GOVERNMENT PG COLLEGE AMBALA CANTT

Department of Computer Science

COURSE OUTCOMES (BACHELOR OF COMPUTER SCIENCE)

Course Name: Computer and Programming Fundamentals

Course Code: BCA-111

Class/Sem: BCA/1ST SEM

Course Outcomes:

After the successful completion of the course students will be able to:

- Understand basic concepts of computers hardware and software.
- Understand the organization and operation of computer processors, peripheral devices, memory etc.
- Course describes concepts of structure programming, program design etc.
- Be familiar with different types of operating system.
- Understand the concept of algorithms.
- Write the various searching and sorting algorithms like binary search, linear search, bubble sort, selection, merge sort etc.

Course Name: Windows and PC software

Course Code: BCA-112

Class/Sem: BCA 1st Sem

Objectives of windows and PC software

- Give students an in-depth understanding of why computers are essential components in business, education and society.
- Introduce the fundamentals of computing devices and reinforce computer vocabulary, particularly with respect to personal use of computer hardware and software, the Internet, networking and mobile computing.
- Provide hands-on use of Microsoft Office applications Word, Excel and PowerPoint.
- Completion of the assignments will result in MS Office applications knowledge and skills.
- Provide foundational or "computer literacy" curriculum that prepares students for life-long learning of computer concepts and skills.

- Solve common business problems using appropriate Information Technology applications and systems.
- Identify categories of programs, system software and applications. Organize and work with files and folders.

Course Name: Mathematics foundation-I

Course Code: BCA-113

Class/Sem: BCA 1st Sem

CO1: Mathematical Foundation-I for BCA 1st sem

The students will be able to understand sets, subsets and operations on set,

Able to solve problems related to permutation and combinations.

Get knowledge on Boolean algera.

Able to understand the concept of continuity and differentiability of functions.

Acquire knowledge on differential equations, ordinary differential equations,and it's application to geometry.

Course Name: Logical Organization of Computers – I

Course Code: BCA-114

Class/Sem: BCA 1st Sem

Course Outcomes:

The students on completing this course are expected to:

- It helps the students to understand binary number system as well as different coding schemes
- Most importantly students understand the concept of logic Gates and their application and further designing of various circuits diagram.
- Students very well aware about karnaugh map which help to solved complexity of Sum of Product & Product of Sum equations.
- Understand the combinational circuits
- Understand the multiplexer and demultiplexer.

Course Name: Communicative English

Course Code: BCA-115

Class/Sem: BCA 1st Sem

Course Outcomes:

The students on completing this course are expected to:

- Demonstrate critical and innovative thinking.
- Display competence in oral, written, and visual communication.
- Apply communication theories.
- Show an understanding of opportunities in the field of communication.
- Use current technology related to the communication field.
- Respond effectively to cultural communication differences.
- Communicate ethically.
- Demonstrate positive group communication exchanges.

Course Name: Programming in C

Course Code: BCA-116

Class/Sem: BCA 1st Sem

Course Outcomes:

The students on completing this course are expected to:

1. Build their programming skills.
2. Be familiar with programming environment with C Program structure.
3. Able to declare variables and constants.
4. Able to work with inbuilt functions for various input and output operations.
5. Understand operators and expressions.
6. Able to make use of decision making statements and looping constructs in programs.
7. Understand arrays, its declaration and uses.
8. Design programs using functions.

Course Name: Advance Programming in C

Course Code: BCA-121

Class/Sem: BCA 2nd Sem

Course Outcomes:

The students on completing this course are expected to:

- Work with textual information-strings.
- Work with inbuilt functions for various input and output operations.
- Implement problem solving skills using pointers.
- Understand and implement structure and union.
- Work efficiently with files.
- Handle possible errors during program execution.
- Be familiar with pre-processors
- Write a program for the given problem using C language.

