

# **Bachelor of Computer Application**

## **B.C.A 1<sup>st</sup>**

### **SEMESTER – I**

#### **BCA-111 General English – I**

CO I. Short stories by their nature, they are more accessible to students.

CO II. This subject improves the reading skills of students.

CO III. For being a part of syllabus these are less time consuming and catch the interest of students and create aesthetical feeling among them.

CO IV. Grammar brings accuracy in sentence formation.

#### **BCA-112 Punjabi (Compulsory)**

CO I. In this semester students were introduced to the Pargat Singh Sidhu's novel 'bathakh de khamba jeh sphaid din' which is a novel on dynamic life in collages.

CO II. This keeps the interest of students towards the various works of literature. All this helps them to live life in a better way.

CO III. Apart from this the students were introduced to the nuances of grammar like basic grammar information like sentences, noun sentences etc.

#### **BCA-113 Fundamentals of Information Technology**

CO I. Course familiarizes the students with the basics of computer components, hardware and software, input and output devices.

CO II. Students become able to understand the basics of binary number system.

CO III. Application of the IT into the society and industry.

#### **BCA-114 Programming Fundamentals using C**

CO I. Student become able to understand the fundamental concept of mother of programming language.

CO II. To learn design of algorithm, data flow chart and analytical ability to solve the problems.

CO III. The student learnt about usage of operators, array, functions, user-defined data types.

CO IV. Student become able to handling the execution and file, complex data structures, file handling.

#### **BCA-115 Software Lab –I (Windows and Office Automation)**

CO I. Course familiar the students with the basics of computer components, hardware and software, input and output devices.

CO II. Students become able to create document, worksheet, presentation, databases.

CO III. The student learnt about the word options like mail merge, Excel options, Powerpoint options etc.

#### **BCA-116 Software Lab – II (Based on paper BCA-114. Programming Fundamentals using C)**

CO I. The student will be able to learn a programming language, to learn problem solving techniques.

CO II. To write programs in C like looping structure, reverse of digit, sum of digit, even or odd.

## **SEMESTER – II**

### **BCA-121 General English – II**

CO I. Short stories by their nature, they are more accessible to students.

CO II. This subject improves the reading skills of students.

CO III. For being a part of syllabus these are less time consuming and catch the interest of students and create aesthetical feeling among them.

CO IV. Grammar bring accuracy in sentence formation.

### **BCA-122 Punjabi (Compulsory)**

CO I. In the 2nd semester of BCA-1st year, students have a prose book 'Chonwe Punjabi Nibandh' as part of their course.

CO II. This helps in intellectual and mental development of students and improving IQ of students.

CO III. Apart from this business letter writing is also introduced this semester which makes them capable for writing professionally in the future.

### **BCA-123 Digital Electronics**

CO I. This subject introduces the basic and fundamental of building of the digital electronics viz. gates including universal gates, Numbers system and conversions.

CO II. To learn K-Map and uses to build Boolean expression for the digital system.

CO III. The student also learnt about basics of the combinational and sequential circuit and role, Ana log to Digital (ADC) and Digital to Ana log (DAC).

### **BCA-124 Data Structures**

CO I. The student also able to understand the concept of Dynamic memory management, data types, algorithms, Big O notation.

CO II. To learn basic data structures such as array, linked lists, stack and queue.

CO III. The student also able to apply Algorithm for solving problems like sorting, searching, insertion and deletion of data.

### **BCA-125 Basic Mathematics**

CO I. The student will be able to understand the foundations of mathematics.

CO II. The student will be able to perform basic computations in higher mathematics.

CO III. Able to read and understand middle-level proofs, to develop and maintain problem-solving skills.

CO IV. To learn to Use **mathematical** ideas to model real-world problems.

### **BCA-126 Software Lab – III (based on BCA-124. Data Structures)**

CO I. Able to implement basic data structures such as array and linked list.

CO II. Expert to implement various searching and sorting algorithms.

CO III. To learn programming to demonstrate the implementation of various operations on stack and queue.

### **BCA-127 Drug Abuse : Problem, Management and Prevention\*\*\***

CO I. Today's youth face many risks, including drug abuse, violence, and HIV/AIDS.

CO II. Responding to these risks before they become problems can be difficult.

CO III. Understand the present situation; this subject has been started for all the graduating students.

CO IV. To be aware of the daunting challenges ahead in their life so that they do not deviate from the goals set for making their life successful.

CO V. This topic provides information about the current prevalent drugs and their adverse effects on the body and mind.

CO VI. The main purpose of the subject is to identify addicted student, get him treated properly and get his life back on track.

