Department of Computer Applications

BCA

S.No.	Course Code	Course Name	Course Outcomes
1.	21UCAC11	Core Course - I: Programming in C	**CO1[K1]:** identify the fundamentals of C, tokens and basic input/output operations **CO2[K2]:** demonstrate conditional, iterative statements to write C programs **CO3[K3]:** perform data storage, retrieval to/from memory location and basic graphic functions **CO4[K4]:** classify the usage of character arrays, structure and union to solve complex computations **CO5[K4]:** examine the importance of user defined functions and file management operations
2.	21UCAC1P	Core Course - II: Practical: C Programming	**CO1[K2]:** illustrate the programs for the designed algorithm with simple problems and control structures **CO2[K3]:** develop C programs through arrays, pointers and string **CO3[K4]:** classify user defined function and structures **CO4[K4]:** examine the file handling functions **CO5[K5]:** evaluate the graphics program using C
3.	21UCAS1P	Skill Enhancement Course - I: Practical: Office Automation	**CO1[K1]:** identify the formatting tools in word, excel and impress **CO2[K2]:** demonstrate a problem in an excel sheet by using math functions **CO3[K3]:** organize chart tools to present a table data **CO4[K4]:** examine a presentation using slideshow **CO5[K4]:** simplify all the tools to create an advertisement

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4.	21UCAC21	Core Course - III: Object Oriented Programming with C++	**CO1[K1]:** identify the principles of Object-oriented programming, C++, tokens and control structures **CO2[K2]:** demonstrate classes and objects using C++ **CO3[K3]:** compute the concept of inheritance, overloading and constructor **CO4[K4]:** simplify the use of OOP's concept to write a C++ program **CO5[K4]:** examine the importance of virtual functions, Polymorphism, Exception
5.	21UCAC2P	Core Course - IV: Practical: Object Oriented Programming with C++	**CO1[K2]:** illustrate the programs for the designed algorithm with simple problems using classes and objects **CO2[K3]:** performC programs through array of objects, functions and constructors **CO3[K3]:** utilize object oriented programming concepts to write a C++ program **CO4[K4]:** inspect on file concepts **CO5[K6]:** construct a C++ program using exception handling
6.	21UCAS2P	Skill Enhancement Course - II: Practical : PrePress Designing	**CO1[K1]:** list out all the tools for designing **CO2[K2]:** trace the shapes and patterns **CO3[K3]:** make use of the tools to create flowchart **CO4[K4]:** compare the image editing tools to create the banner **CO5[K5]:** choose the tools for applying color to the images

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7.	21UCAC31	Core Course - V: Object Oriented Programming with JAVA	**CO1[K1]:** describe the basic OOPs concept such as Class, Inheritance, Encapsulation and Polymorphism **CO2[K2]:** demonstrate the knowledge of OOPs concept in Java programming **CO3[K3]:** perform the program using procedures, packages and multithreads **CO4[K4]:** analyze differences between application program and applets programming **CO5[K5]:** assess the simple project using all java libraries
8.	21UCAC3P	Core Course - VI: Practical: Object Oriented Programming with JAVA	**CO1[K3]:** apply the knowledge of OOPs concept in problem solving and develop basic program **CO2[K3]:**develop the basic programs on inheritance **CO3[K3]:**build the program using procedures, interfaces and multithreads **CO4[K4]:** classify the concepts of application program and applets programming **CO5[K6]:** design the simple project using java packages
9.	21UCAA31	Allied Course - III: Digital Principles And Computer Organization	**CO1[K1]:** describe the basic logic gates, flip-flop concepts **CO2[K2]:** classify the number system, instruction architecture, memory system in computers **CO3[K3]:**employ the number conversion, addressing modes, bus operations **CO4[K4]:** analyse fast adders, number representation, memory concepts **CO5[K5]:** assess the operational concepts, compilers, interface circuits