Course Name: Logical Organization of Computer II

Course Code: BCA-122

Class/Sem: BCA 2nd Semester

Course Outcomes:

- It helps the students to understand binary number system as well as different coding schemes
- Most importantly students understand the concept of logic Gates and their application and further designing of various circuits diagram.
- Students very well aware about karnaugh map which help to solved complexity of Sum of Product & Product of Sum equations.
- This course helps the students to aware of designing of various combinational logic and sequential logic circuits and their different design procedures.
- Finally students get full knowledge of various memory organizations, instructions design and I/O organization.

Course Name: Mathematical Foundation-ll

Course Code: BCA-123

Class/Sem: BCA 2nd Sem

CO2: Mathematical Foundation-ll for BCA 2nd sem:

The students will understand the concept of propositions and logical operators, Truth table and propositions generated by a set, laws of logics,

Aquire knowledge on Mathematical inductions,

Able to get detailed knowledge of group theory.

Obtained knowledge of Rings Theory.

Come to know about addition and multiplication of matrices, singular and non-singular matrices, Rank of matrix, system of linear equations.

Able to understand the concept of Eigen value and eigen vectors of matrix, calacy hamilton theorem and diagonalization of matrix.

Course Name: Office Automation and Tools

Course Code: BCA-124

Class/Sem: BCA 2nd Sem

Course Outcomes:

After the successful completion of the course students will be able to:

- Learn about the importance of desktop publishing.
- Acquire the knowledge about different desktop publishing softwares.
- Learn and practice desktop publishing using PAGEMAKER.
- Create enriched documents such as books, business cards, birthday cards etc using PAGEMAKER
- Learn about the importance and application of Office Automation.
- Work with a word processing system.
- Create quality presentations using PowerPoint Presentation software.

Course Name: Structured System Analysis and Design

Course Code: BCA-125

Class and Sem :BCA-I/ Sem II

Course Outcomes:

On completion of the course the student should be able to:

- Explain what systems are and how they are developed.
- Identify and describe the phases of the systems development life cycle.
- Follow the analysis portion of the Systems Development Life Cycle in a disciplined manner.
- Develop and evaluate system requirements.
- Work effectively in a team environment.
- Describe the role and responsibilities of the systems analyst in the development and management of systems.
- Explain the need for and value of a formalized step-by-step approach to the analysis, design, and implementation of computer information systems.
- Use tools and techniques for structure analysis.
- Describe the role and responsibilities of the participants in information systems° development.
- Develop a feasibility analysis of a proposed system.
- Analysis the cost benefits for new proposed system.

Course Name: Personality Development

Course Code: BCA-126

Class/Sem: BCA 2nd Sem

Course Outcomes:

After the successful completion of the course students will be able to:

- Make use of techniques for self-awareness and self-development.
- Apply the conceptual understanding of communication into everyday practice.
- Understand the importance of teamwork and group discussions skills.
- Develop time management and stress management.
- Apply business etiquette skills effectively an engineer requires.

Course Name: Lab-II Based on BCA-112 and BCA-124 (Practical)

Course Code: BCA-131

Class/Sem: BCA 1st and 2nd Sem

Course Outcomes:

After the successful completion of the course students will be able to:

- Learn about Desktop Publishing.
- Develop enriched documents that will be ready for publishing like books, magazines, newsletter etc.
- Design birthday cards, business cards, logo etc.
- Make power point presentation of their work.
- Use word processing software for making and generating reports.
- Make use of spreadsheet for data handling.
- Learn to work with different MS Office packages.
- Manipulate and control the Windows desktop, files and disks

Course Name: Lab-II Based on BCA-116(Programming in C) & BCA-121(Advanced Programming in C) (Practical)

Course Code: BCA-132

Class/Sem: BCA 1st and 2nd Sem

Course Outcomes:

The students on completing this course are expected to:

- Build their programming skills.
- Able to read, understand and find the execution of programs written in C language.
- Write the C code for a given algorithm.
- Write C programs using Decision making statements, looping constructs.
- Write C programs using arrays, functions, strings, structures and union.
- Implement programs with pointers and use the preprocessors.
- Able to perform file handling and error handling.

