GURU KASHI UNIVERSITY
PUNJAB - INDIA

# Program Syllabus Booklet

## Diploma in Computer Applications

## (Code-305)


## Session: 2017-18

**GURU KASHI UNIVERSITY**

**University College of Computer Applications (Code:3)**

**Diploma in Computer Applications (Code: 305)**

**Study Scheme**

**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 | 305101 | Fundamentals of Computer | T | 3 | 1 | 0 | 4 | 50 | 50 | 100 |
| 2 | 305102 | Operating Systems | T | 3 | 1 | 0 | 4 | 50 | 50 | 100 |
| 3 | 305103 | Programming Using C | T | 3 | 1 | 0 | 4 | 50 | 50 | 100 |
| 4 | 305104 | Office Automation Systems | T | 3 | 1 | 0 | 4 | 50 | 50 | 100 |
| 5 | 305105 | S/W Lab-I (Office Automation System) | P | 0 | 0 | 4 | 2 | 50 | 50 | 100 |
| 6 | 305106 | S/W Lab-II (C Programming) | P | 0 | 0 | 8 | 4 | 50 | 50 | 100 |
| 7 | 305107 | Installation, Assembling and Networking of Computers (Practical) | P | 0 | 0 | 4 | 2 | 50 | 50 | 100 |
| Total No. of Credits | | | | 24 | | | | | | |

**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 | 305201 | Fundamentals of Web Technology | T | 3 | 1 | 0 | 4 | 50 | 50 | 100 |
| 2 | 305202 | Programming Using C++ | T | 3 | 1 | 0 | 4 | 50 | 50 | 100 |
| 3 | 305203 | Data Structures | T | 3 | 1 | 0 | 4 | 50 | 50 | 100 |
| 4 | 305204 | S/W Lab-III( Programming Using C++) | P | 0 | 0 | 6 | 3 | 50 | 50 | 100 |
| 5 | 305205 | S/W Lab-IV(Fundamentals of Web Technology) | P | 0 | 0 | 4 | 2 | 50 | 50 | 100 |
| 6 | 305206 | Training on MS-Office | P | 0 | 0 | 16 | 8 | 50 | 50 | 100 |
| Total No. of Credits | | | | 25 | | | | | | |

# Guru Kashi University, Talwandi Sabo
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## Fundamentals of Computers (305101)

**Credits 04**

| L | T | P |
|---|---|---|
| 3 | 1 | 0 |

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### 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.

### UNIT – II

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

**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.

### UNIT – III

**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 – IV

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

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

**Text Book:**


1. **"Foundations of Computing",** P.K. Sinha and P. Sinha, First Edition, 2002, BPB.
2. **"Computers Today",** D. H. Sanders, Fourth Edition, McGraw Hill, 1988.
3. **"Fundamentals of Computers"**, V. Rajaraman, Second Edition, Prentice Hall of India, New Delhi, 1996.
4. **"Information Technology",** Satish Jain, Paperback Edition, BPB 1999.
5. **"Fundamentals of Information Technology**", Chetan Srivastva, Third edition, KalayaniPublishers.

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**Operating Systems (305102)**

**Credits 04**

| L | T | P |
|---|---|---|
| 3 | 1 | 0 |

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**Unit-I**

**Introduction:** Operating system Meaning, Supervisor & User mode, Operating system operations & Functions, Types of OS.

**Unit-II**

**Process management**: Process Concept, PCB, Process Scheduling, Cooperating Processes, Overview of Inter process Communication, Context Switching, scheduling criteria, Type of Scheduling: Long term, Short term & Medium term scheduling, scheduling algorithms, Deadlock concept & handling.

**Unit-III**

**Memory Management**: Logical & Physical Address space, Swapping, Contiguous memory allocation, paging, segmentation, Virtual memory, demand paging, Overview of Page replacement, Thrashing.

**Unit-IV**

**Secondary Storage Structure:** disk structure, Disk Scheduling, disk management, swap space management.

**Text Books:**

**1.** Silberschatz, Gagne & Galvin, "Operating System Concepts", John Wiley & Sons, Seventh Edition or Latest.
**2.** A.S. Tanenbaum : Operating System : Design and Implementation, Prentice Hall of India.
**3.** Milankovic, Operating system, Tata Macgraw Hill, New Delhi.
**4.** Stalling, W., "Operating Systems", 2nd edition, Prentice Hall.
**5.** Deitel H. M., "Operating Systems, 2nd edition, Addison Wesley.

