Department of Computer Science and Applications

Program: BCA

Academic Year :2019-2020

Course Code	Course Title	Co.No.	Description of the Course Outcome
19UC1101	Basic English	CO1	Apply the practical knowledge of using action words in sentence construction.
		CO2	Apply and analyse the right kind of pronunciation with regards to speech sounds and able to get different types of pronunciations.
		CO3	Apply the concept of fundamental principle of counting to solve the problems on linear, circular permutations and also for the problems on selections. Apply the concept of probability, while doing the problems on Leap year & Non-Leap year problems, coins, dice, balls and cards.
		CO4	Analyze the given conditions and finding out all the possible arrangements in linear & circular order. Analyze the given numbers or letters to find out the hidden analogy and apply that analogy to find solutions. Finding the odd man out by observing the principle which makes the others similar.
19MT1105	Fundamentals of Mathematics	CO1	Solve problems of matrices, limits and differential equations
		CO2	Formulate differential calculus, differentiation rules and identify a method for solving and interpreting the results.
		CO3	Formulate physical laws and relations mathematically
		CO4	Verify the solution of problems through MATLAB.
19SC1105	Logic And Reasoning	CO1	Apply the fundamental principle of counting and use them to measure the uncertainty in random experiments.
		CO2	Apply Venn diagrams to find the conclusion of statements , solve puzzles using binary logic and problems relating to cubes.

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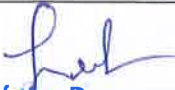Green Fields, Vaddeswaram-522502
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		CO3	Apply the available models for Data sufficiency & redundancy and interpret it, when given, in tabular and graphical forms.
		CO4	Apply the Reasoning techniques to solve problems on arrangements, series, analogies, coding and decoding.
19UC0001	Ecology and Environment	CO1	Identify the importance of Environmental education and conservation of natural resources.
		CO2	Describe the importance of ecosystems and biodiversity.
		CO3	Apply the environmental science knowledge on solid waste management, disaster management and EIA process.
19CA1104	Digital Logic Design	CO1	Describe the concepts of number systems with codes and logic gates usage in digital circuit design and identify the logical expressions in different forms and their minimization techniques for logical circuit Optimization
		CO2	Apply rules Combinational logic circuits and verification through hardware description language
		CO3	Substantiation of Sequential logic circuits and verification through hardware description language
		CO4	Implementation of digital circuits using PAL, PLA, FPGA and CPLD
19CA1101	Programming in C	CO1	Explain different concepts of C programming, used to create programs.
		CO2	Discuss about different data types and control structures
		CO3	Demonstrate the working of functions, arrays and pointers
		CO4	Identify the working of different file handling methods
		CO5	Create programs using basic and advanced concepts of C language
19CA1207	Computer Architecture & Organization	CO1	Understand the basic units of digital computer system and number system
		CO2	Understanding the basic operations of the micro operations
		CO3	Analyze the machine instructions and codes to implements
		CO4	Understanding various components of CPU and memory system.

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		CO1	Apply the concepts of accurate English while writing and become equally at ease in using good vocabulary and language skills.
		CO2	Understand the importance of pronunciation and apply the same day to day conversation.
19UC1202	English Proficiency	CO3	Apply the concepts of Ratios, Percentages, Averages and Analysing the given information, a student is required to understand the given information and thereafter answer the given questions on the basis of comparative analysis of the data in the form of tabulation, bar graphs, pie charts, line graphs. Analyse the given data to find whether it is sufficient or not.
		CO4	Apply the basic functionality of Clocks and Calendars to find the solutions for the problems. Analyze the given symbols to understand the hidden meaning of the given expression and finding the solutions. Analyze the given conditions and finding out all the possible arrangements in linear & circular order.
		CO1	Understand Boot Process of Linux and Software Package Administration
		CO2	Demonstrate User and Group Administration
19CA2106	Linux Administration	CO3	Ability to configure NIS, NFS,DNS , DHCP, web, mail and log server.
		CO4	Create programs to demonstrate different functionalities in Linux Administration OS
		CO1	Explain the types of storage and usage in different scenarios
		CO2	Describe data centre designS
19CA2116	Information Storage and Management	CO3	Compare different types of server farms
		CO4	Discuss data centre construct and back-up/recovery technologies
		CO1	Discuss how to establish a connection among various devices. Explain the different networking concepts and devices that are used today for establishing connectivity.
19CA1203	Computer Networks	CO2	Summarize the functionalities of different network protocols