BCA II<sup>nd</sup>

### **SEMESTER – III**

#### **BCA-211 English Communication Skills – I**

CO I. The key motive of the subject is to enhance student's communication skills and develop fluency in their conversations.

CO II. Essay which is mandatory part of syllabus develop essential skills and enables them to practice and perfect skills transferable throughout their learning career.

CO III. Teaching of Grammar Brings credibility into their language acquisition.

#### **BCA-212 Punjabi (Compulsory)**

CO I. The students were introduced to the stories of various scholarly storytellers and their lives.

CO II. The above stories were directly related to social problems.

CO III. By reading them, students are able to create a better future.

### **BCA-213 Discrete Mathematics**

CO I. Perform operations on various discrete structures such as sets, functions, relations, and sequences.

CO II. Ability to solve problems using Counting techniques, Permutation and Combination, Recursion and generating functions.

CO III. Apply algorithms and use of graphs and trees as tools to visualize and simplify Problems.

CO IV. Use of Truth Tables to construct and verify correctness of a Boolean expression.

### **BCA-214 Computer System Organization and Architecture**

CO I. Computer System Organization and Architecture (CSOA) introduce basics of integral architecture and cohesiveness of the different component.

CO II. Understand the instruction execution, cycle and working operation of the all components.

CO III. The above said subject enlighten the instruction types and life cycle, register transfer language, ALU,CU, Addressing Modes, Memory: memory addressing and role of cache memory.

CO IV. CSOA is the core subject of computer which enables the students clears the internal functioning of the computer system.

### **BCA-215 Object Oriented Programming using C++**

CO 1. To learn the procedural and object oriented paradigm with concepts of classes, functions, data and objects.

CO II. The student skilful to understand dynamic memory management techniques using pointers, constructors, destructors, the concept of function overloading, operator overloading, virtual functions and polymorphism.

CO III. Able to classify inheritance with the understanding of early binding and late binding.

CO IV. Able to use of various OOPs concepts with the help of programs.

#### **BCA-216 Fundamentals of Database Management System**

CO I. It will teach students about DBMS (Database Management System) with MS Access.

CO II. Through this, students will learn about different data models, keys, normalization, concurrency control, recovery of data.

CO III. Expert to create and manage of databases forms using MS Access. Using MS Access students can create databases in future.

#### **BCA-217 Software Lab – IV (Object Oriented Programming using C++ Lab)**

CO I. To learn the programming with object oriented concept.

CO II. In this lab, each concept of object oriented is implemented such as class, object, encapsulation, inheritance, operator overloading, function overloading, inheritance and early binding and late binding with virtual function etc.

CO III. The student also able to develop the program.

#### **BCA-218 Software Lab – V (DBMS using MS Access Lab)**

CO I. After complete the syllabus of this lab, the students will be able to create table, query, Report, Form, importing and exporting data etc.

## **SEMESTER – IV**

### **BCA–221 English Communication Skills – II**

CO I. Syllabus is perfect combination of literary masterpiece and grammar.

CO II. Learning novels, plays and other genres of literature opens up a world of fantasy, creativity and inspiration. It also increases their comprehension skills.

### **BCA–222 Punjabi (Compulsory)**

CO I. The students introduce to the poems of great poets including “Bhai Vir Singh” and give detailed information about the lives and poems of the poets which were read by the students.

CO II. Also receives detailed information about the script and correspondence, English to Punjabi etc.

### **BCA–223 Computer Networks**

CO I. Computer Networks empower the students to learn about the practical concept of communication through layer oriented communication models (TCP/IP and OSI).

CO II. Learn the concepts of the LAN, MAN and WAN.

CO III. Students become able to understand the IP Addressing and sub netting as well as network security algorithms.

### **BCA–224 Management Information Systems**



CO I. It will teach students about Management Information System (MIS).

CO II. Through this students will learn how to create systems for finding and storing data.

CO III. They learn about computer databases and network's security.

### **BCA-225 Computer Oriented Numerical and Statistical Methods**

CO I. The student able to recognize the error in the number generated by the solution and Compute solution of algebraic and transcendental equation by numerical methods like Bisection method and Newton Rapshon method.

CO II. The student able to apply method of interpolation and extrapolation for prediction. Recognize elements and variable in statistics and summarize qualitative and quantitative data.

CO III. Calculate mean, median and mode for individual series.

CO IV. Outline properties of correlation and compute Karl-Pearson's coefficient of correlation.

### **BCA-226 Relational Database Management Systems with Oracle**

CO I. The student learn database system concepts and able to apply normalization to the database.

CO II. The student learn the basic processing and optimization techniques for high level query, different transaction processing concepts ,different concurrency control techniques and different types of databases such as object oriented and distributed databases.