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10.	21UCAN31	Non-Major Elective Course - I: Basics of Computers	**CO1[K1]:** define the fundamental concepts of computers **CO2[K2]:**explain the functional units and memory units of computer **CO3[K3]:** determine the use of input and output devices **CO4[K4]:**differentiate the various number systems used in computer **CO5[K4]:** examine the importance of networks
11.	21UCAS3P	Skill Enhancement Course – III: Practical: Digital Electronics	**CO1[K1]:** identify the functionality of gates **CO2[K2]:**differentiate the NOR gates, NAND gate Circuits **CO3[K4]:**distinguish the Electronic gates, Half Adder, Full Adder concepts **CO4[K4]:**compare RS Flipflop, D flip flop circuits effectively **CO5[K5]:** evaluate the Demorgan's Law in the area of Electronics
12.	21UCAC41	Core Course - VII: Open Source Technology And RDBMS	**CO1[K1]:** state the connection between PHP and databases **CO2[K2]:** explain the Knowledge of Database architectures, query languages **CO3[K3]:** apply theknowledge of handling large Database, tables and attributes **CO4[K4]:** classify the concept of Relational Database design, cookies, sessions and files **CO5[K5]:** evaluate the faster queries and serve as many users as possible concurrently in open source

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13.	21UCAC4P	Core Course - VIII: Practical : Open Source Technology And RDBMS	**CO1[K1]:** define the Knowledge of RDBMS, SQL & PHP **CO2[K3]:**develop the Web page, Database, tables and attributes and apply SQL queries **CO3[K5]:**evaluate the Relational operations in web page. **CO4[K6]:**create the Web page with PL/SQL program **CO5[K6]:** construct the dynamic web page using PHP with MySQL
14.	21UCAA41	Allied Course – IV : Basics of Financial Accounting	**CO1[K1]:** define the objectives of book keeping, accounting functions **CO2[K2]:** explain the accounting rules, accounting concepts and conventions **CO3[K3]:** apply the accounting principles for recording the journals, posting to ledgers, prepare trial balance and subsidiary books **CO4[K4]:** examine the rectification of errors and Bank reconciliation statements **CO5[K4]:** analyze the procedure for preparing the final accounts

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15.	21UCAM41 21UCAM42	Self-paced Learning (Swayam/NPTEL Course) 1. Soft Skills 2. Cloud Computing	**CO1[K1]:** identify the background and the key words in soft skill **CO2[K2]:** demonstrate independent and self-paced learning for clear understanding of the concept **CO3[K3]:** develop computer and communication skills to broaden their knowledge in the course **CO4[K3]:** use high quality reading resources, communication tools and technology to send assignments and to take up test **CO5[K4]:** analyse critically and apply technical skills to comprehend the ideas or theories in the video lectures
16.	21UCAN41	Non-Major Elective Course - II: Web Programming	**CO1[K1]:** describe the basic tags design in static pages **CO2[K2]:**express the basic functions of lists in web designing **CO3[K3]:** develop web based application using suitable tags, links and images **CO4[K4]:**analyze the Table tags usage in web page **CO5[K4]:** dissect the web page using frames
17.	21UCAS41	Skill Enhancement Course - IV: Numerical Aptitude	**CO1[K1]:** identify the number systems **CO2[K2]:** demonstrate the relevance and need of quantitative methods **CO3[K3]:** applyquantitative methods to solve the business problems **CO4[K4]:** examine the importance of statistical problems **CO5[K5]:** evaluate the probabilistic strategies

