Program Syllabus Booklet

Bachelor of Computer Applications

(BCA- 300)

Session: 2017-18

University College of Computer Applications,

Guru Kashi University, Talwandi Sabo

GURU KASHI UNIVERSITY
PUNJAB - INDIA

TABLE OF CONTENTS

Sr No.	Content	Page No
1	Introduction about Program	2
2	Curriculum / Scheme - Annexure-2	3-8
3	Semester wise Syllabi - Annexure-3	9-55
4	Academic Instructions - Annexure-4	56

Introduction about Program

The full form of BCA is Bachelors in Computer Application. BCA is a 3-year undergraduate degree program that focuses on knowledge on the basics of computer application and software development. The degree helps interested students in setting up a sound academic base for an advanced career in Computer Applications. The course of BCA includes database management systems, operating systems, software engineering, web technology and languages such as C, C++, HTML, Java etc. The fees for BCA generally range from INR 37,500 to 5 lakh. The minimum and most important eligibility criteria for BCA followed across all colleges is 45 per cent marks in Class 12 or equivalent examination. There are no subject level restrictions for pursuing BCA as students with any subjects in Class 11 and 12 can apply for BCA. A BCA graduate has scope in jobs such as Software Engineer, Web Designer and System Analyst.

A few of the topics covered under BCA courses are listed below. Each semester has 6 topics to cover so a total of 36 topics are covered in the entire duration of the course. Each semester has Computer Laboratory and Practical work based on the syllabus of that particular semester.

- Business Communication
- Principles of Management
- Programming Principles and Algorithms
- Computer Fundamental and Office Automation
- Organizational Behavior
- Elements of Statistics
- C Programming
- Cost Accounting
- Software Engineering
- C++, Core Java, Advanced Java

GURU KASHI UNIVERSITY
PUNJAB - INDIA

Annexure-2

Semester: 1st										
Sr.	**Subject Code**	**Subject Name**	**Type of Subject T/P**	**(Hours Per Week)**			**No. of Credits**	**Internal Marks**	**External Marks**	**Total Marks**
				L	**T**	**P**				
1	A300101	Fundamentals of Computer and Information Technology	T	3	1	0	4	50	50	100
2	A300102	Programming Using C	T	3	1	0	4	50	50	100
3	A300103	Human Values and Ethics	T	3	1	0	4	50	50	100
4	A300104	Communication Skills-I	T	3	1	0	4	50	50	100
5	A300105	S/W Lab-I(Fundamentals of Computers and Information Technology)	P	0	0	6	3	60	40	100
6	A300106	S/W Lab-II(C programming)	P	0	0	4	2	60	40	100
7	A300107	Installation, Assembling and Networking of Computers (Practical)	P	0	0	4	2	60	40	100
Total No. of Credits				23						

Semester: 2nd										
Sr.	**Subject Code**	**Subject Name**	**Type of Subject T/P**	**(Hours Per Week)**			**No. of Credits**	**Internal Marks**	**External Marks**	**Total Marks**
				L	**T**	**P**				
1	A300201	Fundamentals of Web Technology	T	3	1	0	4	50	50	100
2	A300202	Data Structures	T	3	1	0	4	50	50	100
3	A300203	Programming Using C++	T	3	1	0	4	50	50	100
4	A300204	Communication Skills-II	T	3	1	0	4	50	50	100
5	A300205	S/W Lab-III (Programming Using C++)	P	0	0	6	3	60	40	100
6	A300206	S/W Lab-IV(Data Structures)	P	0	0	4	2	60	40	100
7	A300207	S/W Lab – V (Fundamentals of Web Technology)	P	0	0	4	2	60	40	100
Total No. of Credits				23						

Semester: 3rd										
Sr.	**Subject Code**	**Subject Name**	**Type of Subject T/P**	**(Hours Per Week)**			**No. of Credits**	**Internal Marks**	**External Marks**	**Total Marks**
				L	**T**	**P**				
1	A300301	Digital Electronics	T	4	1	0	5	50	50	100
2	A300302	Discrete Mathematics	T	4	1	0	5	50	50	100
3	A300303	Operating Systems	T	4	1	0	5	50	50	100
4	A300304	System Analysis & Design	T	4	1	0	5	50	50	100
5	A300305	H/W Lab-VI (Digital Electronics)	P	0	0	8	4	60	40	100
6	A300306	S/W Lab-VII(Operating Systems)	P	0	0	8	4	60	40	100
Total No. of Credits				28						

Semester: 4th										
Sr.	**Subject Code**	**Subject Name**	**Type of Subject T/P**	**(Hours Per Week)**			**No. of Credits**	**Internal Marks**	**External Marks**	**Total Marks**
				L	**T**	**P**				
1	A300401	Computer System Architecture	T	4	1	0	5	50	50	100
2	A300402	Database Management Systems	T	4	1	0	5	50	50	100
3	A300403	E-Commerce	T	4	1	0	5	50	50	100
4	A100302	Environment Studies	T	3	0	0	3	50	50	100
5	A300404	Mathematics	T	4	1	0	5	50	50	100
6	A300405	S/W Lab-VIII(Database Management Systems)	P	0	0	8	4	60	40	100
7	300408	S/W Lab-IX(Workshop on Visual Basic)	P	0	0	6	5	60	40	100
Total No. of Credits				32						

Semester: 5th										
Sr.	**Subject Code**	**Subject Name**	**Type of Subject T/P**	**(Hours Per Week)**			**No. of Credits**	**Internal Marks**	**External Marks**	**Total Marks**
				L	**T**	**P**				
1	A300501	Introduction to Java	T	4	1	0	5	50	50	100
2	A300502	Computer Networks	T	4	1	0	5	50	50	100
3	A300503	Software Engineering	T	4	1	0	5	50	50	100
4	A300504	Distributed Systems	T	4	1	0	5	50	50	100
5	A300505	S/W Lab-X (Java)	P	0	0	8	4	60	40	100
6	A300605	S/W Lab-XI(Workshop on PHP)	P	0	0	8	4	60	40	100
Total No. of Credits				28						

Semester: 6th										
Sr.	**Subject Code**	**Subject Name**	**Type of Subject T/P**	**(Hours Per Week)**			**No. of Credits**	**Internal Marks**	**External Marks**	**Total Marks**
				L	**T**	**P**				
1	A300601	Computer Graphics	T	4	1	0	5	50	50	100
2	A300602	Multimedia Systems	T	4	1	0	5	50	50	100
3	A300603	System Software	T	4	1	0	5	50	50	100
4	A300604	S/W Lab-XII(Major Project)	P	0	0	4	2	60	40	100
5	A300605	S/W Lab-XIII (Computer Graphics)	P	0	0	8	4	60	40	100
6	A300606	S/W Lab – XIV (Multimedia Systems)	P	0	0	4	2	60	40	100
7	A300607	Seminar	NA	NA	NA	NA	1	100	NA	100
Total No. of Credits					24					

Annexure-3

Course Name: Fundamentals of Computer and Information Technology

Course Code: A300101

Semester: 1st

L T P

Credits: 04 **3 1 0**

Course Contents

UNIT-I

Computer Fundamentals: Block diagram of a computer, characteristics of computers and generations of computers.

Number System: Bit, byte, binary, decimal, hexadecimal, and octal systems, conversion from one system to the other, representation of characters, integers and fractions.

Binary Arithmetic: Addition, subtraction and multiplication.

Computer Codes: weighted and non-weighted code, BCD, EBCDIC, ASCII, Unicode.

UNIT-II

Input Devices: Keyboard, Mouse, Joy tick, Track Ball, Touch Screen, Light Pen, Digitizer, Scanners, Speech Recognition Devices, Optical Recognition devices – OMR, OBR, OCR

Output Devices: Monitors, Printer and its Types.

