying the Protected and Private Access, Copy Constructors, Overview of Template classes and their use.

10. Overview of Function Overloading and Operator Overloading

(5 Lectures)

Need of Overloading functions and operators, Overloading functions by number and type of arguments, Looking at an operator as a function call, Overloading Operators (including assignment operators, unary operators)

11. Inheritance, Polymorphism and Exception Handling

(8 Lectures)

Introduction to Inheritance (Multi-Level Inheritance, Multiple Inheritance), Polymorphism (Virtual Functions, Pure Virtual Functions), Basics Exceptional Handling (using catch and throw, multiple catch statements), Catching all exceptions, Restricting exceptions, Rethrowing exceptions.

Reference Books

1. HerbtzSchildt, "C++: The Complete Reference", Fourth Edition, McGraw Hill.2003th
2. BjarneStroustrup, "The C++ Programming Language", 4th Edition, Addison-Wesley, 2013.
3. BjarneStroustrup, "Programming -- Principles and Practice using C++", 2nd Edition, Addison-Wesley 2014.
4. E Balaguruswamy, "Object Oriented Programming with C++", Tata McGraw-HillEducation, 2008.
5. Paul Deitel, Harvey Deitel, "C++ How to Program", 8th Edition, Prentice Hall, 2011.
5. John R. Hubbard, "Programming with C++", Schaum's Series, 2nd Edition, 2000.
6. Andrew Koeni, Barbara, E. Moo, "Accelerated C++", Published by Addison-Wesley, 2000.
7. Scott Meyers, "Effective C++", 3rd Edition, Published by Addison-Wesley, 2005.
8. Harry, H. Chaudhary, "Head First C++ Programming: The Definitive Beginner's Guide", First Create space Inc, O-D Publishing, LLC USA.2014
9. Walter Savitch, "Problem Solving with C++", Pearson Education, 2007.
10. Stanley B. Lippman, JoseeLajoie, Barbara E. Moo, "C++ Primer", Published by Addison-Wesley, 5th Edition, 2012



COMPUTER SCIENCE LAB (CORE-II): Programming Fundamentals using C/C++ Lab (SSICR0101P)

Practical: 15 Lectures

1. WAP to print the sum and product of digits of an integer.
2. WAP to reverse a number.
3. WAP to compute the sum of the first n terms of the following series $S = 1 + 1/2 + 1/3 + 1/4 + \dots$
4. WAP to compute the sum of the first n terms of the following series $S = 1 - 2 + 3 - 4 + 5 - \dots$
5. Write a function that checks whether a given string is Palindrome or not. Use this function to find whether the string entered by user is Palindrome or not.
6. Write a function to find whether a given no. is prime or not. Use the same to generate the prime numbers less than 100.
7. WAP to compute the factors of a given number.
8. Write a macro that swaps two numbers. WAP to use it.
9. WAP to print a triangle of stars as follows (take number of lines from user):

```
      *
     ***
    *****
   ********
  **********
 **********
```

10. WAP to perform following actions on an array entered by the user:
 - i) Print the even-valued elements
 - ii) Print the odd-valued elements
 - iii) Calculate and print the sum and average of the elements of array
 - iv) Print the maximum and minimum element of array
 - v) Remove the duplicates from the array
 - vi) Print the array in reverse order

The program should present a menu to the user and ask for one of the options.

The menu should also include options to re-enter array and to quit the program.

11. WAP that prints a table indicating the number of occurrences of each alphabet in the text entered as command line arguments.
12. Write a program that swaps two numbers using pointers.
13. Write a program in which a function is passed address of two variables and then alter its contents.
14. Write a program which takes the radius of a circle as input from the user, passes it to another function that computes the area and the circumference of the circle and displays the value of area and circumference from the main() function.
15. Write a program to find sum of n elements entered by the user. To write this



program, allocate memory dynamically using malloc() / calloc() functions or new operator.