Course Name: Object Oriented Programming Using C++

Course Code: BCA-231

Class/Sem: BCA 3rd Sem

Course Outcomes:

The students on completing this course are expected to:

- To learn fundamental principles of developing software like modular and object oriented approach
- To understand the principles of object-oriented programming
- To Develop object-oriented software
- To Develop CUI based User Interface based on classes and objects.
- Describe the vocabulary of object-oriented systems
- Develop an object-oriented system given a specific application case study
- Construct human/systems interfaces
- Demonstrate the elicitation of systems requirements techniques

Course Name: Data structure

Code: BCA-232

Class/Sem: BCA II/Sem III

Course Outcomes:

After the successful completion of the course students will be able to:

- To impart the basic concepts of data structures and algorithms.
- To Understand basic concepts about stacks.
- To Understand basic concepts about queues.
- To Understand basic concepts about lists.
- To understanding about writing algorithms and step by step approach in solving problems with the help of fundamental data structures

Course Name: Computer oriented Numerical Method/ Computer Oriented Statistical Methods

Course Code: BCA-236

Class/Sem: BCA 3rd

CO3: Computer -Oriented Numerical 236 3rd Semester:

The students will be able to understand the different numerical methods to solve the linear and quadratic equations and iterative methods.

Able to understand the solution of simultaneous linear equations and ordinary differential equations.

Wil able to solve problems related to Numerical differentiation and integrations, Trapezoidal and Simpson rule.

Course Name: Computer Architecture

Code:BCA-233

Class/Sem: BCA II/Sem III

Course Outcomes:

After the successful completion of the course students will be able to:

- Understand the internal working of Computer.
- Explore different instruction sets and format available.
- Learn about the register transfer language in detail
- Design the different units of computer like arithmetic, logic, shifter etc.
- Learn about memory hierarchy.
- Learn about design of basic computer.

Course Name: Software Enggineering

Course Code:BCA-234

Class/Sem: BCA II/Sem III

Course Outcomes:

After the successful completion of the course students will be able to:

- Knowledge of basic SW engineering methods and practices, and their appropriate application.
- Describe software engineering layered technology and Process frame work.
- A general understanding of software process models such as the waterfall and evolutionary models.
- Understanding of software requirements and the SRS documents.
- Understanding of the role of project management including planning, scheduling, risk management, etc.

Course Name: Fundamental of Database Management System

Course Code:BCA-235

Class/Sem: BCA II/Sem III

Course Outcomes:

After the successful completion of the course students will be able to:

- To describe a sound introduction to the discipline of database management systems.
- To give a good formal foundation on the relational model of data and usage of Relational Algebra.
- Explain the basic concepts of relational data model , entity relationship model ,relational database designs and relational algebra .
- Design ER Models to represent simple database application scenarios.
- Improve database design by using different models.

Course Name: Advance Data Structure

Course Code: BCA-241

Class/Sem: BCA 4th Sem

Course Outcomes:

The students on completing this course are expected to:

- Understand the role of data structure in real life and in industry.
- Understand and remember algorithms and its analysis procedure.
- Design and implement various data structure algorithms.
- Introduce various techniques for representation of the data in the real world.
- Be familiar with advanced data structures such as binary search tree, graphs.
- Be familiar with various searching and sorting algorithms such as binary search, quick sort, merge sort, heap sort.

- Be able to write recursive methods
- Develop applications using data structure algorithms.
- Compute complexity of various algorithms.
- Understand different file types, operations performed on it and their comparisons.
- Understand different file organizations.