Memories: Units of Memory, Main Memories - RAM, ROM and Secondary Storage Devices - Hard Disk, Compact Disk, DVD.

Introduction to Computer Terms like Hardware, Software

UNIT - III

Computer languages: Machine language, assembly language, higher level language, 4GL. Introduction to Compiler, Interpreter, Assembler, Assembling, System Software, Application Software.

MS Word: Introduction, Creating & Editing Word Document. Saving Document, Working with Text: Selecting, Formatting, Aligning, Finding Replacing Text, Bullets & Numbering, Header & Footer, Working with Tables, Properties Using spell checker, Grammar, AutoCorrect Feature, Graphics: Inserting Pictures, Clipart, Drawing Objects, Setting page size and margins; Printing documents, Mail-Merge.

UNIT – IV

MS-Excel: Environment, Creating, Opening, & Saving Workbook, Range of Cells, Formatting Cells, Functions: Mathematical, Logical, Date Time, Auto Sum, Formulas.

Graphs: Charts. Types & Chart Tool Bar, Printing: Page Layout, Header and Footer Tab.

MS PowerPoint: Environment, Creating and Editing presentation, Auto content wizard using built-in templates, Types of Views: Normal, Outline, Slide, Slide Sorter, Slide Show, Creating, customized templates; formatting presentations, AutoShapes, adding multimedia contents, printing slides

Internet: Basic Internet terms: Web Page, Website, Home page, Browser, URL, Hypertext, Web Server, Applications: WWW, e-mail, Instant Messaging, Videoconferencing.

Reference Book:

1. Sinha P.K. and Sinha P. (2002).*Foundations of Computing*, First Edition, BPB.
2. Sanders D.H. (1988). *Computers Today*, Fourth Edition, Mc Graw Hill.
3. Rajaraman V. (1996). *Fundamentals of Computers*, Second Edition, Prentice Hall of India, New Delhi.
4. Jain Satish (1999). *Information Technology*, Paperback Edition, BPB.
5. Chetan Srivastva. *Fundamentals of Information Technology*, Third Edition, Kalayani Publishers.
6. Long Larry and Long Nancy. *Computers*, Twelfth Edition, Prentice Hall.

Course Name: Programming Using C

Course Code: A300102

Semester: 1st

L T P

Credits: 04 **3 1 0**

Course Contents

UNIT - I

Introduction: ANSI C standard, Overview of Compiler and Interpreters, Structure of C Program, Programming rules, Execution

Basic structure of C program: Character set, Identifiers and keywords, constants, variable, Data types, input and output, type conversion,

Operators and expressions: Arithmetic, Unary, Logical and Relational operators, assignment operators, Conditional operators, type conversion. Library functions.

UNIT - II

Input/ Output in C: Formatting input & output functions.

Decision making statements – if, else if

Control statements: branching, looping using For, While and Do-While statements, nested control structures, switch, break and continue statements.

UNIT - III

Arrays: Definition, declaration, assignment, one dimensional and two dimensional arrays.

Strings: input/output of strings, string handling functions, table of strings.

Pointers: pointer data type, pointer declaration, initialization, accessing values using pointers.

Functions: prototype, definition and call, formal and actual arguments, methods of parameter passing to functions, recursion versus iteration.

UNIT – IV

Structures and unions: using structures and unions, comparison of structure with arrays and union.

Files: opening and closing files, Basic I/O operation on files.

Storage Classes: automatic, external, static and register variables.

Text Book:

1. Kanetkar P. Yashvant. *Let us C,* Seventh Edition, BPB Publications, New Delhi.

2. Balagurusamy E. *Programming in C,* Tata Mc Graw Hill.

3. Byron G.S. *Programming in C,* Second Edition, Mc Graw Hills.

4. Kernighan and Richie. *The C Programming Language*, Second Edition, PHI.

5. Salaria R.S. *Problem Solving and Programming in C,* Second Edition.

Course Name: Human Value and Ethics

Course Code: A300103

Semester: 1st

L T P

Credits: 04 **3 1 0**

Course Contents

UNIT - I

Human Values: Morals, Values and Ethics - Integrity - Work Ethic - Service Learning - Civic Virtue - Respect for Others - Living Peacefully - caring - Sharing - Honesty - Courage - Valuing Time - Co-operation - Commitment - Empathy - Self-Confidence - Character – Spirituality.

UNIT - II

Engineering Ethics: Senses of 'Engineering Ethics' - variety of moral issued - types of inquiry- moral dilemmas - moral autonomy - Kohlberg's theory - Gilligan's theory - consensus and controversy - Models of Professional Roles - theories about right action - Self-interest - customs and religion - uses of ethical theories.

UNIT – III

Engineering as Social Experimentation: Engineering as experimentation - engineers as responsible experimenters - codes of ethics - a balanced outlook on law - the challenger case study.

UNIT – IV

Safety, Responsibilities and Rights: Safety and risk - assessment of safety and risk - risk benefit analysis and reducing risk - the Three Mile Island and Chernobyl case studies. Collegiality and loyalty - respect for authority - collective bargaining - confidentiality - conflicts of interest - occupational crime - professional rights - employee rights - Intellectual Property Rights (IPR) - discrimination.

Text Books

1. Martin Mike and Schinzinger Roland (1996). *Ethics in Engineering*, Mc Graw-Hill, New York.

2. Govindarajan M, Natarajan S, Kumar V.S. Senthil (2004). *Engineering Ethics*, Prentice Hall of India, New Delhi.

Course Name: Communication Skills - I

Course Code: A300104

Semester: 1st

L T P

Credits: 04 **3 1 0**

Course Contents

UNIT - I

English Language: Sentence, Parts of speech, Tenses, Active passive voice, Direct/Indirect speech, Creative writing& vocabulary, Comprehension passage, Reading of Biographies of at least 10 IT business personalities.

UNIT - II

Business communication: Types, Medias, Objectives, Modals, Process, Importance Understanding Barriers to communication & ways to handle and improve barriers.

Listening skills: Its importance as individual and as a leader or as a worker, Types of listening and Traits of a good listener, Note taking, barriers to listening & remedies to improve listening

UNIT – III

Non verbal Communication: understanding what is called non verbal communication, its importance as an individual, as a student, as a worker and as a leader, its types.

Presentation skills: It's Purpose in business world, How to find material for presentation, How to sequence the speech with proper introduction and conclusion, How to Prepare PPT& Complete set of required body language while delivering presentation.

UNIT – IV

Reading Skills: to enhance independent reading, Comprehension Passages, News / Magazine articles on stereotype topics, Poems – Abu Ben Adhem, The Tiger

Writing skills: Importance of reading and writing, improving writing skills through Basic cohesive paragraph writing, resume writing, Job application writing/acceptance letter

Text Book:

1. Rodriguez M.V. *Effective Business Communication.*
2. Allen W. Standard, *Living English Structure*, Orient Longman.
3. Meenakshi Raman and Singh Parkash. *Business Communication,* Paperback Edition, Oxford University Press.

Course Name: S/W Lab–I (Fundamentals of Computer and Information Technology)

Course Code: A300105

Semester: 1st

L T P

Credits: 03 **0 0 6**

Course Contents

UNIT - I

MS Windows: Familiarizing with windows operating system; using built-in accessories; managing files and folders using windows explorer; working with control panel; installing hardware and software, Installation of MS Office.

UNIT - II

MS Word: Salient features of MS WORD, Starting and quitting of MS WORD, File, Edit, View, Insert, Format, Tools, Tables, Window, Help options and all of their features, Options and sub options etc. Transfer of files between MS WORD and other word processors and software packages.