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		CO3	Describe different WAN technologies, topologies and other basic networking concepts.
		CO4	Explain how to troubleshoot a network.
19CA1201	OOPS using Java	CO1	Discuss different object oriented concepts, features and its application through java.
		CO2	Apply the java concepts to create standalone desktop applications.
		CO3	Identify the different predefined classes and methods in packages
		CO4	Apply java concepts to create UI oriented applications, along with database manipulation.
		CO5	Create applications using java concepts, swings and JDBC
19CA1202	Data Structures	CO1	Discuss various data structures and explain how they can be used for searching and sorting elements
		CO2	Identify the pros and cons of different searching and sorting algorithms
		CO3	Discuss the working of different data structures and their applications
		CO4	Summarize the working of linked lists, trees and graphs
		CO5	Create programs to demonstrate the functionality of different data structures, sorting algorithms, searching algorithms, etc.
19CA1205	Probability & Statistics	CO1	Identify the types of random variables and also apply discrete distributions to analyze various rela-world situations
		CO2	Construct the probability distribution of a continuous random variable based on a real-world problems, and also predict the linear and non-linear relationship between the two variables
		CO3	Apply statistical tests for large and small samples to test the hypothesis.
		CO4	Testing the hypothesis to analyze the variance by applying suitable design
19UC0010	Universal Human Values and Professional Ethics	CO1	Understand and identify the basic aspiration of human beings
		CO2	Envisage the roadmap to fulfill the basic aspiration of human beings.
		CO3	Analyze the profession and his role in this existence.

19CA2117	Principles Of Virtualization	CO1	Describe cloud concepts and types of cloud
		CO2	Migration and governance in cloud
		CO3	Enumerate basic concepts of Virtualization
		CO4	Illustrate deployment of VMWare
19CA1102	Operating System	CO1	Discuss the working of an operating system, with its features, uses, and other functionalities.
		CO2	Describe process and storage management and how OS performs various functionalities
		CO3	Identify the purpose of different process synchronization and management methods
		CO4	Describe security and file system management in an operating system.
19CA1103	Database Management Systems	CO1	Discuss the importance of creating and maintaining an error free database.
		CO2	Apply different SQL commands to manipulate a database
		CO3	Discuss how to normalize a database
		CO4	Describe transaction concepts in a database
		CO5	Create database tables and manipulate them using SQL queries
19CA2118	Network & Information Security	CO1	Introduction : Security Definition, Why Security, Security and its need, Current Trends and Statistics, Basic Terminology, The C I A of Security .User identity and Access Management: Authentication, Account Authorization, Validation, Access Control and Privilege management. Encryption and Decryption
		CO2	System and Server Security : System Security, Desktop & Server Security, Firewalls, Password cracking Techniques, Key-logger, viruses and worms, Malwares & Spy wares, Windows Registry, Vulnerability Assessment, Penetration Testing, Risk Assessment, Threat, Vulnerability
		CO3	Network Security: Overview of Network Security, Access Control, Security features on Switches, Firewall, Types of firewall, Access Management, Authentication, NAC .Network Intrusion Prevention – Overview of Intrusion Prevention System (IPS),