Class and Sem :BCA/ Sem IV

Course Name: Advanced Programming using C++

Course Code : BCA-242

Course Outcomes:

On completion of the course the student should be able to:

- To understand how C++ improves C with object-oriented features.
- To learn the syntax and semantics of the C++ programming language.
- To learn how to design C++ classes for code reuse.
- To learn how to overload functions and operators in C++.
- To learn how containment and inheritance promote code reuse in C++.
- To learn how inheritance and virtual functions implement dynamic binding with polymorphism.
- To learn how to design and implement generic classes with C++ templates.
- To learn how to use exception handling in C++ programs.

Course Name: E-commerce

Course Code: BCA-243

Class/Sem: BCA 4th Semester

Course Outcomes:

After the successful completion of the course students will be able to:

- Demonstrate an understanding of the foundations and importance of E-commerce
- Demonstrate an understanding of retailing in E-commerce by:
- analyzing branding and pricing strategies,
- using and determining the effectiveness of market research
- assessing the effects of disintermediation.
- Analyze the impact of E-commerce on business models and strategy

- Describe Internet trading relationships including Business to Consumer, Business-to-Business, Intra-organizational.
- Describe the infrastructure for E-commerce
- Describe the key features of Internet, Intranets and Extranets and explain how they relate to each other.
- Discuss legal issues and privacy in E-Commerce
- Assess electronic payment systems
- Recognize and discuss global E-commerce issues

Course Name: Relational Database Management System

Course Code: BCA-244

Class/Sem: BCA-4TH sem

Course Outcomes:

The students on completing this course are expected to:

- Understand relational model and its concepts
- Understand and implement codd's rules for relational model
- Implement relational algebra operators
- Understand and solve queries using relational and tuple calculus
- Understand functional dependencies
- Decompose tables to more stable structures using normal forms(1NF,2NF,3NF)
- Understand data types and operators in SQL
- Implement DDL,DML and DCL commands of SQL
- Understand and implement views, and indexes
- Understand architecture and basics of PL/SQL and SQL* PLUS
- Understand cursor, triggers in PL/SQL
- Implement programming using PL/SQL

Course Name: Computer oriented Numerical Method/ Computer Oriented Statistical Methods

Course Code: BCA-245

Class/Sem: 4th Sem

CO4: Elements of Computer Oriented Statistical Methods for BCA 4th sem:-

The students are able to understand basic concepts of statistics and measure of dispersion.

Aquire knowledge on the topic frequency distribution, moments and moments generating function

Students able to understand the probability distributions: normal, binomial, Poisson distribution, correlation and regression,

Able to apply z-test, chi square test, curve fitting and Anova method.

Course Name: Management Information system

Course Code: BCA-246

Class/Sem: BCA 4th Semester

Course Outcomes:

After the successful completion of the course students will be able to:

- Understand the leadership role of Management Information Systems in achieving business competitive advantage through informed decision making.
- Analyze and synthesize business inform
- ation and systems to facilitate evaluation of strategic alternatives.
- Effectively communicate strategic alternatives to facilitate decision making.
- Articulate the fundamental principles of information systems analysis and design.
- Demonstrate the skills necessary to conduct a requirements determination study.
- Analyze how information system impacts a firm.
- Interpret how to use information systems to solve business problems.

Course Name: Lab – I Based on BCA-231 & BCA-242
Course Code: BCA-251

Class/Sem: BCA 4th Sem

Course Outcomes:

The students on completing this course are expected to:

- Build software based on object oriented approach
- Understand the concept of abstraction
- Implement Polymorphism
- Understand the concept of reusability of code
- Achieve Dynamic binding of code
- Build their own header files
- Learn to access the restricted private members using friend functions.

Course Name: lab-II based on BCA 232 and BCA 242

Course Code: BCA-252

Class/Sem: BCA 4th sem

Course Outcomes:

The students on completing this course are expected to:

- Be able to implement the concept of array, stack and Queue.
- Design and implement various data structure algorithms.
- Be able to Implement the advanced data structures such as binary search tree, graphs.
- Implementation of various searching and sorting algorithms such as binary search, quick sort, merge sort, heap sort.
- Be able to write recursive methods.
- Understand different file organizations.