16. Write a menu driven program to perform following operations on strings:
 - a) Show address of each character in string
 - b) Concatenate two strings without using strcat function.
 - c) Concatenate two strings using strcat function.
 - d) Compare two strings
 - e) Calculate length of the string (use pointers)
 - f) Convert all lowercase characters to uppercase
 - g) Convert all uppercase characters to lowercase
 - h) Calculate number of vowels
 - i) Reverse the string
17. Given two ordered arrays of integers, write a program to merge the two-arrays to get an ordered array.
18. WAP to display Fibonacci series (i) using recursion, (ii) using iteration
19. WAP to calculate Factorial of a number (i) using recursion, (ii) using iteration
20. WAP to calculate GCD of two numbers (i) with recursion (ii) without recursion.
21. Create Matrix class using templates. Write a menu-driven program to perform following Matrix operations (2-D array implementation):
 - a) Sum
 - b) Difference
 - c) Product
 - d) Transpose
22. Create the Person class. Create some objects of this class (by taking information from the user). Inherit the class Person to create two classes Teacher and Student class. Maintain the respective information in the classes and create, display and delete objects of these two classes (Use Runtime Polymorphism).
23. Create a class Triangle. Include overloaded functions for calculating area. Overload assignment operator and equality operator.
24. Create a class Box containing length, breath and height. Include following methods in it:
 - a) Calculate surface Area
 - b) Calculate Volume
 - c) Increment, Overload ++ operator (both prefix & postfix)
 - d) Decrement, Overload -- operator (both prefix & postfix)
 - e) Overload operator == (to check equality of two boxes), as a friend function
 - f) Overload Assignment operator
 - g) Check if it is a Cube or cuboidWrite a program which takes input from the user for length, breath and height to test the above class.
25. Create a structure Student containing fields for Roll No., Name, Class, Year and Total Marks. Create 10 students and store them in a file.
26. Write a program to retrieve the student information from file created in previous question and print it in following format:

Roll No. Name Marks
27. Copy the contents of one text file to another file, after removing all whitespaces.



28. Write a function that reverses the elements of an array in place. The function must accept only one pointer value and return void.
29. Write a program that will read 10 integers from user and store them in an array. Implement array using pointers. The program will print the array elements in ascending and descending order.

Generic Elective (GE-1)

**Subject – Introduction to Programming using C
(SSCIGE0101L)**

Origin & Introduction to C : About C, Evolution of C, Structure of a C program, Compiling a C program, Simple C program, Character set in C, Keywords in C, Basic data types, Qualifiers used with basic data types, Variables in C, Type declaration, Input function, Output function and format specifiers.

Operators: Arithmetic operators, Unary operators, Relational and logical operators, address operator, conditional operator, Hierarchy of operators.

Decision Making, looping & Branching: Control statements, if statement, if else statement, for statement, while loop, do while loop, switch statement, break statement, continue statement, goto statement.

Arrays: Introduction to arrays, advantages of arrays, single dimensional arrays, multidimensional arrays, array declaration, array initialization, accessing data from array. Two-dimensional Arrays (Declaring, Defining and Initializing Two Dimensional Array, Working with Rows and Columns)

Introduction to pointers, function, structure and union.

Reference Books:

1. Y. Kanetkar, Let Us C, BPB Publication.
2. B.S. Gottfried, Schaum's outline of Theory and Problems of Programming with C, McGraw-Hill.
3. *Programming in ANSI C - Balaguruswami, TMH 2.*
4. *The 'C' programming language - B.W.Kernighan, D.M.Ritchie, PHI*
5. A.K. Saxena, Programming Language C : Anamaya Publishers, New Delhi.
6. *C The Complete Reference - H.Sohldt, TMH 3.*
7. *Computer fundamentals and programming in C – Pradip Dey & Manas Ghosh, OXFORD*

Generic Elective -1 LAB (GE- IA) : **Introduction to Programming using C Lab** Practical : 15 Lectures
(SSCIGE0101P)

1. Write a program to find greatest of three numbers.
2. Write a program to find gross salary of a person
3. Write a program to find grade of a student given his marks.
4. Write a program to find LCM of two numbers.
5. Write a program to find divisor or factorial of a given number.
6. Write a program to find Fibonacci sequence.
7. Write a program to print first ten natural numbers.
8. Write a program to print first ten even and odd numbers.
9. Write a program to find grade of a list of students given their marks.
10. Create Matrix class. Write a menu-driven program to perform following Matrix operations (2-D array implementation):
 - a) Sum
 - b) Difference
 - c) Product
 - d) Transpose
11. Write a program to add first ten natural numbers using function.
12. Write a program to display prime numbers using function.
13. Write a program to store information of students using structure.

COMPUTER SCIENCE (CORE-III): Programming in Java (SSCICR0203L)

Theory: 60 Lectures

1. Introduction to Java

(4 Lectures)

Java Architecture and Features, Understanding the semantic and syntax differences between C++ and Java, Compiling and Executing a Java Program, Variables, Constants, Keywords Data Types, Operators (Arithmetic, Logical and Bitwise) and Expressions, Comments, Doing Basic Program Output, Decision Making Constructs (conditional statements and loops) and Nesting, Java Methods (Defining, Scope, Passing and Returning Arguments, Type Conversion and Type and Checking, Built-in Java Class Methods),

2. Arrays, Strings and I/O

(8 Lectures)

Creating & Using Arrays (One Dimension and Multi-dimensional), Referencing Arrays Dynamically, Java Strings: The Java String class, Creating & Using String Objects, Manipulating Strings, String Immutability & Equality, Passing Strings To & From Methods, String Buffer Classes. Simple I/O using System.out and the Scanner class, Byte and Character streams, Reading/Writing from console and files.