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18.	21UCAC51	Core Course - IX: Computer Graphics And Image Processing	**CO1[K1]:** describe the concepts of graphics display devices, different types of graphics, drawing algorithms and image processing techniques **CO2[K2]:** classify the theory of transformation such as scaling, rotation **CO3[K3]:** build the ability to implement clipping operations **CO4[K4]:** classify the interactive graphics applications using 2-dimensional attributes of output primitives **CO5[K4]:** analyse the Image Sensing and Acquisition and Image Sampling
19.	21UCAC5P	Core Course - X: Practical: Computer Graphics And Image Processing	**CO1[K1]:** draw the basic shapes in graphics **CO2[K2]:** demonstrate the boundary and flood fill algorithms **CO3[K3]:** apply the DDA and bresenham's line concepts **CO4[K4]:** distinguish how image processing techniques are practically used **CO5[K4]:** differentiate various 2 dimensional transformations such as scaling, rotation, translation, reflection and shearing
20.	21UCAC52	Core Course - XI: Software Engineering	**CO1[K1]:** describe the designing process of complex software systems **CO2[K2]:** estimate efficient, reliable, robust and cost-effective solutions **CO3[K3]:** articulatetime, processes and resources effectively by prioritizing competing demands to achieve personal and team goals **CO4[K4]:** analyse software requirements specifications for different projects and prepare documentations **CO5[K5]**: choose appropriate techniques and skills on how to use modern software testing tools to support software testing projects

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21.	21UCAC5Q	Core Course - XII: Practical: Android Applications & Virtual Gaming	**CO1[K2]:** demonstrate an application that uses layout managers. **CO2[K3]:** build an application that uses event listeners. **CO3[K4]:** examine an application that implements navigation **CO4[K4]:** simplify an application that makes use of database **CO5[K5]:** evaluate 2D game applications
22.	21UCAO51	Major Elective Course - I: 1. Computer Networks	**CO1[K1]:** describe the network protocols, services and network security **CO2[K2]:**specify the OSI model and TCP/IP model in network layers **CO3[K3]**: use the Connection services, switching and network applications **CO4[K4]:**analyze the TCP Primitives, WWW, Digital Signature, and Service Security **CO5[K4]:** differentiate the role of the layers and protocols in networking
23.	21UCAO52	Major Elective Course - I: 2. E - Commerce Technologies	**CO1[K1]:** describe about the basics of E-Commerce **CO2[K2]:** demonstrate the various approaches of secure transactions **CO3[K3]:** present various security issues and solutions **CO4[K4]:** analyse to acquire knowledge about various cards used for transactions **CO5[K4]:** differentiate the internet applications for E-commerce

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24.	21UCAO53	Major Elective Course - I: 3. Artificial Intelligence and Expert Systems	**CO1[K1]:** define the basics of artificial intelligence and concepts **CO2[K2]:** explain the implementation of the logical agents and propositional theorems **CO3[K3]:** determine the resource management in forward and backward chaining **CO4[K4]:** analyse how objects are defined in knowledge representation **CO5[K4]:** examine Natural language processing concepts and parsing techniques
25.	21UCAO54	Major Elective Course - II: 1. Data Structures and Algorithms	**CO1[K1]:** describe the data structures list and stack concepts **CO2[K2]:** explain the applications of stack and queue **CO3[K3]:** apply the tree traversal and expression trees concepts **CO4[K4]:** simplify the prims and kruskal algorithms **CO5[K4]:** differentiate the quick and merge sort algorithms
26.	21UCAO55	Major Elective Course - II: 2. Cyber Security	**CO1[K1]:** describe the basic functionality of networks and cyber security concepts **CO2[K2]:** illustrate various types of attacker techniques **CO3[K3]:** apply the concepts and theories of networking to various circumstances **CO4[K4]:** examine several malicious attacks **CO5[K4]:** analyze software vulnerabilities and security solutions to reduce the risk of exploitation

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27.	21UCAO56	Major Elective Course - II: 3. Soft Computing	**CO1[K1]:** identify and describe soft computing techniques and their roles in building intelligent machines **CO2[K2]:** explain fuzzy logic and reasoning to handle uncertainty and solve various complex problems **CO3[K3]:** apply genetic algorithms to combinatorial optimization problems **CO4[K4]:** examine the importance of ant colony optimization algorithm **CO5[K4]:** analyze some applications of computational intelligence
28.	21UCAS5P	Skill Enhancement Course – V: Practical: Accounting Package	**CO1[K1]:** describe the purchase and sales entries in trial balance sheet **CO2[K2]:** explain the types of vouchers **CO3[K3]:** perform the fundamental concepts of accounting. **CO4[K4]:** simplify the types of vouchers **CO5[K5]:** assess the accrual adjustments, and also print financial statements
29.	21UCAJ51	Internship	**CO1[K1]:** find the offer a framework for breaking down tasks and creating on job trainings **CO2[K2]:** interpret and revise appropriate job search plans and materials **CO3[K3]:** develop and execute effective informational job interviews **CO4[K4]:** simplify the strategies to manage public information **CO5[K4]:** inspect a process for ensuring training tricks long term