Course Name: Web designing Fundamental

Couse Code: BCA-351

Class/Sem: BCA III/Sem V

Course Outcomes:

The students on completing this course are expected to:

- Understand the role of web engineering in real life and also in industry.
- Web Engineering lifecycle and fine grained software evolution.
- Learn the role of information architect in building the information architecture of today's web.

- Be familiar with current Web technologies.
- Be familiar with Web application development software tools and environments currently available on the market.
- Implement web application using HTML, CSS.

Course Name: Operating system

Course Code: BCA-352

Class/Sem: Vth SEM

Course Outcomes:

After the successful completion of the course students will be able to:

- understand basic concepts and types of operating system
- Understand the Process management.
- Do the various problems related to CPU scheduling.
- Be familiar with concept of deadlock and its various recovery techniques
- Be familiar with concept of memory management which consist the concept of swapping, segmentation, demand paging, virtual memory etc.
- Solve the various page replacement problems.
- Be familiar with file organization.

Course Name: Artificial Intelligence
Course Code: BCA-353
Class/Sem:BCA 5th sem

Course Outcomes:

The students on completing this course are expected to:

- Learn different techniques used in AI for problem solving,
- Represent a natural language description as statements in logic
- Deduct new sentences by applying inference rules.
- Design a fuzzy expert system for a given problem.
- Represent a problem in terms of probabilistic statements
- Apply a suitable learning algorithm to solve the problem.
- Apply Bayes rule and product rule for inference
- Perform probabilistic inference using Bayes net.

Course Name: Computer Networks
Course Code: BCA-354
Class/Sem:BCA 5th sem

Course Outcomes:

After completing this course the student must demonstrate the knowledge and ability to:

- Independently understand basic computer network technology.
- Understand and explain Data Communications System and its components.
- Identify the different types of network topologies and protocols.
- Enumerate the layers' of the OSI model and TCP/IP. Explain the function(s) of each layer.
- Identify the different types of network devices and their functions within a network
- Understand and building the skills of routing and congestion mechanisms.
- Familiarity with the basic protocols of computer networks, and how they can be used to assist in network design and implementation.

Course Name: Programming using VB
Couse Code:BCA-355

Class/Sem: BCA III/Sem V

Course Outcomes:

The student will demonstrate knowledge of visual programming by:

- Creating a visual program to solve a problem.
- Interpreting a series of instructions used in a visual program.
- Identifying the basic structures of program (sequence, decision, and repetition).
- Describing the different program development tools.
- Creating the design for a program using the development tools.
- Modifying the design for an existing program.
- Describing the difference between a console program and a Graphical User Interface (GUI).
- Creating a console program.

Course Name: Multimedia Tools

Couse Code:BCA-356

Class/Sem: BCA III/Sem V

Course Outcomes:

After the successful completion of the course students will be able to:

- To learn and understand technical aspect of Multimedia Systems.
- To understand the standards available for different audio, video and text applications.
- To Design and develop various Multimedia Systems applicable in real time.
- To learn various multimedia authoring systems.
- To understand various networking aspects used for multimedia applications.
- To develop multimedia application and analyze the performance of the same.

Course Name: Web Designing Using Advanced Tools

Course Code: BCA-361

Class/Sem: BCA 6th Semester

Course Outcomes:

After the successful completion of the course students will be able to:

- Understand and use Javascript
- Familiarize with VBscript
- Understand and use ASP
- Understand and use PHP
- Understand and use CSS
- Use FrontPage
- Use XML

Course Name: Operating System II

Course Code: BCA-362

Class/Sem: BCA 6th Semester

Course Outcomes:

After the successful completion of the course students will be able to:

- Distinguish between different types of Operating Systems.
- Understand the concept of process synchronization.
- Learn about different algorithms to solve the problem of process synchronization.
- Explore the disk structure and directory structure.
- Analyse and distinguish different disk scheduling algorithms.
- Understand about simple commands used in the Linux operating system.
- Implement process synchronization in the Linux operating system.
- Understand about shell programming in Linux operating systems.