UNIT – III

MS Excel: Spread Sheet. Getting started with Excel worksheet, Entering data into work sheet, Editing cell addressing, Ranges and range names, Commands, Menus, Copying and moving cell contents, Inserting and deleting rows and columns, Column width control, Cell protection, Printing reports, Creating and displaying graphs, Statistical functions.

UNIT – IV

MS Power Point: Salient features of POWER POINT, File, Edit, View, Insert, Format, Tools, and Slide Show.

Internet: Navigating with Internet Explorer; surfing the net, using search engines; using email.

Text Book:

1. Sinha P.K. (2002). *Foundations of Computing,* First Edition, BPB.

2. Sanders D. H. (1988). *Computers Today*, Fourth Edition, Mc Graw Hill.

3. RajaramanV. (1996). *Fundamentals of Computers,* Second Edition, Prentice Hall of India, New Delhi.

4. Jain Satish (1999). *Information Technology,*Paperback Edition, BPB.

5. Srivastva Chetan. *Fundamentals of Information Technology,* Third Edition, Kalayani Publishers.

6. Long Larry and Long Nancy. *Computers,* Twelfth Edition, Prentice Hall.

Course Name: S/W Lab –II (C Programming)

Course Code: A300106

Semester: 1st

L T P

Credits: 02 **0 0 4**

Course Contents

1. Program to find sum of two numbers.
2. Program to test whether an entered number is even, odd or zero.
3. Program to test whether an entered number is prime number or not.
4. Program to print N terms of a Fibonacci Series.
5. Program to find the reverse of number.
6. Program to check whether a given Number or a given string is palindrome or not.
7. Program to reverse a given string.
8. Program to check whether a given number is prime or not.
9. Program to find the prime numbers up to N.
10. Program to print:

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

11. Program to search a string in an array using read-data.
12. Program to find the frequency of vowels in a given string.
13. Program to find the frequency of each character in a given string.
14. Program to find greatest in a matrix using subroutine.
15. Program for Matrices Addition and subtraction.
16. Program for Matrix Transpose.
17. Program to find sum of rows and column of a matrix.
18. Program to find sum of both diagonals of the matrix.

Course Name: Installation, Assembling and Networking of Computers (Practical)

Course Code: A300107

Semester: 1st

L T P

Credits: 02 **0 0 4**

Course Contents

1. Introduction of Hardware and Software/components of computer.
2. Mother boards, Chipsets & Microprocessor concept & latest available in market.
3. Basics &Types of Floppy drive/HDD/DVD/RAM /SMPS//BIOS.
4. Assembling of different parts of computers.
5. Knowing ports, wires attached in the Computer.
6. Installation of OS (Linux/Windows).
7. Installation of application and utility software.
8. Networking Basics: Different types of Topologies and their configuration.
9. Types of Switches, I/O Sockets.
10. Creation of Cross Wires and Direct Cables.
11. IP & Setting up a computer on LAN.

Course Name: Fundamentals of Web Technology

Course Code: A300201

Semester: 2nd

L T P

Credits: 04 **3 1 0**

Course Contents

UNIT - I

HTML: Introduction, HTML Tags, Commonly used HTML Commands, Structure of HTML Program, Formatting, Text Styles, and Text Effects

HTML: HTML Lists, Types of lists, adding graphics to HTML Document

UNIT - II

HTML: Creating tables, Linking documents, Frames

HTML Forms: Properties and Methods, Button, Text, Text Area, Checkboxes, radio buttons, select and option elements

UNIT – III

Web Development: Web site, Web page, Static Website and Dynamic Website

HTML: Web Server, Web Client/ Browser

DHTML: Cascading Style Sheets, Class, External Style Sheets

Introduction to Java Script: How& Where to put the JavaScript Code, JavaScript Statements, Comments, Variables, Operators, Control Statements, Loops, Popup Boxes, Functions.

UNIT – IV

Purchasing a Domain Name & Web Space: Domain Name & Web Space, Getting a Domain Name & Web Space (Purchase or Free), Uploading the Website to Remote Server.

Internet: Basic Concepts, Communicating on the Internet, Internet Domains, Establishing connectivity to the Internet, Client IP Address, IP Address.

Text Books:

1. Bayros Ivan. *Web Enabled Commercial Application Development Using HTML, DHTML, Java Script, PHP*, Fourth Revised Edition, BPB publication.
2. Wilton Paul. *Beginning JavaScript*, Wrox Mc Peak Jeremy.
3. Don Jones, Scott Mark & Villarsrick. *E-Commerce for Dummies*, Hungry Minds.

Course Name: Data Structures

Course Code: A300202

Semester: 2nd

LT P

Credits: 04 **3 1 0**

Course Contents

UNIT - I

Introduction: definition, various types of data structures, data structure operations, algorithms complexity and Time Space Trade-off.

Arrays and Records: Linear arrays, Representation of linear arrays in memory, Operations on Array, Multidimensional arrays and its implementation, Pointers, pointer arrays, Records.

UNIT - II

Stacks: Stacks, array representation of stacks, operation on stacks, Polish Notation, Notation conversion, evaluation of postfix expression, Applications of Stack.

Queues: Queues, implementation, operations on queue, Dequeues, Priority queues.

UNIT – III

Linked Lists: Linked lists, Representation in memory, traversing link lists, operations on link list, overflow and underflow, Memory allocation, Header link list, two way lists.

Trees: Basic terminology, Binary trees and its representation, Complete binary tree, Extended binary tree, linked representation of binary tree, traversing binary tree, searching binary tree, Binary search trees.

UNIT – IV

Sorting and Searching: Definitions, bubble sort, insertion sort, selection sort, quick sort, merge sort, radix sort, heap sort, Quick Sort, Linear Search, Binary Search.

Graphs: representation of graph, types of Graph, adjacency matrices, path matrix, Graph traversal: Breadth first search. Depth first search, shortest path problem: Warshall's algorithm, Dijkstra algorithm

Text Books:

1. Lipschutz Seymour. *Theory and Problems of Data Structures*, Schaum's series.
2. Baluja G.S. *Data structures throughC++*, PHI.

Course Name: Programming using C++

Course Code: A300203

Semester: 2nd

L T P

Credits: 04 **3 1 0**

Course Contents

UNIT - I

Introduction to C++: Oriented Programming, OOP Paradigm, Characteristics of OOP Language, Advantages and disadvantages of OOP over its predecessor paradigms.

Tokens: Identifier, Keywords, Constants,

Operators: Arithmetic, relational, logical, conditional and assignment.

Data Types: Variable declaration, expressions, Type conversion.

Statements: Input and output statements, stream I/O, Conditional and Iterative statements, breaking control statements.

UNIT - II

Storage Classes: Automatic, Static, Extern, Register.

Arrays: Arrays as Character Strings, Structures, Unions, Enumerations.

Functions: Prototyping, Definition and Call, Parameter Passing by value, Parameter Passing by address and Parameter Passing by reference, Constant functions, Constant and default arguments, recursion.

UNIT – III

Classes and Objects: Class Declaration and Class Definition, Defining member functions, inline functions, this pointer, Object as function arguments, array of objects, functions returning objects, Static data members and Static member functions, function overloading, Friend functions and Friend classes. Constructors& Destructors: properties, types of constructors.

UNIT – IV

Inheritance: Defining derived classes, inheriting private members, types of inheritance, Types of base classes. Polymorphism: Methods of achieving polymorphic behavior, early binding, virtual functions, late binding, pure virtual functions and abstract base class.

Operator overloading: overloading binary and unary operator, operator overloading using friend function, function overloading.

Files and streams: Classes for file stream operations, opening and closing of files, reading and writing files.

Text Books

1. Balagurusamy E. *Object Oriented Programming with C++*, Tata Mc Graw-Hill.
2. Lafore Robert. *Object Oriented Programming in C++*, Galgotia Publications.
3. Schildt Herbert. *The Complete Reference C++*, Tata Mc Graw-Hill.