		CO	
			Intrusion Detection System (IDS), Deploying IPS and IPS high Availability; host Intrusion Prevention; Anomaly Detection and Mitigation
		CO4	Network Management : Security Monitoring and correlation; Security Management - Security and Policy Management and Security Framework and Regulatory Compliance; Best Practices Framework, Case Studies
19UC2204	Aptitude Builder – 1	CO1	Apply the concept of Critical Reading and Analytical Reading and comprehend the key ideas and gist of a passage.
		CO2	Apply the concepts of grammar, various strategies and the usage of formal language in written expression
		CO3	Apply the concepts of Numbers to solve the problems related to divisibility rules, problems based on Unit's digit, Remainders, Successive Division, Prime Factorization, LCM & HCF problems.
		CO4	Apply the various concepts of cubes to find out how to cut a cube to get the maximum number of smaller identical pieces, how to minimize the number of cuts required to cut a cube into the given number of smaller identical pieces, how to count the number of smaller cubes which satisfy the given painting scheme.
19CA2219	Technical Skills	CO1	Ability to analyse the data structures requirement with respect to algorithm
		CO2	Ability to design and develop complex algorithms using data structures
		CO3	Ability to apply tree and graph concepts
		CO4	Ability to develop a mini project using data structures
19CA2216	Fundamentals Of Cloud Storage	CO1	Explain the types of storage and usage in different scenarios
		CO2	Outline concepts of a backup recovery and management of data
		CO3	Explain consistency and management of storage infrastructure
		CO4	Identify different storage management challenges
19CA2217	Ethical Hacking	CO1	Concepts and types of Ethical Hacking
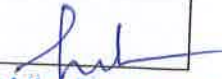
		CO2	Using tools create hack in scenarios	
		CO3	Identify how to perform web hacking	
		CO4	Implement report writing and mitigation	
		CO5	Demonstrate the concepts of ethical hacking using tools and techniques	
19UC3105	Aptitude Builder – 2	CO1	Apply the strategies and techniques learnt in carrying out conversations in different contexts. Analyse the different parameters and formats of written technical communication and apply in everyday work and life.	
		CO2	Analyse the concepts of critical and analytical reading skills. Apply the strategies and techniques learnt in handling interviews in different contexts.	
		CO3	Apply the concepts of Ratio & Proportion, Percentages, Profit &Loss, Simple & Compound Interest, students will be able to solve the problems based on Ratios, problems involving Percentages, problems related to cost price, selling price, profit, loss, marked price and discounts, problems involving interest.	
		CO4	Analyse the given series of numbers to predict the next number in the series. Analyse the given set of numbers or letters to find the analogy. Analyse the given data to find the code which is used to encode a given word and use the same code in the process of decoding. Apply the given set of conditions to select a team from a group of members.	
19CA3121	Windows Azure	CO1	panel data	
		CO2	Managing infrastructure in Azure	
		CO3	Apply storage and SQL in Azure	
		CO4	Apply website deployment	
		CO5	Deploy web applications on Azure	
19CA3122	Digital Forensics	CO1	Explain Forensics in Information Technology World	
		CO2	Discuss different data recovering methods	
		CO3	Identify various forensics techniques and their working	
		CO4	Make use of cyber laws and describe them	
		CO5	Apply and practice programs on digital forensics	

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19CA3124	Malware Analysis	CO1	Goals of Malware Analysis, AV Scanning, Hashing, Finding Strings, Packing and Obfuscation, PE file format, Static, Linked Libraries and Functions, Static Analysis tools, Virtual Machines and their usage in malware analysis, Sandboxing, Basic dynamic analysis, Malware execution, Process Monitoring, Viewing processes, Registry snapshots, Creating fake networks	
		CO2	X86 Architecture- Main Memory, Instructions, Opcodes and Endianness, Operands, Registers, Simple Instructions, The Stack, Conditionals, Branching, Rep Instructions, Disassembly, Global and local variables, Arithmetic operations, Loops, Function Call Conventions, C Main Method and Offsets. Portable Executable File Format, The PE File Headers and Sections, IDA Pro, Function analysis, Graphing, The Structure of a Virtual Machine, Analysing Windows programs, Anti-static analysis techniques.	
		CO3	Live malware analysis, dead malware analysis, analyzing traces of malware, system calls, api calls, registries, network activities. Anti-dynamic analysis techniques, VM detection techniques, Evasion techniques, , Malware Sandbox, Monitoring with Process Monitor, Packet Sniffing with Wireshark, Kernel vs. User-Mode Debugging, OllyDbg, Breakpoints, Tracing, Exception Handling, Patching	
		CO4	Downloaders and Launchers, Backdoors, Credential Stealers, Persistence Mechanisms, Handles, Mutexes, Privilege Escalation, Covert malware launching- Launchers, Process Injection, Process Replacement, Hook Injection, Detours, APC injection, YARA rule based detection.	
19CA3125	Technical Skills Coding	CO1	Apply the concepts of basic programming to solve the basic problems	
		CO2	Apply solutions for problems on Numbers and array based problems , functions, recursion	
		CO3	Solve problems solutions for character/string based problems	
		CO4	Build solutions to programs on Data structures concepts.	