CO III. The student able to identify different types of database failures and techniques to recover from such failures.

### **BCA-227 Software Lab – VI (Computer Oriented Numerical and Statistical Methods Lab)**

CO I. Able to compute the mean and weighted mean and mode and median of raw data, discrete series (x, f), continuous series,

CO II. To compute the standard deviation and variance of different, coefficients, Bisection method, Regula-Falsi method, Secant method, Newton-Raphson method, Gauss-Elimination method, Lahrage's Interpolation method, Newton-Interpolation method.

### **BCA-228 Software Lab – VII (Oracle Lab)**

CO I. The student will be able to create the Table, querying the record using order, group, multiple conditions by clauses.

CO II. Expert to create Synonyms, Sequences, Views, Indexes, triggers, cursors for procedures in structure query Language

### **BCA-229 Environmental and Road Safety Awareness (Qualifying Exam)**

CO I. The student will teach about the environment, its resources.

CO II. To know about eco system, environment pollution, Bio diversity and conversation and social issues etc.

## **BCA 3<sup>rd</sup>**

### **SEMESTER – V**

### **BCA-311 English Literary Skills – I**

CO I. English has the specific status forever all language of the world is essential every sphere of life expectably the play in the fifth semester.

CO II. 'All My Sons' focuses on the story of the businessman.

CO III. This play gives the message to the audience that all are my sons play is not always accompanied by smiles and laughter.

CO IV. It can also create mental tension or anxieties essay is also main part of writing skills.

### **BCA-312 System Analysis and Design**

CO I. Expert to understand the major components of a computer including CPU, memory, I/O and storage.

CO II. Students will understand the uses for cache memory, a wide variety of memory technologies both internal and external.

CO III. Understand the role of the operating system in interfacing with the computer hardware.

CO IV. Understand the basic components of the CPU including the ALU and control unit.

### **BCA-313 System Software**

CO I. The student will teach about system software, types and features.

CO II. To learn language processors, assemblers, compilers, linkers, loader and software tools etc.

### **BCA-314 Java Programming**

CO I. Student expert to know the model of object oriented programming and fundamental features of an object oriented language.

CO II. Student learn to how to test, document and prepare a professional looking package for each business project.

CO III. Student has the ability to write a computer program to solve specified problems.

CO IV. Learn to use the Java SDK environment to create, debug and run simple Java programs.

CO V. Student will be able to explain and develop programs for inheritance, multithreading, applets, exception handling and file handling.

### **BCA-315 Web Designing using HTML and DHTML**

CO I. Learn to build basic of the web designing using Markup language.

CO II. Understand the fundamental tags to easily grab the advance web programming languages.

CO III. Student become able to design, publish and retrieve the data in the databases.

CO IV. CSS style sheets and basic of server side programming.

### **BCA-316 Software Lab – IX (based on paper BCA-314: Java Programming**

CO I. The student will learn to construct the program with basic concept of Java such as operators.

CO II. The student will be able to compile, debug and run the program. It will also learn to create package , interface etc.

### **BCA-317 Software Lab – X (based on paper BCA-315: Web Designing using HTML and DHTML)**

CO I. Learn to build basic of the web designing using Markup Language.

CO II. Understand the fundamental tags to easily grab the advance web programming languages.

CO III. Student become able to design, publish and retrieve the data in the databases.

CO IV. CSS style sheets and basic of server side programming.

### **BCA-318 Punjabi (Compulsory)**

CO I. The main purpose of teaching Punjabi as a compulsory subject in Part-III is to acquaint the students with the Punjabi language.

CO II. The role of folklore is read in the book to make them aware of the distinctive features of Punjabi folklore.

CO III. Noun phrases and verb phrases are analyzed by identifying the context of the Punjabi language.

## **SEMESTER – VI**

### **BCA-321 English Literary Skills – II**

CO I. Students who don't like writing Essays may like poetry with the dearth of fixed rules.

CO II. Poetry can give a outlet for surging emotions.

CO III. Reading poetry can improve your speaking and listening.

### **BCA-322 E-Commerce**

CO I. The student will be able to analyse the impact of **E-commerce** on business models and strategy.

CO II. The student will learn the major types of **E-commerce** and the process that should be followed in building an **E-commerce** presence.

CO III. The student will be able to identify the key security threats in the **E-commerce** environment.

### **BCA-323 Operating Systems**

CO I. It will teach students about operating system.

CO II. Through this students will learn about an operating system is a generic term for the multitasking software layer that lets you perform a wide array of lower tasks with your computer.