Course Name: Communication Skills-II

Course Code: A300204

Semester: 2nd

L T P

Credits: 04 **3 1 0**

Course Contents

UNIT - I

Introduction to Business Communication: Meaning and Definition; process and classification of communication; elements &characteristics of communication; barriers to effective communication in business organization; Formal and Informal communication; grapevine, importance of effective communication in business house; Principals of effective communication.

UNIT - II

Writing Skills: Inter-office memorandums, faxes, E-mails, writing effective sales lettersto agents, suppliers, customers, report writing, project writing.

UNIT – III

Curriculum Vitae (CV): Drafting a CV; writing job application and other applications; do's and don'ts while appearing for an Interview; types of interview.

UNIT – IV

Presentation Skills: Introduction; need of good presentation skills in professional life; preparing a good presentation; group discussion; extempore speaking.

Text Book:

1. Rodriguez M.V. *Effective Business Communication.*
2. Allen W. Standard, *Living English Structure*, Orient Longman.
3. Raman Meenakshi and Singh Parkash. *Business Communication*, Paperback Edition, Oxford University Press.

Course Name: Software Lab- III (Programming using C++)

Course Code: A300205

Semester: 2nd

L T P

Credits: 03 **0 0 6**

Course Contents

1. Write a program to print 1

12

123

1234

123452.

2. Write a program to print 1

22

333

4444

55555

3. Write a program generates the prime numbers.
4. Write a program addition of two square matrices.
5. Write a program multiplication of two matrices.
6. Write a program to subtract two matrices.
7. Write a program to find whether the number is even, odd.
8. Write a program to find greatest out of three number using &&operators.
9. Write a program to find whether the number is palindrome or not.
10. Write a program to print even number Series.
11. Write a program to print odd number Series.
12. Write a program to print prime number Series.
13. Write a program to find whether the number is prime or composite.
14. Write a program to find length of given Character string.
15. Write a program to find the reverse of number.
16. Write a program to add string2 into string1.
17. Write a program to compare two strings.
18. Write a program to copy sring2 intostring1.
19. Write a program to find volume of (I) cylinder (II) cone.
20. Write a program to find factorial of number.

21. Write a program to add, multiply, subtract, divide two numbers using nested if-else in C++.
22. Write a program to implement switch case in C++.
23. Write a program to implement for loop, while loop and do-while loop in C++.
24. Write a program to enter record of 50students.
25. Write a program to implement call by value.
26. Write a program to show call by reference in C++.
27. Write a program to create structure in C++.
28. Write a program to find the area of circle, rectangle and polygon by using structure.
29. Write a program to create classes in C++.
30. Write a program that uses a class where the member functions are defined inside a class.
31. Write a program that uses a class where the member function share defined outside a class.
32. Write a program to demonstrate the use of static data members.
33. Write a program to demonstrate the use of keyword const data members.
34. Write a program using constructors in C++.
35. Write a program using destructors in C++.
36. Write a program using multiple constructors in C++.
37. Write a program using Copy constructor in C++.
38. Write a program to demonstrate the single inheritance.
39. Write a program to demonstrate the multilevel inheritance.
40. Write a program to demonstrate the multiple inheritances.
41. Write a program showing hierarchal inheritance in C++.
42. Write a program to implement function overloading.
43. Write a program to demonstrate the overloading of binary arithmetic operators.
44. Write a program showing operator overloading in C++.
45. Write a program to demonstrate the use of function template.
46. Write a program to demonstrate the use of class template.
47. Write a program showing Exception handling in C++.
48. Write a program to read and write data from a file in C++.
49. Write a program to demonstrate the reading and writing of mixed type of data.
50. Write a program to demonstrate the reading and writing of objects.

Course Name: S/W Lab-IV (Data Structures)

Course Code: A300206

Semester: 2nd

L T P

Credits: 02 **0 0 4**

Course Contents

1. Write a program to insert an element into an array
2. Write a program to delete an element from an array.
3. Write a program to implement linear search algorithm
4. Write a program to implement binary search algorithm
5. Write a program to implement bubble sort algorithm.
6. Write a program to implement selection sort algorithm.
7. Write a program to implement PUSH operation in stacks.
8. Write a program to implement POP operation in stacks.
9. Write a program to implement Queues.
10. Write a program to insert an element in the beginning of the link list.
11. Write a program to insert an element in the middle of the link list.
12. Write a program to insert an element in the end of the link list.
13. Write a program to delete an element from the beginning of the link list.
14. Write a program to delete an element from the end of the link list.
15. Write a program for implementation of a graph.
16. Write a program for implementation of binary search tree.

Course Name: S/W Lab-V (Fundamentals of Web Technology)

Course Code: A300207

Semester: 2nd

L T P

Credits: 02 **0 0 4**

Course Contents

1 Design the page with an attractive background color, text color and background image.

2. Design the page with an attractive color combination, with suitable headings and horizontal rules.

3. Write an HTML document with an example of Ordered List and Unordered List.

4. Write an HTML document with an example of Table format to print your Bio-Data.

5. Write an HTML document with an example of Table format to print your Telephone Bill.

6. Develop a complete web page using Frames and Frameset.

7. Write an HTML code for designing the subscription form of mail account in the e-mail website with appropriate fields.

8. Write an example of Style Sheet.

9. Design a webpage with colors in bgcolor, text and link, try out different sizes.

10. Design a single page web site for a university containing a description of the courses offered, it should also contain some general information about the university such as its history.

11. Write a HTML code for specifying the heading BS or cities in the HTML document.

12. Write a HTML Code for Nested list.

13. Write HTML code to develop a web page having background in blue and title "Welcome to my home page" in red other color.

14. Create an HTML document of giving details of your name, age, and telephone no, address and enrolment no, aligned in proper order.

15. Design a web page that provides links to five different web pages or to entirely different websites.

Course Name: Digital Electronics

Course Code: A300301

Semester: 3rd

L T P

Credits: 05 **4 1 0**

Course Contents

UNIT - I

Introduction: Overview of number system and codes. Elements and functions of digital Logic gates, Gate propagation delay time, logic gates applications.

UNIT - II

Boolean algebra: Boolean operations, SOP and POS forms, Detection and correction codes, detecting and correcting an error.

UNIT – III

Combinational logical circuits: design of Binary Adder, Serial, Parallel, Carry look ahead type, Full sub-tractor, code converters, MUX and DEMUX, encoders and encoders. Sequential logic circuits: Flip flop: RS, JK, Bachelor slave JK, D and T flip-flops using NAND gates.

UNIT – IV

Counters: Design of asynchronous and synchronous, up down and programmable counters. Registers: shift registers, various types and their applications.

Text Books:

- Mano D. Morris. *Digital Circuits of Logic Design*, PHI.
- Bartee T.C. *Digital and Electronic Circuits*, McGraw Hill.
- Malvino. *Digital Computer Electronics***,** Career Education.
- Floyd T.L. *Digital Fundamentals,* Pearson Education.
- Jain R.P. *Modern Digital Electronics,* Mc Graw Hill Education India.
- Tauls and Schillings. *Digital Integrated Electronics,* Mc Graw-Hill Education.

Course Name: Math I (Discrete Mathematics)

Course Code: A300302

Semester: 3rd

L T P

Credits: 05 **4 1 0**

Course Contents

UNIT - I

Set theory, Relations and functions: Set notations and description, subsets, basic set operations. Venn diagrams, laws of set theory, partition of sets, min sets, duality principle, basic definitions of relations and functions, graphics of relations, properties of relations; injective, subjective and bijective functions, composition.