3. Object-Oriented Programming Overview

(4 Lectures)

Principles of Object-Oriented Programming, Defining & Using Classes, Controlling Access to Class Members, Class Constructors, Method Overloading, Class Variables & Methods, Objects as parameters, final classes, Object class, Garbage Collection.

3. Inheritance, Interfaces, Packages, Enumerations, Autoboxing and Metadata (14 lectures)

Inheritance: (Single Level and Multilevel, Method Overriding, Dynamic Method Dispatch, Abstract Classes),



Interfaces and Packages, Extending interfaces and packages, Package and Class Visibility, Using Standard Java Packages (util, lang, io, net), Wrapper Classes, Autoboxing/Unboxing, Enumerations and Metadata.

4. Exception Handling, Threading, Networking and Database Connectivity (15 Lectures) Exception types, uncaught exceptions, throw, built-in exceptions, Creating your own exceptions; Multi-threading: The Thread class and Runnable interface, creating single and multiple threads, Thread prioritization, synchronization and communication, suspending/resuming threads. Using java.net package, Overview of TCP/IP and Datagram programming. Accessing and manipulating databases using JDBC.

5. Applets and Event Handling (15 Lectures)

Java Applets: Introduction to Applets, Writing Java Applets, Working with Graphics, Incorporating Images & Sounds. Event Handling Mechanisms, Listener Interfaces, Adapter and Inner Classes. The design and Implementation of GUIs using the AWT controls, Swing components of Java Foundation Classes such as labels, buttons, textfields, layout managers, menus, events and listeners; Graphic objects for drawing figures such as lines, rectangles, ovals, using different fonts. Overview of servlets.

Reference Books

1. Ken Arnold, James Gosling, David Homes, "The Java Programming Language", 4th Edition, 2005.
2. James Gosling, Bill Joy, Guy L Steele Jr, Gilad Bracha, Alex Buckley "The Java Language Specification, Java SE 8 Edition (Java Series)", Published by Addison Wesley, 2014.
3. Joshua Bloch, "Effective Java" 2nd Edition, Publisher: Addison-Wesley, 2008.
4. Cay S. Horstmann, Gary Cornell, "Core Java 2 Volume 1, 9th Edition, Prentice Hall. 2012
5. Cay S. Horstmann, Gary Cornell, "Core Java 2 Volume 2 - Advanced Features", 9th Edition, Prentice Hall. 2013
6. Bruce Eckel, "Thinking in Java", 3rd Edition, PHI, 2002.
7. E. Balaguruswamy, "Programming with Java", 4th Edition, McGraw Hill. 2009.
8. Paul Deitel, Harvey Deitel, "Java: How to Program", 10th Edition, Prentice Hall, 2011.
9. "Head First Java", Orielly Media Inc. 2nd Edition, 2005.
10. David J. Eck, "Introduction to Programming Using Java", Published by CreateSpace Independent Publishing Platform, 2009.
11. John R. Hubbard, "Programming with JAVA", Schaum's Series, 2nd Edition, 2004.

COMPUTER SCIENCE LAB (CORE-III): **Programming in Java Lab (SSCICR0203P)**

Practical: 15 Lectures

1. To find the sum of any number of integers entered as command line arguments
2. To find the factorial of a given number
3. To learn use of single dimensional array by defining the array dynamically.
4. To learn use of .length in case of a two dimensional array
5. To convert a decimal to binary number
6. To check if a number is prime or not, by taking the number as input from the keyboard
7. To find the sum of any number of integers interactively, i.e., entering every number from the keyboard, whereas the total number of integers is given as a command line argument
8. Write a program that show working of different functions of String and StringBuffer class like setCharAt(), setLength(), append(), insert(), concat() and equals().
9. Write a program to create a —distance class with methods where distance is computed in terms of feet and



- inches, how to create objects of a class and to see the use of this pointer
10. Modify the `—distance` class by creating constructor for assigning values (feet and inches) to the distance object. Create another object and assign second object as reference variable to another object reference variable. Further create a third object which is a clone of the first object.
 11. Write a program to show that during function overloading, if no matching argument is found, then java will apply automatic type conversions (from lower to higher data type)
 12. Write a program to show the difference between public and private access specifiers. The program should also show that primitive data types are passed by value and objects are passed by reference and to learn use of final keyword
 13. Write a program to show the use of static functions and to pass variable length arguments in a function.
 14. Write a program to demonstrate the concept of boxing and unboxing.
 15. Create a multi-file program where in one file a string message is taken as input from the user

and the function to display the message on the screen is given in another file (make use of Scanner package in this program).