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30.	21UCAC61	Core Course - XIII: System Software and Operating Systems	**CO1[K1]:** describe the basic concepts of system software and Assemblers **CO2[K2]:** classify various Scheduling algorithms **CO3[K3]:** formulate the concept of Deadlocks **CO4[K4]:** simplify the concept of Processes and Threads **CO5[K4]:** analyze various memory management schemes
31.	21UCAC62	Core Course - XIV: Programming in Python	**CO1[K1]:** describe the basic knowledge about python variables, operators **CO2[K2]:** illustrate the the study of various control structures **CO3[K3]:** Utilize the various complex data types in python programming **CO4[K4]:** analyse the Python files, databases and advanced python objects **CO5[K5]:** evaluate the overall idea about various python packages and GUI programming
32.	21UCAC6P	Core Course - XV: Practical: Python and R Programming	**CO1[K1]:** describe the fundamental programming procedures **CO2[K2]:** demonstrate the uses of structuring data using lists, dictionaries, tuples and sets **CO3[K3]:** develop programs with conditionals and loops **CO4[K4]:** simplify programs using arrays **CO5[K6]:** construct simple graphical programs using Pygame
33.	21UCAC63	Core Course - XVI: Advanced Computing	**CO1[K2]:** outline the Internet of things and its applications **CO2[K2]:**differentiate the basics of mobile, cloud computing and machine learning **CO3[K3]:** determine the basic concepts and security implications in cloud computing **CO4[K4]:** distinguish the awareness and representation of Machine learning **CO5[K5]:** evaluate the security of Fog, Mobile and cloud computing

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34.	21UCAJ61	Core Course - XVII: Project	**CO1[K1]:** identify the needs of the project **CO2[K2]:** illustrate the problem and solutions **CO3[K3]:** develop the software to find solutions for complex problems **CO4[K4]:** examine the developed components **CO5[K4]:** analyze or integrate with existing project
35.	21UCAO61	Major Elective Course - III: 1. Data Mining and Warehousing	**CO1[K1]:** identify the fundamental concepts of data mining and warehousing **CO2[K2]:** explain the association rule and cluster analysis **CO3[K3]:** implement solutions to basic bio-informatics problems **CO4[K4]:** compare and evaluate different data mining techniques like classifications and predictions **CO5[K4]:** analyze data mining and trends and applications
36.	21UCAO62	Major Elective Course - III: 2. Bigdata Analytics	**CO1[K1]:** state the Data management architecture and Data management system **CO2[K2]:** explain the big data technology tools or components **CO3[K3]:** develop the virtualizations and distributed computing **CO4[K4]:** differentiate the Map reduce and other data warehouse system **CO5[K4]:** compare the technological aspects of data warehouses

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37.	21UCAO63	Major Elective Course - III: 3. Internet of Things	**CO1[K1]:** define the Internet of things and its applications **CO2[K2]:** classify the concepts of IoT and M2M management **CO3[K3]:** develop simple IoT design using Raspberry Pi **CO4[K4]:** examine the IoT infrastructure for popular applications **CO5[K4]:** simplify the views of IoT and their protocols
38.	21UCAS6P	Skill Enhancement Course - VI: Practical: Shell Programming	**CO1[K2]:** specify the basic commands of shell programming **CO2[K3]:** make the file operations and directory in shell **CO3[K3]:** apply standard input and output operation in files **CO4[K4]:** classify the various access rights **CO5[K5]:** evaluate the various file processing commands using shell