UNIT - II

Combinations: Rule of products, permutations, combinations, Algebra of Logic: Propositions and logic operations, truth tables and propositions generated by set, equivalence and implication laws of logic, mathematical system, and propositions over a universe, mathematical induction, quantifiers.

UNIT – III

Recursion and recurrence: The many faces of recursion, recurrence, relations, and some common recurrence relations, generating functions.

UNIT – IV

Graph theory: Various types of graphics, simple and multi-graphs, directed and undirected graphs, Eulerian and Hamiltonian graph, graph connectivity, traversals, graph optimizations, Graph coloring , trees, spanning trees, rooted trees, binary trees.

Text Books:

1. Doerr A and Kenneth L. *Applied Discrete Structure of Computer Science,*Galgotia Publications.

2. Swami M.N.S. and Thisiraman E. *Graphics Networks and Algorithms,* John Wiley & Sons.

3. Tremblay J.P. and Manohar R. *Discrete Mathematical Structure with Application to Computer Science,* McGraw Hill.

Course Name: Operating System

Course Code: A300303

Semester: 3rd

L T P

Credits: 05 **4 1 0**

Course Contents

UNIT - I

Introduction to Operating System: its need and Operating System services; Operating System classification , single user, multiuser, simple batch processing, Multiprogramming, Multitasking, Parallel system, Distributed system, Real time system.

UNIT - II

Process Management: Process Concept, Process scheduling.

CPU Scheduling: Basic concepts, Scheduling Criteria, Scheduling Algorithms.

UNIT – III

Memory Management: Logical Versus Physical addresses space, Swapping Partition, paging and segmentation, concepts of Virtual Memory.

File Management: File concept, access methods, Directory Structure, file protection. Allocation methods: Contiguous, linked and index allocation.

UNIT – IV

Deadlocks: Deadlock Characteristics, Prevention, Avoidance, Detection and Recovery, critical section, semaphores, combined approach to deadlock handling.

Security: Authentication, Program Threats, System Threats, and Encryption.

Text Books:

1. Silberschatz Galvin. *Operating System Concepts*, John Wiley & Sons Inc.

2. Milan Milenkovic. *Operating System*, McGraw Hill Education.

3. Deital H.M. *An Introduction to Operating System*, Addison Wesley.

4. Stalling W. *Operating System*, PHI.

Course Name: Systems Analysis and Design

Course Code: A300304

Semester: 3rd

L T P

Credits: 05 **4 1 0**

Course Contents

UNIT - I

System Concepts: Definition, characteristics, elements & types of system.

System development life cycle: Recognition of need: Feasibility study, system analysis, introduction

UNIT - II

Structure design and Fact finding Techniques: Information collection, interviews, questionnaires, observation, record searching and document analysis, analysis tools, data flow diagram, data dictionary, decision tree, structured English and decision table.

UNIT – III

System Design: The process and stages of systems design, input/output and file design;

UNIT – IV

System Implementation: System implementation, system testing, implementation process and implementation methods, system maintenance.

Text Books:

1. Awad Elias N. *System Analysis and Design*, Galgotia Publications.
2. Sen James A. *Analysis and Design of Information System***,** Tata Mc Graw Hill.

Course Name: H/W Lab-VI (Digital Electronics)

Course Code: A300305

Semester: 3rd

L T P

Credits: 04 **0 0 8**

Course Contents

UNIT - I

Note: A subset of following experiments has to perform.

1. To study the functions of basic logic gates and verify the truth table of AND, OR, NOT, XOR, NAND, NOR.
2. To study applications of AND, OR, NAND, XOR gates for gating digital signals.
3. To develop the different Arithmetic Circuits:
   a. Half Adder and Subtractor
   b. Full Adder and Subtractor.
4. To study the BCD to binary and binary to BCD Code converter.
5. Study of Decoder Circuits: a. BCD to Decimal Decoder b. BCD to 7 Segment Decoder
6. Study of Encoder Circuits: a. BCD to Decimal Encoder b. Octal to Binary Encoder
7. To study the flip flop circuit using Gates:
   a. R S Flip Flop
   b. J K Flip Flop
   c. Bachelor Slave J K Flip Flop
   d. D Flip Flop
8. To study the R S & J K and D Flip Flop Using IC‟s
9. Study of Shift Register.
10. Study of Ring Counter.
11. Study of Asynchronous and Synchronous Counters.

Course Name: S/W Lab- VII (Operating Systems)

Course Code: A300306

Semester: 3rd

L T P

Credits: 04 **0 0 8**

Course Contents

1) Write down the Steps to Install Linux Operating System.
2) Write down the Steps to Install XP Operating System.
3) Write and explain the File Related commands.
4) Write and explain the Directory Related commands.
5) Write and explain the Process and status information commands.
6) Write and explain the Text related commands.
7) Write and explain the command to set the File Permissions.
8) Write a shell Program for Numerical Calculations in Linux.
9) Write a shell program to create a table in Linux.
10) Write a shell program to identify Even and Odd Number in Linux.

Course Name: Computer System Architecture

Course Code: A300401

Semester: 4th

L T P

Credits: 05 **4 1 0**

Course Contents

UNIT - I

Introduction to Computer Organization & Design: Computer Organization, computer design, Computer Architecture, Instruction codes, op-codes, Computer Registers, Common Bus System, Computer Instructions, Timing and Control, Instruction Cycle, Memory reference instructions CPU: Stack Organization, Addressing Mode.

UNIT - II

Control Unit Architecture: I/O Architecture, Transfer of Information among I/O devices, I/O Bus and memory Modules, I/O versus Memory Bus, and Isolated versus Memory Mapped I/O.

UNIT – III

Data Transfer Modes: Asynchronous data transfer Modes of Transfer, DMA, Input output Processor, CPU, Memory and I/O ports.

UNIT – IV

Memory System: Storage technologies, Memory hierarchy, Memory mapping, Main memory and Auxiliary memory, Associative and Cache memory, introductory study of 8 bit Microprocessor

Text Books:

1. Mano M.M. *Computer System Architecture*, PHI.

2. J.P. Hayes. *Computer Organization and Architecture*, TMH.

3. Stallings. *Computer System Architecture*, PHI.

Course Name: Database Management System

Course Code: A300402

Semester: 4th

L T P

Credits: 05 **4 1 0**

Course Contents

UNIT - I

An overview of the DBMS: Concept of database system, Database Administrator and his responsibilities. Physical and Logical data independence, three levels Architecture of database system: The external level, conceptual level and the internal level.

UNIT - II

Introduction to Data Models: Entity Relationship Model, Hierarchical, Network and Relational Model, Comparison of Network, Hierarchical and Relational Model.

UNIT – III

Relational data model: Relational database, relational algebra and calculus, SQL dependencies, functional, multi valued and join, Normalization.

UNIT – IV

Database protection: Recovery, concurrency, security, integrity and control, Distribute database: Structure of distributed database, design of distributed databases.

Text Books:

1. Date C.J. *An Introduction to Data Base Systems*, Narosa Publications.
2. Korth F. Henry. *Database System Concepts*, McGraw Hill.
3. Prakash Naveen. *Introduction to Database Management*, TMH.
4. Desai C. Bipin. *An Introduction to Database System*, Galgotia Publications.
5. Ullman. *Principles of Database Systems*, Galgotia Publications.

Course Name: E-Commerce

Course Code: A300403

Semester: 4th

L T P

Credits: 05 **4 1 0**

Course Contents

UNIT - I

Introduction to E-commerce: Introduction, E-commerce or Electronic Commerce- An Overview, Advantages and Disadvantage of E-commerce, E-commerce versus traditional commerce.