16. Write a program to create a multilevel package and also create a reusable class to generate Fibonacci series, where the function to generate fibonacci series is given in a different file belonging to the same package.
17. Write a program that creates/illustrates different levels of protection in classes/subclasses belonging to same package or different packages
18. Write a program `—DivideByZero` that takes two numbers a and b as input, computes a/b, and invokes Arithmetic Exception to generate a message when the denominator is zero.
19. Write a program to show the use of nested try statements that emphasizes the sequence of checking for catch handler statements.
20. Write a program to create your own exception types to handle situation specific to your application (Hint: Define a subclass of Exception which itself is a subclass of Throwable).
21. Write a program to demonstrate priorities among multiple threads.
22. Write a program to demonstrate multithread communication by implementing synchronization among threads (Hint: you can implement a simple producer and consumer problem).
23. Write a program to create URL object, create a URLConnection using the `openConnection()` method and then use it to examine the different components of the URL and content.
24. Write a program to implement a simple datagram client and server in which a message that is typed into the server window is sent to the client side where it is displayed.
25. Write a program that creates a Banner and then creates a thread to scroll the message in the banner from left to right across the `applet_s` window.
26. Write a program to get the URL/location of code (i.e. java code) and document (i.e. html file).
27. Write a program to demonstrate different mouse handling events like `mouseClicked()`, `mouseEntered()`, `mouseExited()`, `mousePressed()`, `mouseReleased()` and `mouseDragged()`.
28. Write a program to demonstrate different keyboard handling events.
29. Write a program to generate a window without an applet window using `main()` function.
30. Write a program to demonstrate the use of push buttons.



Generic Elective (GE-2)

Subject – Introduction to Internet Technologies(SSCIGE0202L)

Theory: 60 lectures

Introduction to computer network: LAN, MAN, WAN, wireless LAN, internet, intranet, extranet, LAN topologies, Network devices: NIC, repeaters, hub, bridge, switch, gateway and router.

Internet Terms: Web page, Home page, website, internet browsers, URL, Hypertext, ISP, Web server, download and upload, online and offline.

Internet Applications: www, telnet, ftp, e-mail, social networks, search engines, Video Conferencing, e-Commerce, m-Commerce, VOIP, blogs.

Introduction to Web Design: Introduction to hypertext markup language (html) Document type definition, creating web pages, lists, hyperlinks, tables, web forms, inserting images, frames, hosting options and domain name registration.

Customized

Features: Cascading style sheet (css) for text formatting and other manipulations.

JavaScript Fundamentals: Data types and variables, functions, methods and events, controlling program flow, JavaScript object model, built-in objects and operators.

Reference Books:

1. Andrew S. Tanenbaum, David J. Wetherall Computer Networks (5th Edition), PHI, 2010
2. B. A. Forouzan, Data Communication and Networking, TMH, 2003.
3. D.R. Brooks, An Introduction to HTML and Javascript for Scientists and Engineers, Springer W. Willard, 2009
4. HTML A Beginner's Guide, Tata McGraw-Hill Education, 2009.
5. J. A. Ramalho, Learn Advanced HTML 4.0 with DHTML, BPB Publications, 2007

Internet Technologies Lab Practical: 15 lectures(SSCIGE0202P)

Practical exercises based on concepts listed in theory using HTML.

1. Create HTML document with following formatting – Bold, Italics, Underline, Colors, Headings, Title, Font and Font Width, Background, Paragraph, Line Brakes, Horizontal Line, Blinking text as well as marquee text.
2. Create HTML document with Ordered and Unordered lists, Inserting Images, Internal and External linking
3. Create HTML document with Table:

