TECNIA INSTITUTE OF ADVANCED STUDIES

NAAC Accredited Grade 'A' Institute

Department of Information Communication & Technology

Ref.No.TIAS/ICT/2021-22/51 Dated: 01.12.2021

Subject: Bachelor of Computer Applications Course Outcomes

BCA–COs: Reference to Scheme of Examination & Syllabi of Bachelor of Computer Applications for First and Second year w.e.f Academic Session 2021-22 of Guru Gobind Singh Indraprastha University offered by the Department of Information Communication & Technology of the Tecnia Institute of Advanced Studies' for its undergraduate programme i.e. BCA, It has following Course outcomes.

Course Outcomes

The course outcomes of various courses of BCA are as under:

Bachelor of Computer Applications (BCA)	
Paper/Subject	Course Outcome
First Semester	
BCA-101: Discrete Mathematics	CO1: Understand the basics conceptual math and relations.. CO2: Understand and apply partial order and recurrence relation and their operations. CO3: Compare and design, sorting and hashing techniques.. CO4: Appraise and determine the correct logic and solutions for any given real world problem..
BCA-103: Programming Using 'C' Language	CO1: Develop programming skills by learning the fundamentals of structured programming using C Language. CO2: Design and develop programs using arrays, storage classes, functions and to understand memory management through pointers CO3: Critically analyze real world problems using structures, unions and develop applications for handling text and binary files. CO4: Explore the use of command line arguments, string manipulation and standard libraries.
BCA 105: Fundamentals of Computers & IT	CO1: Describe computer with its characteristics, its usage, limitations and benefits, Computer Memories and its type, Software and its type CO2: Acquire knowledge about Number Systems, various computer languages and operating system DOS CO3: Attain skills in Application Software used for word processing, spreadsheet and presentation CO4: Understand network fundamentals and various communication network, Advance trends in IT

BCA 107: Web Technologies	CO1: Develop static web pages through HTML, JavaScript, CSS and Bootstrap. CO2: Implement different constructs and programming techniques provided by JavaScript. CO3: Adapt HTML, Javascript, CSS and Bootstrap syntax and semantics to build web pages. CO4: Develop Client-Side Scripts using JavaScript to display the contents dynamically
BCA 109: Technical Communication	CO1: The student will become familiar with the basics of communication and its importance in the organizational world. CO2: To improve the business writing skills also will become well aware how to write effective resume to enter the global world. CO3: To improve the listening skills by knowing well how to negotiate and give effective presentations. CO4: To make use of effective business language and give a professional look to oneself.
BCA 181: Bridge Course in Mathematics	CO1: Understand the various approaches dealing the data using theory of matrices CO2: Understand and apply the concepts of determinants CO3: Understand the concept of calculus such as limit, continuity and differentiability. CO4: Appraise and determine the correct logic and solutions for any given real world problem using application of integration& integral calculus..
BCA 171: Practical -1 'C' Prog. Lab	CO1: Develop programming skills by learning the fundamentals of structured programming using C Language CO2: Design and develop programs using arrays, storage classes, functions and to understand memory management through pointers CO3: Critically analyze real world problems using structures, unions and develop applications for handling text and binary files. . CO4: Explore the use of command line arguments, string manipulation and standard libraries.
BCA 173 Practical – II IT Lab	CO1: Work with basic DOS Commands and Windows Explorer CO2: Create Word Documents using advanced features of MS Word. CO3: Create Worksheet using advanced features of MS Excel. CO4: Create interactive Presentation using advanced features of MS Power-point
BCA 175 Practical-III Web Tech Lab	CO1: Develop static web pages through HTML, CSS, JavaScript, bootstrap and XML. CO2: Implement different constructs and programming techniques provided by JavaScript. CO3: Adapt HTML, CSS, javascript, bootstrap and XML syntax and semantics to build web pages. . CO4: Develop Client-Side Scripts using JavaScript to display the contents dynamically

Second Semester	
BCA 102: Applied Mathematics	CO1: Understand the various approaches dealing the data using theory of Probability . CO2: Understand various numerical techniques and apply them to solve real life problems. CO3: Analyse and evaluate the accuracy of common Numerical Methods. CO4: Develop a mathematical model for real life situation and solving it Using Linear programming technique
BCA-104 Web Based Programming	CO1: Design and develop dynamic web pages with good aesthetic sense of designing and latest technical know-how's. CO2: Have a good understanding of Web Application Terminologies CO3: Learn how to link and publish web sites