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## Programming Using C (305103)

**Credits 04**

| L | T | P |
|---|---|---|
| 3 | 1 | 0 |

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### 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. **"Let us C"**, Yashvant P Kanetkar, Seventh Edition, BPB Publications, New Delhi.
2. **"Programming in C",** E. Balagurusamy, Tata McGraw Hill.
3. "**Programming in C"**, Byron S. Gottfried, Second Edition, McGraw Hills.
4. **"The C Programming Language"**, Kernighan & Richie, Second Edition, PHI Publication
5. **"Problem Solving and Programming in C"**, R. S. Salaria, Second Edition

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## Office Automation Systems(305104)

**Credits 04**

| L | T | P |
|---|---|---|
| 3 | 1 | 0 |

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### UNIT - I

**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 – II

**MS-Excel:** Environment, Creating, Opening, & Saving Workbook, Range of Cells, FormattingCells, Functions: Mathematical, Logical, Date Time, Auto Sum, Formulas. Graphs: Charts. Types & Chart Tool Bar, Printing: Page Layout, Header and Footer Tab.

### UNIT - III

**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

### UNIT – IV

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

**Text Book:**


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

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## S/W Lab – I (Office Automation System) (305105)

| Credits 02 | L | T | P |
|---|---|---|---|
| | 0 | 0 | 4 |

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

**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.

**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.

**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.

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## S/W Lab – II (C Programming) (305106)

**Credits 04**

| L | T | P |
|---|---|---|
| 0 | 0 | 8 |

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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.

**Batch 2015 Onwards**

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## Installation,Assembling and Networking of Computers(305107)

| Credits 02 | L | T | P |
|---|---|---|---|
| | 0 | 0 | 4 |

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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 ofapplication 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.

**Batch 2015 Onwards**

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## Fundamentals of Web Technology (305201)

| Credits 04 | L | T | P |
|---|---|---|---|
| | 3 | 1 | 0 |

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### UNIT – I

**HTML: Introduction, HTML Tags,** Commonly used HTML Commands, Structure of HTML Program, Formatting, TextStyles, 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 JavaScript:**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 (Purchaseor 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. **"Web Enabled Commercial Application Development Using HTML, DHTML, JavaScript, PHP",** Bayros Ivan, BPB publication,Fourth Revised Edition \
2. **"Beginning JavaScript"**, by Paul Wilton, Jeremy McPeak, Wrox
3. **"E-Commerce for Dummies",**Don Jones, Mark Scott & rick Villars, Published byHungry Minds

**Batch 2015 Onwards**

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## Data Structures (305203)

| **Credits 04** | **L** | **T** | **P** |
|---|---|---|---|
| | **3** | **1** | **0** |

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### 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. **"Theory and Problems of Data Structures",**Schaum's,SeymourLipschutz.
2. **"Data structures through C++",** G.S Baluja, PHI.

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## Programming using C++ (305202)

| **Credits 04** | **L** | **T** | **P** |
|---|---|---|---|
| | **3** | **1** | **0** |

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### 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, inlinefunctions, 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 behaviour, early binding, virtual functions, late binding, pure virtual functions and abstract base class.
**Operator overloading:** overloading binaryandunaryoperator, 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. **"Object Oriented Programming with C++",**E. Balagurusamy, Tata McGraw-Hill.
2. **"Object Oriented Programming in C++",**RobertLafore, Galgotia Publications.
3. **"The Complete Reference C++",** Herbert Schildt, Tata McGraw-Hill

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## S/W Lab – III (Programming Using C++ ) (305204)

| **Credits 03** | **L** | **T** | **P** |
|---|---|---|---|
| | **0** | **0** | **6** |

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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 generate 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 substract 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 into string1.
19. Write a program to find volume of (I) cylinder (II) cone.

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**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 50 students.

**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 functions are 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.

**Batch 2015 Onwards**

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## S/W Lab – IV (Fundamentals of Web Technology) (305205)

**Credits 02**

| L | T | P |
|---|---|---|
| 0 | 0 | 4 |

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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, 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.

**Batch 2015 Onwards**

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## Training on M.S Office (305206)

| Credits 08 | L | T | P |
|---|---|---|---|
| | 0 | 0 | 16 |