--	--	--	--	--



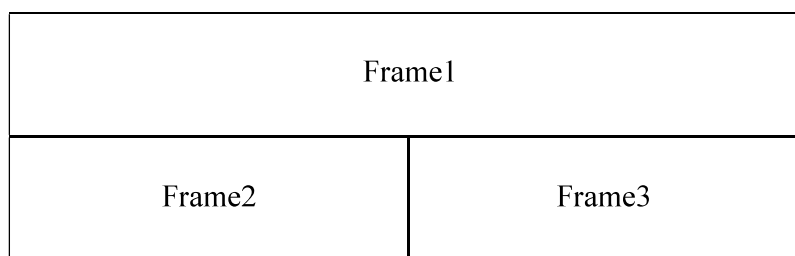
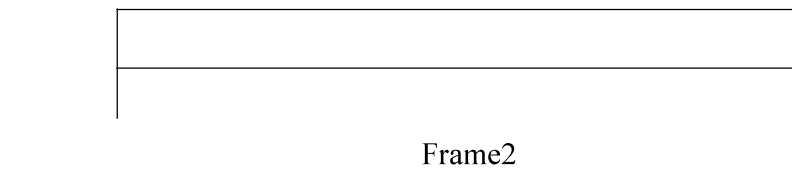
4. Create Form with Input Type, Select and Text Area in HTML.
5. Create an HTML containing Roll No., student_s name and Grades in a tabular form.
6. Create an HTML document (having two frames) which will appear as follows:

About	This frame would show the contents according to the link clicked by the user on the left frame.
Department 1	
Department 2	
Department 3	

7. Create an HTML document containing horizontal frames as follows:

Department Names (could be along with Logos)
Contents according to the Link clicked

8. Create a website of 6 – 7 pages with different effects as mentioned in above problems.
9. Create HTML documents (having multiple frames) in the following three formats:



10. Create a form using HTML which has the following types of controls:



- V. Text Box
- VI. Option/radio buttons
- VII. Check boxes
- VIII. Reset and Submit buttons

Subscribe to XYZ News Magazine and Emails

Interested in receiving daily small updates of all latest News? Well, now you can. And best of all, it is free! Just fill out this form and submit it by clicking the "send it In" button. We will put you on our mailing list and you will receive your first email in 3-5 days.

Please fill the following boxes to help us send the emails and our news letter:

First Name:

Last Name:

Business:

We must have a correct e-mail address to send you the news letter:

Email:

How did you hear about XYZ News Magazine and Emails?

Here on the Web In a magazine Television Other

Would you like to be on our regular mailing list?

Yes, we love junk emails

List of Practicals using Javascript :

Create event driven program for following:

1. Print a table of numbers from 5 to 15 and their squares and cubes using alert.
2. Print the largest of three numbers.
3. Find the factorial of a number n.
4. Enter a list of positive numbers terminated by Zero. Find the sum and average of these numbers.
5. A person deposits Rs 1000 in a fixed account yielding 5% interest. Compute the amount in the account at the end of each year for n years.
6. Read n numbers. Count the number of negative numbers, positive numbers and zeros in the list.



Department of Computer Science & Information technology
Guru Ghasidas Vishwavidyalaya, Bilaspur, C.G.
SYLLABUS FOR UG/PG INTEGRATED (CS) COURSE UNDER CHOICE BASED CREDIT SYSTEM (CBCS)

Semester 1

Session 2017-18 (On and after)

Sno	Subject Code	Title	Credit		Marks		Total Credits
			L	P	Internal	External	
1	PCSC-101	Fundamentals of Computers and Programming Methodology	2		20	30	2
2	PCSC-102	Introduction to Logics of Computer	2		20	30	2
3		Maths-I	3		30	45	3
4		Maths-II	3		30	45	3
5		Physics/Electronics - I	2		20	30	2
6		Physics/Electronics - II	2		20	30	2
7		Hindi	2		40	60	2
8		English	2		40	60	2
9	PCSC-103	Lab based on Computer Science		2	20	30	2
10		Lab based on Physics/Electronics		2	20	30	2
			18	4	260	390	22

Semester 2

Sno	Subject Code	Title	Credit		Marks		Total Credits
			L	P	Internal	External	
1	PCSC-201	Introduction to Data Structures	2		20	30	2
2	PCSC-202	Computer Programming using C	2		20	30	2
3		Maths-I	3		30	45	3
4		Maths-II	3		30	45	3
5		Physics/Electronics - I	2		20	30	2
6		Physics/Electronics - II	2		20	30	2
7		Hindi	2		40	60	2
8		English	2		40	60	2
9	PCSC-203	Lab based on Computer Science		2	20	30	2
10		Lab based on Physics/Electronics		2	20	30	2
			18	4	260	390	22

Semester 3

Sno	Subject Code	Title	Credit		Marks		Total Credits
			L	P	Internal	External	
1	PCSC-301	Computer Based Numerical Methods	2		20	30	2