E-Commerce Process Models: Introduction, Business Models, E-business Models Based on the Relationship of Transaction Parties, e-commerce Sales Life Cycle (ESLC) Model

UNIT - II

E-Payment Systems: B2B Electronic Payments, Third-Party Payment Processing, Electronic Payment Gateway–Security Standard for Electronic Payment System.

E-Marketing: Challenges of Traditional Marketing, Retailing in E-Business Space, Internet Marketing, Advertisement and Display on the Internet, E-Business for Service Industry.

UNIT – III

Introduction to E-Governance: Introduction of E-Governance, Role of ICT's in e-governance, Need, Importance of E- governance.

Governance Process Models: Categories of E-Governance, Key issues of E-Governance, E-Governance Models, Model of Digital Governance, Critical flow model, Government–to-Citizen-to-Government Model (G2C2G).

UNIT – IV

Public Grievances: Telephone, Ration Card, Transportation, Rural services Land Records, Police: FIR registration, Lost and Found, Social Services: Death, Domicile, School Certificate.

Public Information: Employment, Hospitals, Railway, Agricultural sector: Fertilizers, seeds, water, Commercial: Income tax, custom duty, Stages in Evolution and strategies for success, Challenges against E –Governance.

Course Name: Environment Studies

Course Code: A100302

Semester: 4th

	L T P
Credits: 03	**3 0 0**

Course Contents

UNIT - I

The Multidisciplinary nature of environmental studies Definition, scope and importance (2 Lectures) Need for public awareness.

Natural Resources: Renewable and non-renewable resources: Natural resources and associated problems. a) Forest resources: Use and over-exploitation, deforestation,. Timber extraction, mining, dams and their effects on forests and tribal people. b) Water resources: Use and over-Utilization of surface and ground water, floods, drought, conflicts and water, dams-benefits and problems. c) Mineral resources: Use and exploitation, environmental effects of extracting and using mineral resources. d) Food resources: World food problems, changes caused by agriculture and overgrazing, effects of modern agriculture, fertilizer-pesticide problems, water logging, salinity, case studies. e) Energy resources: Growing energy needs, renewable and non renewable energy sources, use of alternate energy sources. Case studies f) Land resources: Land as a resource, land degradation, man induced landslides, soil erosion and desertification.

UNIT - II

E-Concept of an ecosystem: Structure and function of an ecosystem, Producers, consumers and decomposers, Energy flow in the ecosystem, Ecological succession, Food chains, food webs and ecological pyramids.

Biodiversity and its conservation: Introduction – Definition: genetic, species and ecosystem diversity, Biogeographical classification of India, Value of biodiversity: consumptive use, productive use, social, ethical, aesthetic and option values, Biodiversity at global, National and local levels, India as a mega-diversity nation.

UNIT – III

Environmental Pollution Definition: Causes, effects and control measures of: a. Air pollution b. Water pollution c. Soil pollution e. Noise pollution f. Thermal pollution g. Nuclear hazards ill-effects of fireworks, Solid waste Management : Causes, effects and

control measures of urban and industrial wastes, Role of an individual in prevention of pollution, Disaster management: floods, earthquake, cyclone and landslides.

UNIT – IV

Social Issues and the Environment: From Unsustainable to Sustainable development, Urban problems related to energy, Water conservation, rain water harvesting, watershed management, Resettlement and rehabilitation of people; its problems and concerns, Environmental ethics: Issues and possible solutions, Climate change, global warming, acid rain, ozone layer depletion, nuclear accidents and holocaust, Wasteland reclamation, Consumerism and waste products, Environment Protection Act, Air (Preventation and Control of Pollution) Act, Water (Prevention and control of Pollution) Act, Wildlife Protection Act, Forest Conservation Act, Issues involved in enforcement of environmental legislation

Human Population and the Environment: Population growth, variation among nations, Population explosion – Family Welfare Program, Environment and human health, Human Rights, Value Education, HIV / AIDS, Women and Child Welfare

Suggested Books:

1. Agarwal K.C. (2001). *Environment Biology***,** Nidi Publ. Ltd. Bikaner.
2. Jadhav H and Bhosale V.M. (1995). *Environment Protection and Laws***,** Himalaya Pub House, Delhi.
3. Rao M.N. and Datta A.K. (1987). *Waste Water Treatmen*, Oxford & IBH Publ. Co. Pvt. Ltd.
4. Cunninghan, W.P. *Principle of Environment Science.*
5. Joseph. *Essentials of Environment Science***.**
6. Rao C.S. *Environment Pollution Control Engineering.*
7. Kaushik A. *Perspectives in Environmental Studies.*

Course Name: Mathematics

Course Code: A300404

Semester: 4th

L T P

Credits: 05 **4 1 0**

Course Contents

UNIT - I

Matrix Algebra: Introduction of a matrix, its different kinds, matrix addition and scalar multiplication, Multiplication of matrices, Square matrix, Transpose, Adjoint and Inverse of a matrix ,Matrix method ,Cramer rule, Rank of a matrix, Solving simultaneous equations using Gauss elimination method, Gauss Jordan Method and matrix, inversion method

UNIT - II

Differential Calculus: Introduction, Differentiation, Derivative of a Function of One Variable, Power Function, Sum and Product of Two Functions, Function of a Function, Differentiation by method of substitution, Maxima and Minima

UNIT – III

Integral Calculus: Indefinite Integral, Integration by substitution, integration by parts,, Integration by partial fractions, definite integral. Numerical integration: Trapezoidal method, simpson's 1/3 rule, simpson's 3/8 rule.

UNIT – IV

Statistics: Measures of central tendency, Preparing frequency distribution table, arithmetic mean, Geometric mean, harmonic mean, median and mode. Measures of dispersion: Range, mean deviation, standard deviation, co-efficient of variation, moments, Skewness and Kurtosis

Text Books:

1. Rajaraman. *Computer Oriented numerical methods.*

2. Grewal. *Numerical methods to Engg.*

3. Sancheti D.C. *Business Mathematics.*

Course Name: S/W Lab- VIII (Data Base Management Systems)

Course Code: A300405

Semester: 4th

	L T P
Credits: 04	**0 0 8**

Course Contents

1. Introduction to DBMS & SQL.
2. To implement Various DDL comment.
3. Implement the DML commands.
4. Study of Various types of data Constraints and implementation.
5. Study of all types of operators.
6. Implement the concept of Set Operators.
7. Explore select clauses -order by, having etc.
8. Implement the concept of Inbuilt Function.
9. Implement the concept of Joins,
10. Implement the concept of views.
11. Implement the concept Of Indexes

Course Name: S/W Lab-IX (Workshop on Visual Basic)

Course Code: (A300406)

Semester: 4th

	L	T	P
Credits: 05	**0**	**0**	**6**

Course Contents

Develop an Application using Visual Basic

1. Bank transactions management
2. Hotel Management
3. Gas agency management
4. Office automation
5. Railway reservation
6. Computerization course registration
7. Hostel management
8. Hospital management
9. Inventory management
10. Competitive examination database
11. Air line reservation
12. Transport management
13. College admission
14. Library management

Course Name: Introduction to Java

Course Code: A300501

Semester: 5th

L T P

Credits: 05 **4 1 0**

Course Contents

UNIT - I

Introduction to Java: Introduction to java , Java History, Java Features; How Java Differs from C and C++; Comments in java, Java Program Structure, Implementing a Java Program, Java Virtual Machine, Command Line Arguments, Programming Style, Java and Internet, Java and World Wide Web, Web Browsers; Hardware and Software Requirements; Java Support Systems, Java Environment, Java Tokens; Java Statements.

UNIT - II

Constants, Variables and Data Types: Introduction; Constants, Variables, Data Types, Introduction to Operators, Expressions, Operator Precedence. Decision Making, Branching and Looping: Decision making and branching Statements, Looping Statements, Labeled loops, Jumping Statements.