BCA-106 Data Structure and Algorithm Using C	CO1: Familiarize the basics of data structures and algorithms CO2: Understand and apply linear and nonlinear data structures and their operations. CO3: Compare and implement searching, sorting and hashing techniques CO4: Appraise and determine the correct data structure for any given real world problem
BCA 108: Database Management System	CO1: Understand the DBMS concepts with detailed architecture, characteristics. Describe different database languages and environment and learn various data models, along with the related terminologies CO2: Explore Structure Query Language, a brief on NOSQL, Query By Example. Also understand the overview of SQL, and try to implement DDL, DML and DCL along with operators, use of joins, nested query, use of views and Indexes Discuss Integrity Constraints CO3: Describe Relational Data Model, explain Codd's Rules, Relational Algebra, Set theory operations and the concept of functional dependencies and normalization CO4: Acquire Knowledge about Transaction Processing, concurrency problems, and its controlling techniques, Database backup and recovery and security
BCA 110: Environmental Studies	CO1: Gain in-depth knowledge on natural processes and resources that sustain life and govern economy. CO2: Understand the consequences of human actions on the web of life, global economy, and quality of human life. CO3: Develop critical thinking for shaping strategies (scientific, social, economic, administrative, and legal) for environmental protection, conservation of biodiversity, environmental equity, and sustainable development. CO4: Acquire values and attitudes towards understanding complex environmental economic-social challenges, and active participation in solving current environmental problems and preventing the future ones. CO5: Adopt sustainability as a practice in life, society, and industry

BCA 134: Front End Design Tools VB.NET	CO1: Design Console application using basic programming concepts. CO2: Design Windows application using control CO3: Understand and use of different Data Structures, Exception Handling CO4: Learn basic concepts of OOPS. Design classes and interfaces.
BCA 136: Statistical Analysis using Excel	CO1: Understand the basic concepts of statistics and its application in the real life scenarios CO2: Understand the means and mechanisms for applying the various skills used in the process of generating various statistical concepts by using MS Excel software CO3: Developing the skills needed for understand the various features of MS Excel software which assist the user in the process of deriving statistical measures CO4: Understand the skill needed to draw various forms of graphical representation based on statistical data CO5: Understand the various features of MS Excel involved in the process of compilation and summarizing of Statistical data and the skills needed to interpret the statistical data CO6: Understand the skills needed to ensure the process of integrating data from multiple in MS Excel.
BCA-138 Designing Lab Photoshop	CO1: Explain the basics of graphics designing & Adobe suite CO2: Exploring the Raster designing tools in Adobe Photoshop. CO3: Exploring the Vector designing tools in Adobe Photoshop CO4: Exploring the image filters & adjustments in Adobe Photoshop.
BCA-172 Practical-IV WBP Lab	CO1: Design and develop dynamic web pages with good aesthetic sense of designing and latest technical know-how's. CO2: Have a good understanding of Web Application Terminologies CO3: Learn how to link and publish web sites
BCA-174 Practical-V DS Lab	CO1: Implement basic operations on static linear data structures. CO2: Implement various operations on dynamic linear data structures.. CO3: Implement basic operations on non-linear data structures CO4: Implement searching techniques on linear and non-linear data structures CO5: Implement sorting techniques on one dimensional array

BCA-176 Practical-VI DBMS Lab	CO1: Understand the structure and design of relational databases. CO2: Write DDL statements in SQL to create, Modify and remove database objects CO3: Use constraints for the database CO4: Write DML statements in SQL to insert, Modify and remove data from database CO5: Write SQL statements to retrieve data based on the conditions provided by the user CO6: Use index and Views in database CO7: Use structured query language (SQL) to an intermediate/advanced level.
Third Semester	
BCA-201 Computer Networks	CO1: Utilize the fundamentals of data communication and networking to identify the topologies and connecting devices of networks CO2: Understand and describe the layered protocol model (OSI and TCP/IP model) CO3: Analyze the elements and protocols for peer – peer and communication between layers. CO4: Evaluate and implement routing algorithms and Router basic configuration CO5: Evaluate the protocols and Principles in computer networking
BCA-203 Computer Organization and Architecture	CO1: Able to understand the fundamentals of digital principles and able to design digital circuits by simplifying the Boolean functions CO2: Implement the combinational and sequential circuits for the given specifications. CO3: Able to trace the execution sequence of an instruction through the processor CO4: Demonstrate computer architecture concepts related to design of modern processors, memories and I/Os. CO5: Demonstrate the ability to classify the addressing modes, instructions set
BCA-205 Object Oriented Programming with C++	CO1: Understand the basic principles of Object-Oriented Programming CO2: Apply OOPs principles using C++ constructs . CO3: Develop expertise in classification hierarchies and polymorphism using C++ CO4: Comprehend the working of files and generic programming
BCA-207 Human Values and Ethics	CO1: Identify and evaluate personal ethical values and their implications in various social situations CO2: Recognize the multiple ethical interests at stake in a real-world situation CO3: Demonstrate knowledge of ethical values in non-classroom activities, such as service learning, internships, and field work integrate, synthesize, and apply knowledge of ethical dilemmas and resolutions in academic settings, including focused and interdisciplinary research CO4: Instill Moral and Social Values and Loyalty and