2	PCSC-302	Database Management Systems	2		20	30	2
3		Maths-I	3		30	45	3
4		Maths-II	3		30	45	3
5		Physics/Electronics - I	2		20	30	2
6		Physics/Electronics - II	2		20	30	2
7		Environment - I	3		40	60	3
8	PCSC-303	Lab based on Computer Science		2	20	30	2
9		Lab based on Physics/Electronics		2	20	30	2
			17	4	220	330	21

Semester 4

Sno	Subject Code	Title	Credit		Marks		Total Credits
			L	P	Internal	External	
1	PCSC-401	System Analysis and Design	2		20	30	2
2	PCSC-402	Introduction to Computer Networks	2		20	30	2
3		Maths-I	3		30	45	3
4		Maths-II	3		30	45	3
5		Physics/Electronics - I	2		20	30	2
6		Physics/Electronics - II	2		20	30	2
7		Environment - I	3		40	60	3
9	PCSC-403	Lab based on Computer Science		2	20	30	2
10		Lab based on Physics/Electronics		2	20	30	2
			17	4	220	330	21

Semester 5

Sno	Subject Code	Title	Credit		Marks		Remarks
			L	P	Internal	External	
1	PCSC -501	Introduction to OOPS (C++)	4		20	30	4
2	PCSC-502	Introduction to Operating Systems	4		20	30	4
3	PCSC-503	Internet Applications	4		20	30	4
4	PCSC-504	Introduction to Software Engineering	4		20	30	4
5	PCSC-505	Minor Project		4		100	4
		Total	16	4	80	220	20

Semester 6

Sno	Subject Code	Title	Credit		Marks		Remarks
			L	P	Internal	External	
1	PCSC -601	Programming in Visual Basic	4		20	30	4
2	PCSC-602	Introduction to JAVA	4		20	30	4
3	PCSC-603	Linux Operating System and Shell Programming	4		20	30	4
4	PCSC-604	Introduction to Artificial Intelligence	4		20	30	4



5	PCSC-605	Major Project		4		100	4
		Total	16	4	80	220	20

Total Course Credits – 126

* The syllabus is subjected to change as per the requirement.

Syllabus for Integrated UG/PG(Computer Science) [on and after 2017]

Subject – Database Management Systems
Paper code – PCSC-302

Introduction: Purpose of Database System, Concept of database & its evaluation, Views of Data, Types of DBMS, DBMS architecture, Data Independency, Data Models, Data Dictionary.

E-R Model: Basic Concept, Design Issues, Entity Sets, Attributes & its Types, E-R Diagram, Design of an E-R Database Schema, Keys.

Normalization: Purpose of Normalization, Functional Dependencies, 1 NF, 2 NF and 3 NF.

SQL: Introduction to SQL, DDL, DML & DCL statements, Basic Operations, Aggregate function, Modification of Database, other SQL features.

Relational Model: Structure of Relational Model, The Relational algebra (Selection, Projection, Union, Intersection Cartesian product, Join), Tuple relational calculus.

Readings:

1. Database system concepts By H.Korth and A. Silberschatz ,S.Sudarshan, TMH Publication , 2010.
2. An introduction to Database Systems by Bipin Desai, Galgotia Publications, 2003 edition.
3. An Introduction to Database Systems, C.J.Date, A.Kannan, S. Swamynathan, Pearson Publication, Eight edition, Database Management System C.J.Data

Department of Computer Science & Information technology
Guru Ghasidas Vishwavidyalaya, Bilaspur, C.G.

SYLLABUS FOR UG/PG INTEGRATED (CS) COURSE UNDER CHOICE BASED CREDIT SYSTEM (CBCS)

Semester 1



Sno	Subject Code	Title	Credit		Marks		Total Credits
			L	P	Internal	External	
1	PCSC-101	Computer Science - I	2		20	30	2
2	PCSC-102	Computer Science - II	2		20	30	2
3		Maths-I	3		30	45	3
4		Maths-II	3		30	45	3
5		Physics/Electronics - I	2		20	30	2
6		Physics/Electronics - II	2		20	30	2
7		Hindi	2		40	60	2
8		English	2		40	60	2
9	PCSC-103	Lab based on Computer Science		2	20	30	2
10		Lab based on Physics/Electronics		2	20	30	2
			18	4	260	390	22