UNIT – III

Classes, Objects and Methods: Introduction, Defining a Class, Data member, member function, Creating Objects, Accessing Class Members, Constructors, Methods Overloading, Static Members, Nesting of Methods. Arrays, Strings, Vectors: Arrays, Zagged Arrays, Strings, String functions: Vectors, Wrapper Classes. Inheritance: Extending a Class, Overriding Methods, Final Variables and Methods, Final Classes, Finalizer Methods, Abstract Methods and Classes, Visibility Control.

UNIT – IV

Interfaces: Introduction, Defining Interfaces, Extending Interfaces, Implementing Interfaces, Accessing Interface Variables, Implementing Multiple Inheritance using Interfaces. Packages: Introduction; System Packages, Using System Packages, Naming Conventions, Creating Packages, Accessing a Package, Using a Package, Adding a Class to a Package, Hiding Classes.

Managing Errors and Exceptions: Introduction; Types of Errors; Exceptions, Exception Handling using Try, Catch and Finally block: Throwing Our Own Exceptions, Using Exceptions for Debugging. Applet Programming: Introduction; How Applets Differ from Applications; Applet Life Cycle; Creating an Executable Applet

Text Books:

1. Balaguruswamy E. *Programming with JAVA.*
2. *Java Network Programming,* Publisher: Manning Publications.
3. Naughton Patrick and Morrison Michael. *The JAVA handbook.*

Course Name: Computer Networks

Course Code: A300502

Semester: 5th

L T P

Credits: 05 **4 1 0**

Course Contents

UNIT - I

Data communications concepts: Digital and analog parallel and serial synchronous and asynchronous, simplex, half duplex, full duplex, multiplexing. Communication channels: Wired transmissions: Telephone lines, leased lines, switch line, coaxial cables, base band, broadband, optical fiber transmission.

UNIT - II

Wireless transmission: Microwave transmission, infrared transmission, laser transmission, radio transmission, and satellite transmission, Communication switching techniques, Circuit switching, message switching, packet switching.

UNIT – III

Network reference models: Network topologies, OSI references model, TCP/IP reference model, comparison of OSI and TCI reference model. Data link layer design issue: Services provided to the network layer, framing, error control, flow control, HDLC, SDLC, data link layer in the internet (SLIP, PPP).

UNIT – IV

MAC sub layer: CSMA/CD, IEEE standards, FDM, TDM, CDMA. The Network Layer: Design Issues, Routing Algorithms: Optimality principled, shortest path routing, Concept of Internet Working.

Text Books:

1. Tannenbaum S. Andrew. *Computer Networks*, PHI.
2. S.K. Bansandra. *Computer Today*, Galgotia Publications.
3. Black Ullysee. *Data Communication System*, PHI.
4. Stalling. *Data and Computer Communications*, PHI.

Course Name: Software Engineering

Course Code: A300503

Semester: 5th

L T P

Credits: 05 **4 1 0**

Course Contents

UNIT - I

Software: Characteristics, Components, Applications, And Software Process Models: Waterfall, Spiral, Prototyping, Fourth Generation Techniques, Concepts of Project Management, Role of Metrics &Measurements.

UNIT - II

S/W Project Planning: Objectives, Decomposition techniques: S/W Sizing, Problem based estimation, Process based estimation, Cost Estimation Models: COCOMO Model, The S/W Equation.

UNIT – III

System Analysis: Principles of Structured Analysis, Requirement analysis, DFD, Entity Relationship diagram, Data dictionary. S/W Design: Objectives, Principles, Concepts, Design methodologies: Data design, Architectural design, procedural design, Object ,oriented concepts

UNIT – IV

Testing fundamentals: Objectives, principles, testability, Test cases: White box & Black box testing. Testing strategies: verification & validation, unit test, integration testing, validation testing, system testing

Text Books:

1. Pressman S Roger (1992).*Software Engineering, A Practitioner's Approach*, Third Edition, Mc Graw Hill.

2. Fairley E.R. (1985). *Software Engineering Concepts*, Mc Graw Hill.

3. Jalota Pankaj (1992). *An Integrated Approach to Software Engineering*, Narosa Publishing House.

Course Name: Distributed Systems

Course Code: A300504

Semester: 5th

L T P

Credits: 05 **4 1 0**

Course Contents

UNIT I

Introduction: interconnections, distributed system taxonomy, service models client-server computing, network protocols, Characterization of Distributed Systems, Intercrosses Communication-Introduction-API for Internet protocols-External data representation and marshalling--Client-server communication.

UNIT II

Network protocols: IP and ATM networking communication models naming and binding, sockets programming, remote procedure calls (RPC), object brokers, RPC case studies: Sun RPC, DCE RPC Operating System Support-Introduction-OS layer-Protection-Processes and threads- Communication and invocation OS architecture.

UNIT III

Distributed File Systems: Introduction, File service architecture, Network File System Enhancements and further developments, Name Services, the Domain Name System-Directory Services

UNIT IV

Clustering: scalable performance, load balancing, and reliability, storage virtualization, processor virtualization, Time and Global States, Introduction Clocks, events and process states, Synchronizing physical clocks, Logical time and logical clocks, Global states Distributed debugging

Text Books:

1. Liu M.L. (2004). *Distributed Computing Principles and Applications*, Pearson Addison Wesley.

2. Coulouris George, Dollimore Jean and Kindberg Tim (2005). *Distributed Systems: Conceptsand Design*, 4th Edition, Pearson Education.

Course Name: S/W Lab –X (Java)

Course Code: A300505

Semester: 5th

L T P

Credits: 04 **0 0 8**

Course Contents

1. Introduction to JAVA, Class, Object, Package, Applet
2. Write a Java programs which does the creation of Class and object.
3. Usage of import statement and package declaration in java programs.
4. Declaring variables of various data types and their effect by changing the access modifiers like private, public, protected, default.
5. Write a program which makes use of Comparison Operators.
6. Write programs which make use of Arithmetic Operator.
7. Write a program which makes use of Logical Operators.
8. Write a program which make use of control Statement like if, while, do while.
9. Write Java programs, which make use of Statement like Try, catch, finally.
10. Write a Java program, which make use of control Statement like Try, catch, finally, throw, and throws.
11. Write code snippets which make usage of Method Overloading, Using super, this, super (), this () in Java Programs.
12. Write code snippets which make usage of method Overriding.
13. Write code snippets which make Applet.
14. Write code snippets which make usage of recursion.
15. Write code snippets which make usage of Thread.
16. Write code snippets which make usage of Thread Synchronization.
17. Write code snippets which make usage of String Methods.
18. Write code snippets which make usage of Swing Package.

Course Name: S/W Lab-XI (Workshop on PHP)

Course Code: A300506

Semester: 5th

L T P

Credits: 04 **0 0 8**

Course Contents

Note: Install wamp on window based systems to make it virtual server to run PHP.

1. Create a basic web page to show use of head, title, and body tag.
2. Create a web page to show use heading and text formatting tags.
3. Create a web page to show use img, ul, ol and anchors.
4. Create a web page to show use tables and div tags.
5. Create a web page using class, id and inline styles.
6. Create a web page to create a form.
7. Create a web page to show an alert using java script.
8. Show the use of get Element By Id in java script.
9. Create a web page using variables, loop and Conditions in java script.
10. Create a web page using Switch in java script.
11. Create a web page to show use of jquery.
12. Create a web page to implement get & post in ajax.
13. Create a web page to print your name using PHP.
14. Create a web page to show use of all data types in PHP
15. Create a web page to show use loops & Conditional Statements.
16. Create a web page to show use arrays in PHP.
17. Create database and tables in MySQL.
18. Fetch and display data from MySQL table in a web page using PHP.
19. File upload to server using PHP.
20. Working with cookies and session

Course Name: Computer Graphics

Course Code: A300601

Semester: 6th

L T P

Credits: 05 **4 1 0**

Course Contents

UNIT - I

Input devices: Keyboard, Touch panel, light pens, Graphic tablets, Joysticks, Trackball, Data glove, Digitizers, Image scanner, Mouse, Voice & Systems. Hard copy devices: Impact and non impact printers, such as line printer, dot matrix, laser, inkjet, electrostatic, flatbed and drum plotters.