Course Name: Computer Graphics

Course Code: BCA-363

Class/Sem: BCA 6th Semester

Course Outcomes:

After the successful completion of the course students will be able to:

- Understand the concept of computer Graphics
- Understand and distinguish between different types of displays.
- Learn about point plotting techniques.
- Understand two dimensional transformation.
- Understand two dimensional viewing and projections
- Learn about three dimensional graphics like transformation, viewing and projections.

Course Name: Internet technology objectives
Course Code: BCA-364

Class/Sem: BCA 6th Semester

Course Outcomes:

After the successful completion of the course students will be able to:

- Define terms related to the Internet.
- Describe how the Internet is changing the world.
- Understand how computers are connected to the Internet.
- Demonstrate the ability to use the World Wide Web.
- Understand and apply Internet Etiquette.
- Demonstrate an understanding of and the ability to use electronic mail.
- Understand the principles of Internet services such as Listserv Mailing Lists, Usenet Newsgroups, and Instant Messaging.
- Find information on the Internet.
- Understand and use common types of files found on the internet.
- Demonstrate the ability to download a variety of resources from the internet.
- Understand methods for citing Internet resources.
- Understand societal issues and emerging technologies.

Course Name: Advance Programming with Visual Basic
Course Code: BCA-365

Class/Sem: BCA 6th Semester

Course Outcomes:

After the successful completion of the course students will be able to:

- Design, formulate, and construct software applications with VB.
- Develop programs that retrieve input from a file as opposed to input only provided by the user.
- Develop an Event Planning based program on problem description so as to define the processing that is to occur based on specific events.
- Develop a Graphical User Interface (GUI) based on problem description.
- To Design forms with database connectivity.
- To design and understand menu bar based applications.
- To enhance the User Interface design using Graphics.
- To understand and explore the modern controls available on different interfaces.

Course Name: Programming in Core Java
Course Code: BCA-366

Class and Sem :BCA-III/ Sem VI

Course Outcomes:

On completion of the course the student should be able to:

- Knowledge of the structure and model of the Java programming language, (knowledge)
- Use the Java programming language for various programming technologies (understanding)
- Develop software in the Java programming language, (application)
- Evaluate user requirements for software functionality required to decide whether the Java programming language can meet user requirements (analysis)
- Propose the use of certain technologies by implementing them in the Java programming language to solve the given problem (synthesis)

Course Name: lab I based on BCA 351 & 361

Couse Code: BCA-371

Class/Sem: BCA III/Sem V & VI

Course Outcomes:

The students on completing this course are expected to:

- Understand the role of web engineering in real life and also in industry.
- Be familiar with current Web technologies.
- Design simple web pages.
- Implement web application using HTML, CSS.
- Implement different tags available in HTML.
- Add and set properties of image to a web page.
- Make lists in HTML
- Implement static web pages.
- use Javascript and VBscript
- Understand and use ASP
- Understand and use PHP
- Understand and use CSS

- Use FrontPage and XML

Course Name: Lab-II Based on BCA 355 and BCA 365

Course Code: BCA-372

Class/Sem: BCA 5th & 6th Sem

Course Outcomes:

After the successful completion of the course students will be able to:

- Differentiate between CUI and GUI Applications
- Understand the concepts of Integrated Development Environment
- Design and debug graphical interfaces
- Understand the concept of event handling
- Analyze program requirements.
- Design/develop programs with GUI interfaces which are responsive to Events.
- Code programs and develop interfaces using Visual Basic.
- Perform tests, resolve defects and revise existing code.
- To build menu based applications
- To build applications containing advance controls like TreeView, Tab Strip etc
- To understand the concept of ADO,DAO & RDO based Database connectivity.
- To understand the concept of SDI & MDI Forms to implement Excel like multithreading applications.