Semester 2

Sno	Subject Code	Title	Credit		Marks		Total Credits
			L	P	Internal	External	
1	PCSC-201	Computer Science - I	2		20	30	2
2	PCSC-202	Computer Science - II	2		20	30	2
3		Maths-I	3		30	45	3
4		Maths-II	3		30	45	3
5		Physics/Electronics - I	2		20	30	2
6		Physics/Electronics - II	2		20	30	2
7		Hindi	2		40	60	2
8		English	2		40	60	2
9	PCSC-203	Lab based on Computer Science		2	20	30	2
10		Lab based on Physics/Electronics		2	20	30	2
			18	4	260	390	22

Semester 3

Sno	Subject Code	Title	Credit		Marks		Total Credits
			L	P	Internal	External	
1	PCSC-301	Computer Science - I	2		20	30	2
2	PCSC-302	Computer Science - II	2		20	30	2
3		Maths-I	3		30	45	3
4		Maths-II	3		30	45	3
5		Physics/Electronics - I	2		20	30	2
6		Physics/Electronics - II	2		20	30	2
7		Environment - I	3		40	60	3
8	PCSC-303	Lab based on Computer Science		2	20	30	2
9		Lab based on Physics/Electronics		2	20	30	2
			17	4	220	330	21

Semester 4

Sno	Subject Code	Title	Credit	Marks	Total Credits
-----	--------------	-------	--------	-------	---------------



			L	P	Internal	External	
1	PCSC-401	Computer Science - I	2		20	30	2
2	PCSC-402	Computer Science - II	2		20	30	2
3		Maths-I	3		30	45	3
4		Maths-II	3		30	45	3
5		Physics/Electronics - I	2		20	30	2
6		Physics/Electronics - II	2		20	30	2
7		Environment - I	3		40	60	3
9	PCSC-403	Lab based on Computer Science		2	20	30	2
10		Lab based on Physics/Electronics		2	20	30	2
			17	4	220	330	21

Semester 5

Sno	Subject Code	Title	Credit		Marks		Remarks
			L	P	Internal	External	
1	PCSC -501	Programming with Visual Basic	4		20	30	4
2	PCSC-502	Object Oriented Concepts	4		20	30	4
3	PCSC-503	Linux Operating System and Shell Programming	4		20	30	4
4	PCSC-504	Introduction to Artificial Neural Network	4		20	30	4
5	PCSC-505	Web Based Mini Project		4		100	4
		Total	16	4	80	220	20

Semester 6

Sno	Subject Code	Title	Credit		Marks		Remarks
			L	P	Internal	External	
1	PCSC -601	Introduction to JAVA	4		20	30	4
2	PCSC-602	Software Testing	4		20	30	4
3	PCSC-603	Introduction to Data Structure	4		20	30	4
4	PCSC-604	Management Information System	4		20	30	4
5	PCSC-605	Major Project		4		100	4
		Total	16	4	80	220	20

Total Course Credits – 126

Subject – Programming with Visual Basic

Paper code – PCSC-501

Introduction to visual Basic: Hardware requirements, features of VB, Editions of Visual Basic, and Event Driven Programming vs procedure oriented programming. Introduction to Integrated Development Environment. Basic concepts of Visual Basic programming: Controls, properties, methods, events, forms, projects. Creating Executable files. Variables, constants, data types, data conversion function. Scope of variables Operators Control Structure:



Conditional / branching statements: If...else..endif, Select case Looping statements: do.. while, for.. next, for each, exiting a loop, goto statement, msgbox and input box functions.

Arrays & Functions: types of arrays, array manipulation, working with standard controls. Working with control array, various key and mouse events, using drag and drop concepts. Procedure and Functions: types of function, library function, date and time function, format function, and string related function, validation function. Creating user defined function & procedure, call by value and call by reference, concept of recursion.

Working with Advanced Controls: toolbar, status bar, tabbed dialog controls, progress bar, animation controls, dtpicker, calendar, common dialog control. SDI & MDI Application: creating MDI application, menu editor: defining menu & popup menu, sub main, startup objects.

Error Handling: Types of errors, error trapping tools: watch window, local window, immediate window, debug menu, tracing program flow with call stack, the err object, error function, error handling routines: on error goto statements. File Handling: type of file handling, Sequential file handling: reading, writing and appending in file, understanding user defined data type, Random access file: reading, writing and appending in file.

Data Access Using the ADO Data Control: Basic concepts of relational database, visual data manager, introduction to SQL, concept of ODBC, Overview of DAO and RDO, Using DAO and RDO to access data. Data Environment: accessing data using data environment, Report Generation: Overview of Data Report, creating Data report, adding groups, using data report functions.