### **BCA-324 Software Engineering**

CO I. Expert to plan a software engineering process life cycle , including the specification, design, implementation, and testing of software systems that meet specification, performance, maintenance and quality requirements.

CO II. The student able to elicit, analyse and specify software requirements through a productive working relationship with various stakeholders of the project and analyse and translate a specification into a design, and then realize that design practically, using an appropriate software engineering methodology.

CO III. The student able to Know how to develop the code from the design and effectively apply relevant standards and perform testing, and quality management and practice.

CO IV. The student able to use modern engineering tools necessary for software project management, time management and software reuse.

### **BCA-325 Web Designing using ASP.NET**

CO I. Learn to build basic of the web designing using Markup Language.

CO II. Understand the fundamental tags to easily grab the advance web programming languages.

CO III. Student become able to design, publish and retrieve the data in the databases.

CO IV. CSS style sheets and basic of server side programming.

**BCA-326 Software Lab – XI (More on Java based on BCA-314: Java Programming)**

CO I. The student will be skilful to create user interface and form with advanced controls.

CO II. Able to create connection between frontend and backend.

CO III. Able to apply event handling in this language.

**BCA-327 Software Lab – XII (based on BCA-325: Web Designing using ASP.NET)**

CO I. Learn to build basic of the web designing using Markup Language.

CO II. Understand the fundamental tags to easily grab the advance web programming languages.

CO III. Student become able to design, publish and retrieve the data in the databases.

CO IV. CSS style sheets and basic of server side programming.

**BCA-328 Punjabi (Compulsory)**

CO I. Punjabi is taught as a compulsory subject in BCA Part III.

CO II. In the sixth semester, Punjabi drama from 1960 onwards is introduced thematically and theoretically.

CO III. Apart from this the basic concepts of Punjabi grammar are also analytically studied.

## **PGDCA-1<sup>st</sup> SEM**

### **PGDCA-101 Fundamentals of Information Technology**

CO I. To teach the students about Fundamentals of IT (Information Technology).

CO II. Through this, students will learn about basics of computer, different types of computer memories, computer software's, number system.

CO III. To know about basic internet related concepts, various technologies like 3G, 4G, and LTE.

CO IV. To use of Information Technology in various sectors.

### **PGDCA-102 Operating Systems**

CO I. It will teach students about operating system.

CO II. Through this students will learn about an operating system is a generic term for the multitasking software layer that lets you perform a wide array of lower tasks with your computer.

### **PGDCA-103 Problem Solving using C**

CO I. Expert to understand the fundamental concept of mother of programming language, design of algorithm, data flow chart and analytical ability to solve the problems.

CO II. Usage of operators, array, functions, and user-defined data types etc.

### **PGDCA-104 Software Lab – I (Office Automation and Productivity Tools)**



CO I. To teach to create a document ,worksheet, presentation, database etc.

CO II. Learn some advanced **Office** functions, including Mail Merge (Word) and formulas (Excel).

CO III. Understand how to use Word, Excel, and PowerPoint in a variety of professional, educational, and personal situations.

CO IV. Able to claim **Office** proficiency

### **PGDCA-105 Software Lab – II (Programming Fundamentals through C Language)**

CO I. Able to write programs using advance concepts of C- language.

CO II. Understand and apply the pointers, memory allocation techniques.

CO III. Know to use of files for dealing with variety of problems.

## **PGDCA-2<sup>nd</sup> SEM**

### **PGDCA-201 Database Management System**

CO I. It will teach students about DBMS (Database Management System) with MS Access.

CO II. Through this students will learn about different data models, keys, normalization, concurrency control, recovery of data and creation and management of databases, forms using MS Access.

CO III. Using MS Access students can create databases in future.

### **PGDCA-202 Introduction to Computer Network, Internet and E-Commerce**

CO I. It will teach students about computer network.

CO II. It will teach students gain general knowledge of electric data communication, industry terminology, common equipment and standard hardware and software requirements.

### **PGDCA-203 Object-oriented Programming using C++**

CO I. Understand key features of the object-oriented programming language such as encapsulation (abstraction), inheritance, and polymorphism.

CO II. Able to design and implement object-oriented applications and analyse problems.

CO III. Able to implement simple C++ applications using an object-oriented software engineering approach.

### **PGDCA-204 Software Lab – III (Web Designing, HTML and RDBMS**

CO I. Able to design web pages.

CO II. Learn to work in structure query language.

### **PGDCA-205 Software Lab – IV(C++ Programming)**

CO I. Able to develop solutions for a range of problems using objects and classes.

CO II. Learn to demonstrate the implementation of constructors, destructors and operator overloading.

CO III. Able to apply fundamental algorithmic problems including type casting, inheritance, and polymorphism.