UNIT - II

Video Display Devices: Refresh cathode ray tube, raster scan displays, random scan displays, color CRT, monitors, direct view storage tube, flat, panel displays; 3,D viewing devices, raster scan systems, random scan systems, graphics monitors and workstations.

Scan conversion algorithms for line, circle and ellipse, Bresenham's algorithms, area filling techniques, character generation.

UNIT – III

2 Dimensional Graphics: Cartesian and Homogeneous coordinate system, Geometric transformations (translation, Scaling, Rotation, Reflection, Shearing), Two-dimensional viewing transformation and clipping (line, polygon and text).

UNIT – IV

3 Dimensional Graphics: Geometric transformations (translation, Scaling, Rotation, Reflection, Shearing), Mathematics of Projections (parallel & perspective), 3D viewing transformations and clipping.

Text Books:

1. Hern and Baker. *Computer Graphics,* 2nd Ed.,–PHI, New Delhi.
2. Rogers *Principles of Computer Graphics,* MGH Pub New Delhi.
3. *Schaum's Outline Series Computer Graphics,* MGH Publications.

Course Name: Multimedia Systems

Course Code: A300602

Semester: 6th

L T P

Credits: 05 **4 1 0**

Course Contents

UNIT - I

Multimedia: Meaning and its usage, Stages of a Multimedia Project & Multimedia Skills required in a team, Text: Fonts & Faces, Using Text in Multimedia, Font Editing & Design Tools, Hypermedia & Hypertext. Sound: Multimedia System Sounds, Digital Audio, MIDI Audio, Audio File Formats, MIDI vs Digital Audio, Audio CD Playback, Audio Recording, Voice Recognition & Response.

UNIT - II

Images: Still Images – Bitmaps, Vector Drawing, 3D Drawing & rendering, Natural Light & Colors, Computerized Colors, Color Pellets, Image File Formats, Macintosh & Windows Formats, Cross – Platform format. Animation: Principle of Animations. Animation Techniques, Animation File Formats. Video: How Video Works, Broadcast Video Standards: NTSC, PAL, SECAM, ATSC DTV, Analog Video, Digital Video, Digital Video Standards – ATSC, DVB, ISDB, Video recording & Shooting Videos, Video Editing, Optimizing Video files for CD-ROM, Digital display standards.

UNIT – III

Hardware: Macintosh versus Windows, Connections: IDE, SCSI, UIDE, ATA, USB, Fire wire etc. Storage devices, Input , Output devices for Multimedia Projects Multimedia Software Tools: Text Editing & Word processing tools, OCR S/W, Painting &Drawing Tools, 3D Modeling& Animation Tools, Image editing tools, Sound Editing tools, Animation, Video & Digital movie tools, Overview of various types of Multimedia Authoring tools.

UNIT – IV

Compression: CODEC, Types of Compression & redundancies, GIF, JPEG & MPEG Standards Overview, Fractals Multimedia tools for WWW & Designing for WWW: Plug Ins, Text, Images, Sound & Animation for the Web.

Text Books:

1. Tay Vaughan (1999). *Multimedia: Making it work,* TMH.

2. Parekh Ranjan and Gupta Vikas (2008). *Principles of Multimedia,* Tata McGraw Hill Coundex DTP Course KIT, Publishers: Wiley.

3. Ralf Steinmetz and Klara Naharstedt (2001). *Multimedia: Computing, Communications Applications,* Pearson.

Course Name: System Software

Course Code: A300603

Semester: 6th

L T P

Credits: 05 **4 1 0**

Course Contents

UNIT - I

Introduction to software processors: elements of assembly language programming, assembly scheme, single pass and two pass assembler, general design procedure of a two pass assembler.

UNIT - II

Macros and Macro processor: macro definition, macro expansion, and features of macro facility, design of macro processor.

UNIT – III

Overview of compilers: memory allocation, lexical analysis, syntax analysis, Intermediate code generation and optimization, local and global optimization, code generation.

UNIT – IV

Loaders and linkage editors: Introduction to Loading, linking and relocation, program linking, linkage editors, dynamic linking, bootstrap loader. Other system software: Operating System, DBMS, Functions and structure of Text Editor.

Text Books:

1. Dhamdhere (1996). *Systems Programming and operating systems*, TMH.
2. Donovan (1991). *System Programming* (Mc Graw Hill).

Course Name: S/W Lab –XII (Major Project)

Course Code: A300604

Semester: 6th

	L T P
Credits: 02	**0 0 4**

Course Contents

Starting of Major Project (Feasibility Study, Requirement Analysis, Design)

Note: The marks distribution for the practical will be as under

- Viva Voce 10marks
- System development 30m

Name: S/W Lab –XIV (Multimedia Systems)

Course Code: A300606

Semester: 6th

L T P

Credits: 02 **0 0 4**

Course Contents

1. Procedure to create an animation to represent the growing moon.
2. Procedure to create an animation to indicate a wall bouncing on steps.
3. Procedure to simulate movement of a cloud.
4. Procedure to draw the fan blades and to give proper animation.
5. Procedure to display the background given through your name.
6. Procedure to create an animation with the following features:

WEL COME

- Letter should appear one by one.
- The fill Color of the text should change to a different Color after the display of full word.

7. Procedure to simulate a ball hitting another ball.
8. Procedure to create an animated cursor using STARTDRAG ("SS",TRUE); MOUSE. HIDE ();
9. Procedure to design a visiting card containing at least one graphic and text information.
10. Procedure to take a photographic image. Give title for the image and put the border. Write Your names. Write the institution and place.
11. Procedure to prepare a cover page for the book in your subject area. Plan your own design.
12. Selecting your own background for organization.
13. Picture so that it given an elegant look.
14. Procedure to picture preferably on a plain background of a color of your choice-

Positioning Includes rotation and scaling.

15. Procedure to remove the arrows and text from the given photographic image.
16. Procedure to type a word and apply the effects shadow embosses.
17. Procedure to use appropriate tools(s) from the toolbox cut the object from three files organizes them in a single file and applies feather effects.
18. Procedure to display the background given through your name using mask.
19. Procedure to make anyone of one of the parrots black and white in a given picture.

20. Procedure to change a circle into a square using flash.

Total Number of Course	40
Number of Theory Course	24
Number of Practical Course	16
Total Number of Credits	158

Annexure-4

Academic Instructions

Attendance Requirements

A student shall have to attend 75% of the scheduled periods in each course in a semester; otherwise he / she shall not be allowed to appear in that course in the University examination and shall be detained in the course(s). The University may condone attendance shortage in special circumstances (as specified by the Guru Kashi University authorities). A student detained in the course(s) would be allowed to appear in the subsequent university examination(s) only on having completed the attendance in the program, when the program is offered in a regular semester(s) or otherwise as per the rules.

Assessment of a course

Each course shall be assessed out of 100 marks. The distribution of these 100 marks is given in subsequent sub sections (as applicable).

	Internal (50)						**External (50)**	**Total**
Components	Attendance	A1	A2	A3	MST1	MST2	ETE	
Weightage	10	10	10	10	30	30	50	
Average Weightage	10	10			30		50	100

Passing Criteria

The students have to pass both in internal and external examinations. The minimum passing marks to clear in examination is 40% of the total marks.