	appreciate the rights of others CO5: Comprehend the concept of harmony at all the levels of society and readiness to contribute towards harmony at all levels
BCAT-211 Basics of Python Programming	CO1: Demonstrate knowledge of basic programming constructs in python. CO2: Illustrates string handling methods and user-defined functions in python. CO3: Applying data structures primitives like List, Dictionary and tuples. CO4: Identify the commonly used operations involved in file handling CO5: To understand how python can be used for application development
BCAT-213 Cyber Security	CO1: Define the basic concept of Cyber Security, Cybercrime and Cybercriminals. Identify and understand about Cyber Threats. CO2: Describe briefly types of criminal attack and classification of Cybercrimes. Describe Steganography. . CO3: Identify and apply the Cybercrime Tools and Methods. Identify and apply the underlying concepts of Symmetric-key and Asymmetric-key Cryptography along with Digital Signature. CO4: Implement security for HTTP applications, Emails. Apply Firewall in your system. CO5: Implement, evaluate Key loggers. Implement and evaluate different cyber security algorithms with the help of program. CO6: Design and create security mechanisms to protect computer systems.
BCA-221 Principles of Management & Organizational Behaviour	CO1: Develop basic knowledge about management, management process, managerial roles, skills and functions and management theories. CO2: To give knowledge about planning and decision making process. To describe about staffing and directing.. CO3: To learn about the motivation theories and Leadership styles. To discuss about the Organizational behaviour and its application. CO4: To give basic knowledge people management, their personality and perception. To describe about the Organizational culture and its effects
BCA-233 Designing Lab CorelDraw	CO1: Explain the basics of graphics designing & CorelDraw suite CO2: Exploring the vector & 3D tools in CorelDraw. CO3: Exploring the custom shapes & basics of printing in CorelDraw. CO4: Exploring the workspaces & objects in CorelDraw.
BCA-235 ASP.NET	CO1: Understand the designing and development of Web Application Components CO2: Develop dynamic web pages using Web Server controls. CO3: Design and create web applications with Validation controls

	CO4: Understand and Apply database connectivity to Web Applications
BCA-237 AR VR Development with Unity	CO1: Familiarize the basics of augmented, virtual and mixed reality. CO2: Understand and apply the game development basics. CO3: Compare and implement the various XR development techniques. CO4: Appraise the XR development using Unity Engine.
BCA-239 Cyber Ethics	CO1: Define cyber ethics and recognize cyber ethic issues CO2: Identify how security issues in cyberspace raise ethical concerns. . CO3: Recognize various types of cybercrime and its impact CO4: Discuss ethical issues associated with the use of social networks and social media CO5: Survey recent whistle-blowing cases focusing on associated ethical issues
BCA-271 Practical – VII C++ Lab	CO1: Implement basic concepts of Object Oriented Programming CO2: Implement the concept of Classes and Objects CO3: Analyze and apply various polymorphism techniques to solve real life problems CO4: Implement Generic Classes, Exception Handling and various file operations
Fourth Semester	
BCA-202 Java Programming	CO1: Illustrate the Object-Oriented paradigm and Java language constructs CO2: To inculcate concepts of inheritance to create new classes from existing ones and design the Classes needed given a problem specification CO3: To familiarize the concepts of packages and interfaces. CO4: To facilitate students in handling exceptions and defining their own exceptions. CO5: To manage input output using console and files CO6: To apply the Java Thread model to develop multithreading applications. CO7: To understand and apply the concepts of GUI programming using swings.
BCA-204 Software Engineering	CO1: To evaluate languages to code front end and back end of a software CO2: Instantiating into the process of designing, coding and testing a software module. CO3: Organizing a software product along with its complete documentation. CO4: Implementing Software Development Cycle to develop a software module. CO5: To analyze the use of techniques, skills and modern engineering tools necessary for software development. CO6: Organizing a complete software module
BCA-206 Introduction to Management and	CO1: Gain in-depth knowledge on Entrepreneurial development in today's global scenario CO2: Understand the concept of entrepreneurs and to help