Readings:

1. Mastering Visual Basic 6 Fundamentals - By Microsoft
2. Mastering in Visual Basic - Bv BPB Publications.
3. Introduction to VB Programming – By V. K Jain
4. Visual Basic 6 Programming Black Book ByHolznerDreamtech

Subject – Object Oriented Concepts

Paper code – PCSC- 502

Overview of Object Oriented: Need of Object Oriented, Procedural Vs Object Oriented approach, Benefits, C++ and other languages.

Features of Object Oriented: Class, Objects, Polymorphism, Inheritance, Message Passing, Abstraction, Encapsulation.

Class and Object: Definition, Construction of class, Creation of objects, Pointer to Object, Array of Object, Comparison of Class with Union & Structure.

Polymorphism : Type of Polymorphism, Methods Overloading, Operator overloading.



Inheritance : Types of Inheritance, Single Level, Multi Level, Multiple & Hybrid Inheritance, Advantage of Inheritance, Base Class & Derived Class, C++ & VB: Introduction, Basic Data Type, Writing Simple Program.

Readings:

- 1 Object Oriented Programming: E. Balaguru Swamy, Tata Mc. Graw Hill
- 2 Object Oriented Programming & C++: By R. Raja Raman
- 3 Visual C++ Programming: Yeshwant P. Kanitkar



Subject – **Linux Operating System and Shell Programming**

Paper code – PCSC-503

Introduction to Linux: Introduction to Linux system, History and Emergence, Features of Linux system, Different Linux distributions, Hardware Requirements for the different versions of Linux, Architecture of the Linux, Features of the Kernel and Kernel Shell relationship. Linux File System Features of Linux file system, File types and permissions, Getting started, Logging in /out with the concept of home directory. File operations and links, Commonly used commands like GREP, Find, who, ls, pwd, mv, ls, cd, df, cat, head, tail, rm, sort, grip, ps, whoami, chmod, chonn, gunzip, date, bc, tar.

Text Processing: Introduction to Text Processing, Vi editor, Vi Features, Vi Commands, Yanking, Running shell commands, from within Vi, Command macros, Set showmode, Set Auto Indent, Set number, Introduction to Exrcfile. Emacs editor, Emacs feature, Emacs commands, Using cut, paste and copy in Emacs, Saving buffer in Emacs.

Introduction to Shell & Shell Programming: Features of a Shell, Different types of a Shell, Why use more shell, Shell treatment to the command line, the environment, set, set env, path, home, ifs, mail, ps1, ps2, term, log name, profile, sty, profile file, login/ logout file, setting environment, simple shell programs, for... do, case, do while construct

X-windows : what is X-windows, Microsoft windows verses x-windows, windows manager, FVWM and FVWM95, twm, the client server model of x-windows, starting and stopping an X-window session. GNOME & KDE Using the GNOME & KDE desktop environment : starting the GNOME desktop environment, the GNOME panel, using the main system menu, the Gnome file manager, getting help in GNOME, using the Gnome control. A history of KDE project, starting the KDE desktop environment, exploring the Kde desktop, KDE main system menu, using file manager window, setting wallpaper, screen savers in KDE

System Administration of Linux: Installation & system Administration of Linux: responsibilities of a system administrator, startup and shutdown process, inittub and profile file importance, security file access permission, user and group related jobs, managing disk space, managing file system, backup and restart process.

Readings:

1. Mastering Linux by Paul S. Wang
2. BPB publication Complete Reference Linux by Richard Petersen.



Subject- Introduction to JAVA

PCSC – 601

Introduction: Genesis of java, importance to the Internet, overview and features. **Language Basics:** Constants, Variables and Primitive Data types, Operators and Expression, Decision Making and Branching statement, Decision Making and Looping, Classes, Objects and Methods, Arrays, Strings and Vectors.

Inheritance: Definition, Types, Method overloading and Method Overriding, super and this keywords. **Interfaces:** Defining Interface, Extending Interfaces Implementing Interface.

Packages: Defining Packages, Java API Packages, Naming Conventions, Creating Packages, Accessing Packages, Adding class to Package, CLASS PATH. **Exception handling:** Exception Types, Try, Catch & finally Blocks, Throw and Throws keywords. Creating user defined Exception.

Multithreaded Programming: Thread Model, Creating Threads, Thread Priority, Thread Exception, Synchronization. **Input/output:** Basic Streams, Byte and Character Stream, predefined streams, reading and writing from console and files.

Java Collection: Introduction, Overview of Interfaces, Overview of Classes. **Introduction to AWT:** Window fundamentals, creating windowed programs working with graphics, Using AWT controls, Delegation event model, handling mouse and keyboard event

Aravind
HEAD
DEPT OF CSIT
G.G.V. BILASPUR (C.G.)