Contact: 01882-249968
Website: www.sdcollegehsp.net
Email: sdcollegehsp@gmail.com

SANATAN DHARMA
COLLEGE HOSHIARPUR
DEPARTMENT OF COMPUTER APPLICATION

Class	**Bachelor of Computer Application(5th semester)**
Subject Code and Name	**Computer Networks (BCA-16-501)**
Time	**45 min**
Internal /External Marks	**10/65**

Objective: This course enables students to provide good understanding of the concepts of network security, wireless and various emerging network technologies.

Unit No	Topics	Objectives
I	• Computer Network • Physical Layer	In this section students will be able to learn network hardware and software, network topologies, uses of computer networks etc. In this section student will learn about the transmission media, switching techniques etc.
II	• Data Link Layer • Medium Access Sub Layer	In this section, we discuss about seven layer of OSI model and their functioning.
III	• Network Layer	In this section we will discuss the functioning of network layer. How data is transferred on the network?
IV	• Application Layer	In this section, we discuss about the application layer. Its workingvarious services provided by it.
References Books and Various web resources		
1	Books	Data Communication & computer networks: By Ferozen Data communication and computer Network: Tanenbaum Computer Networks: Kalyani Publisher
2	Web Recourses	Slide share,
3.	Teaching Methods and techniques	Presentations, Group discussion , Online classes(screen Sharing), Google classroom

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B.C.A. SEMESTER-5
DISCRETE MATHEMATICAL STRUCTURE –BCA-16-502

THEORY: 67 MARKS
INTERNAL ASSESSMENT: 08 MARKS

Unit	Topic	Objectives	Method/techniques	References
Unit-1	I Set Theory : Relations and Functions : Set Notation and Description, subset, basic set operations, Venn Diagrams, laws of set theory, partitions of sets, min sets, duality principle, basic definitions of relations and functions, graphics of relations, properties of relations: injective, surjective and bijective functions, compositions.	To introduce the concept of sets relation and function	Online teaching (Zoom), Real life examples, presentation and videos	Discrete Structures for Computer Science
Unit-2	Recurrence : Recurrence Relations and Recursive Algorithms – Linear-Recurrence Relations with Constant Coefficients; Homogeneous Solutions : Particular Solution, Total Solution, Solution by the Method of Generating functions	To introduce the method of recurrence and recursive for repeated function	Online teaching (Zoom), Real life examples ,presentation and videos	Elements of Discrete Mathematics
Unit-3	Graph Theory : Graph and planar graphs – Basic Terminology, Multi-graphs, Weighted Graphs, Paths and Circuits, Shortest Paths, Eulerian Paths and Circuits. Travelling Salesman Problem, Planar Graphs.	To introduce the concept of graph for computational process	Online teaching (Zoom), Real life examples, presentation and videos	Elements of Discrete Mathematics
Unit-4	Automata Theory : Finite State Machines– Equivalent Machines, Finite State Machines as language Recognizers; Analysis of Algorithms - Time Complexity, Complexity of Problems.	To introduce the concept of algorithms and finite state machine	Online teaching (Zoom), Real life examples, presentation and videos	Discrete Structures for Computer Science

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Class	Bachelor of Computer Applications (5th Sem.)
Subject Code and Name	Java Programming (BCA-16-503)
Time	45 min
Internal /External Marks	10/65

Objective: This course enables students to learn Java and implementation of latest programs

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Topics	Teaching Points	Specific Objectives	Methods, Approaches and Techniques	Resources & Links
Java Introduction	Introduction to java	The students will get familiar Byte Code, Java Virtual Machine, constants, variables, data types, operators, expressions, control structures, defining class, creating objects, accessing class members, constructors, Garbage Collection, method overloading	Power point Presentation , Practice on Computer	Reference Books • Java by Anshuman (Lakhanpal Publishers) • Complete reference
	Inheritance	Different types of Inheritance, member access, using super keyword to call super class constructors, creating a multilevel hierarchy, method overriding, dynamic method dispatch, using abstract classes, using Final keyword		
b) Pckages/Interface	• Arrays • Strings • Packages • interface	The students will able to make programs on One-dimensional and two-dimensional Arrays, String Handling using String and StringBuffer class, String Functions. Types of packages, defining a package, Importing packages, Access protection Defining an Interface, Implementing Interfaces, Variables in Interfaces, Achieving multiple inheritance	PPT and Practicals	Reference Books • Java by Anshuman (Lakhanpal Publishers) • Complete reference