Entrepreneurship 3 1 4 Development	the students to develop an entrepreneurial mind-set CO3: Develop critical thinking for shaping strategies and help them to become an successful entrepreneur CO4: Acquire values and attitudes towards understanding complex business problems, and active participation in solving current business problems CO5: Understand the concept of the fundamentals of management
BCAT-212 Introduction to Data Science	CO1: Basics of Data Science and Data Collection strategies CO2: Illustrating statistical analysis of data. CO3: Working with the data structures of python like series and Data Frames CO4: Statistical analysis of data with the help of python
BCAP-214 Introduction to Artificial Intelligence	CO1: To understand elements constituting problems and learn to solve it by various uninformed and informed (heuristics based) CO2: To understand formal methods for representing the knowledge and the process of inference to derive new representations of the knowledge. CO3: Analyze and apply the notion of uncertainty and some of probabilistic reasoning methods to deduce inferences under uncertainty CO4: Apply some mechanisms to create and improve AI system.
BCAT-213 Network Security	CO1: Define and explain the issues and basic concepts of Network Security. To understand how to draw a network model. CO2: To Explain, understand and summarize the concepts, types and features of Firewall. CO3: Explain and implement working of authentication, authorization, Packet security, IP Security, Firewall by using some suitable examples. CO4: Classify and organize the architecture of network security management. CO5: Evaluate different Network Security algorithms with the help of program. CO6: Design and create a network security architecture for an organization.
BCAT-218 Web Development with Python and Django	CO1: Install and Configure Python and Django in a development and production environment CO2: Understands the security implications of Django using templates and develop secure websites with Django CO3: Utilize Django Models to build an interface with powerful relational databases CO4: Design and develop forms (both ad-hoc and from Models and Data Models) and automate the validation and verification of data in those forms
BCA-222 Digital Marketing	CO1: Understanding the digital marketing concepts and its usefulness in business. CO2: Planning steps for digital marketing strategy and successfully executing it. CO3: Understand the importance of Social Media Platforms and Social Media Marketing for online communication.

	CO4: Applying Search Engine Optimization techniques (SEO) and Search Engine Marketing (SEM) to maximize reach and enhance engagement of users. CO5: Analyzing web using analytics tools and gaining insights to various tools for Social Media Marketing.
BCA-224 Principles of Accounting	CO1: Basic accounting knowledge, accounting equations, accounting concepts & convention. CO2: Rules of debit & credit, journal, ledger, trial balance. CO3: Final A/c's (Trading A/c, Profit & Loss A/c, Balance Sheet) without adjustment & with adjustment. CO4: Sub division of Journal: Cash Journal, Petty Cash Book, Purchase Journal, Purchase Return Journal, Sales Journal, Sales Return Journal. CO5: Inventory valuation, Inventory System, Methods of valuation of Inventories (FIFO, LIFO & Weighted Average Method). CO6: Depreciation concept & causes, Method of recording depreciation & Method of providing depreciation
BCA-232 Personality Development Skills	CO1: Learn Social Etiquettes and social conversation. CO2: Learn Leadership, Decision making and Team-building skills CO3: Improve confidence building skills CO4: Able to manage Stress and Time Management
BCA-272 Practical – VIII Java Lab	CO1: Illustrate the Object-Oriented paradigm and Java language constructs CO2: To inculcate concepts of inheritance to create new classes from existing ones and design the classes needed given a problem specification. CO3: To apply various functions of String class CO4: To facilitate students in handling exceptions and defining their own exceptions. . CO5: To manage input output using console and files CO6: To apply the Java Thread model to develop multithreading applications. CO7: To understand and apply the concepts of GUI programming using swings.
BCA-274 Practical-IX SE Lab	CO1: To apply the software engineering lifecycle by demonstrating competence in communication, planning, analysis, design, construction and deployment CO2: Demonstrating an understanding of and apply current theories, models and techniques that provide a basis for the software lifecycle. CO3: Analyzing and deploying a software product along with its complete documentation CO4: Work as an individual and as part of a multidisciplinary team to develop and deliver quality software in one or more significant application domains. CO5: Demonstrate an ability to use the techniques an tools necessary for engineering practice

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