Code	Subject	CO	Description
		CO5	Analyze through Compeletion of Certification
19CA3120	Cloud Information Security	CO1	Explain the basic concepts of cloud computing, virtualization, and the importance of Information Security in the Cloud Context.
		CO2	Discuss various vulnerabilities, controls, and protocols in the cloud.
		CO3	Classify the cloud vulnerabilities and threats
		CO4	Outline how cloud and Security works in a seamless mode
19CA3123	Design and Development of Cloud Application	CO1	Understand the service delivery models
		CO2	Understand the foundational infrastructure services, including VPC, Elastic Compute Cloud (EC2)
		CO3	Apply management tools
		CO4	Experiment with VPC, Internet Gateway, a Security Group, a VPN
		CO5	Develop and deploy sample applications on cloud.
19CA3227	Configuration Management on Cloud	CO1	Understand the concept of automation
		CO2	Understand the basic configuration Management
		CO3	Apply deploy rules in cloud
		CO4	Understand automated Cloud deployments.
19CA3228	Secure Software Design	CO1	Explain about threats and its properties that target software and illustrate the resources that addresses these issues
		CO2	Illustrate the process of analysing and validating security requirements.
		CO3	Apply software testing methods to analyse the software code to improve the quality and describe the assembly changes for system design.
		CO4	Apply the governance security policy to ensure enterprise security in project management
19CA2118	Client-Side Scripting	CO1	Describe the features of different web technologies
		CO2	Illustrate applications using HTML, CSS and JS
		CO3	Identify the different tools used for creating web pages and what are their pros and cons
		CO4	Apply multimedia, canvas and storage concepts to develop HTML5 apps
		CO5	Create web pages, forms, etc. Use styling techniques in the web pages and validate them.
19CA2118	Cloud Web Services	CO1	Cloud Web concepts : Search engine, Apache Hadoop, Grid Computing, Amazon Web Services, REST APIs, SOAP API, Query API, User

			Authentication, Connecting to the Cloud, Open SSH Keys, Tunneling / Port Forwarding, Image (glance), Object Storage (swift), ACL,Logging,Signed URI, Compute (nova),Cloud value proportion, Cloud economics, cloud architecture and design principles, AWS Cloud basic services.
		CO2	Networking & Storage : Overview, Key pairs, Network Types, LAN, Gateways and Router, IP Classes and Subnets, CIDR, Utilities, Instances Management, Image Management, direct connect, hybrid deployments, VPN,Security groups, Block Storage (cinder), Ubuntu in the Cloud, Installation, Utilities, File system, basic concepts of storage and databases, various storage services, storage solutions, database services.
		CO3	Global Infrastructure and Security: Methods of deploying and operating cloud, global infrastructure, availability zone, benefits of CloudFront and Edge locations.AWS Corer services, resources for technology support, methods for provisioning services, Benefits of shared responsibility model, layers of security, Multi Factor Authentication, Identity Access Management Security levels, security policies, benefits of compliance, security services
		CO4	Monitoring & Pricing: Approaches for monitoring, benefits of Cloud watch, CloudTrial, Trust Advisor, Pricing and support model, free tire, benefits of organization and consolidated billing, Budgets, Explorer, AWS pricing calculator, various AWS support plans, AWS market place.
		CO5	Using different cloud web services
19CA2215	Python Web Development	CO1	Understand basic programming skills in core Python
		CO2	Apply basic principles of Python programming language
		CO3	Implement database and GUI applications.
		CO4	Develop program Python applications
		CO5	Develop the skill of designing Graphical user Interfaces in Python
19CA2216	INTRODUCTION TO CLOUD COMPUTING	CO1	Describe cloud concepts and types of cloud
		CO2	Explain how to perform cost management
		CO3	Identify the need for IT governance in cloud
		CO4	Study and report various cloud services
		CO5	Cloud Platforms

K. Ishaan Kumar

Academic Professor I/C

HOD-CSA

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