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		using interfaces, Interface and Abstract classes.		
c) Exception Handling. MultiThredaing	• Exception Handling Modules • Multi-threaded Programming: Functions • Applet Programming	The student will be able to Java Exception handling model, Types of exception, using Try and catch, Multiple Try and Catch clauses, Nested Try statements, finally block, user defined exceptions. The Java Thread model, the Thread class and Runnable interface, Creating a Thread using Runnable Interface and extending Thread, Creating Multiple Threads, Thread Priorities, Synchronizations: Methods, Statements, Inter Thread Communication, Deadlock, Suspending, Resuming and Stopping Threads.: Introduction, Types of applet, Life Cycle, Incorporating an applet into web page using Applet Tag, running applets, using Graphics class and its methods to draw lines, rectangles, circles, ellipses, arcs and polygons.	PPT and Practicals	Reference Books • Java by Anshuman (Lakhanpal Publishers) • Complete reference

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| AWT and JDBC | • **AWT**
 • **JDBC** | Using AWT controls: Introduction to AWT, Creating GUI Applications using AWT, AWT controls: Label, TextBox, TextArea, Check Boxes, Radio Buttons, Choice lists, Understanding Layout Managers: FlowLayout, BorderLayout, GridLayout; Introduction to Event handling using Delegation Event Model. Introduction to Java Database Connectivity (JDBC): JDBC Architecture, JDBC Drivers, Java.SQL package, Connecting to the Database and performing basic database operation like Insert, Delete, Update and Select. | PPT and Practicals | Reference Books
 • Java by Anshuman (Lakhanpal Publishers)
 • Complete reference |

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Class	Bachelor of Computer Application(5th Semester)
Subject Code and Name	Web Application Development using PHP (BCA-16-504)
Time	45 min
Internal /External Marks	10/65

Objectives: The objective of this course is to familiarize students with complete Fundamentals and the carriers commonly used computing software.

Unit No	Topics	Content
I	• Introduction to web applications • PHP Basics • Control structures	Client Side Scripting Vs Server Side Scripting, Understanding Web Servers: Local Servers and Remote Servers, Installing WAMP and configuring PHP environment, Static website Vs Dynamic website development, Embedding PHP code in Web Pages Tokens, Variables, Variable Scope, Constants, Data Types, number handling in PHP, operands, operators, expressions, operator precedence, comments, echo and Print statement Branching statements: if-else, ternary operator, switch; looping statements: while, do-while, for; file inclusion Statements
II	• Functions • String Handling • Arrays	Function definition, Creating and invoking user-defined functions, Formal parameters versus actual parameters, Function and variable scope, Recursion, Library functions interpolation with curly braces, characters and string indexes, string operators, heredoc, string functions, Formatting Strings, Comparing and searching Strings and substrings PHP Arrays, Creating Arrays, Accessing Array elements, Multidimensional Arrays, Inspecting Arrays, Deleting from Arrays, Iterating with each() and foreach(), Iterative functions: current(), next(), prev(), reset(), end()
III	• Arrays • Integrating PHP and Database	Working with HTML Form controls and PHP, Super global variables, super global array, importing user input, Accessing user input

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		Connecting to database, Making SQL queries, Executing queries, Fetching data sets, Integrating Forms and Databases: Basic form submission to a database, editing data with an HTML form
IV	• Maintaining User State • Working with File System	Introduction to Cookies, Setting time in a cookie with PHP, Deleting a cookie, creating session cookie, Introduction to sessions, Starting a session, Registering Session variables, working with session variables, Destroying session, passing session Ids , encoding and decoding session variables, increase session expire time, working of session without cookie Understanding PHP file permissions, Opening and closing a file, File reading and writing functions, File system and directory functions
References Books and Various web resources		
1.	Teaching Methodology	Participative Teaching, collaborative teaching, Group discussion, Blackboard, presentations, teaching with examples.
2.	Books	PHP: The Complete Reference Core PHP Programming