



Koneru Lakshmaiah Education Foundation

(Category -1, Deemed to be University estd. u/s. 3 of the UGC Act, 1956)

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Department of Computer Science and Applications

Program: BCA

Academic Year:2020-21


Course Code	Course Title	Co.No.	Description of the Course Outcome
20UC1101	Integrated Professional English	CO1	Understand the concepts of grammar to improve communication, reading, and writing skills
		CO2	Demonstrate required knowledge over Dos and Don'ts of speaking in the corporate context. Demonstrate ability to face formal situations / interactions.
		CO3	Understand the varieties of reading and comprehend the tone and style of the author. Skim and scan effectively and appreciate rhetorical devices
		CO4	Apply the concepts of writing to draft corporate letters, emails, and memos
20MT1105	Fundamentals of Mathematics	CO1	Fundamental concept .Solve problems of matrices
		CO2	Formulate differential calculus, differentiation rules and identify a method for solving and interpreting the results.
		CO3	Formulate physical laws and relations mathematically in the form of second/higher order differential equations and identify a method for solving and interpreting the results.
		CO4	Formulate partial differential equations and identify method for solving PDE's
20CA1101	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	Develop programs using basic and advanced concepts

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			of C language
20CA1102	Operating Systems	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	Organize security and file system management in an operating system.
20CA1103	Software Engineering	CO1	Discuss the need for following a well structured format for the development of software applications
		CO2	Illustrate how to reduce the complexity to transition from one phase in software development to another.
		CO3	Summarize different testing concepts
		CO4	Identify how to manage a software development project
20CA1104	DLD&CO	CO1	Discuss the need for following a well structured format for the development of software applications
		CO2	Illustrate how to reduce the complexity to transition from one phase in software development to another.
		CO3	Summarize different testing concepts
		CO4	Identify how to manage a software development project
20UC0009	Ecology & Environment	CO1	Understand the importance of Environmental education and conservation of natural resources.
		CO2	Understand the importance of ecosystems and biodiversity.
		CO3	Apply the environmental science knowledge on solid waste management, disaster management and EIA process.
20UC1202	English Proficiency	CO1	Demonstrating different interpersonal skills for employability
		CO2	Distinguishing business essential skills
		CO3	Classifying social media and corporate communication skills
		CO4	Applying analytical thinking skills
20CA1206	Object Oriented	CO1	Discuss different object oriented concepts, features and its application through java.
		CO2	Apply the java concepts to create standalone desktop

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	Programming Using Java		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	Develop applications using java concepts, swings and JDBC
20CA1207	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	Experiment with working of different data structures and their applications
		CO4	Summarize the working of linked lists, trees and graphs
		CO5	Develop programs to demonstrate the functionality of different data structures, sorting algorithms, searching algorithms.
20CA1208	Computer Networks	CO1	Discuss how to establish a connection among various devices. Explain the different networking concepts and devices that are used today for establishing connectivity.
		CO2	Outline the functionalities of different network protocols
		CO3	Describe different WAN technologies, topologies and other basic networking concepts.
20CA1209	Computer Oriented Statistics	CO1	Understand the basic concepts of statistics and explains the various methods of descriptive data collection and analysis
		CO2	Understand the probability distribution of a random variable, based on real-world situation, and use it to compute expectation and variance
		CO3	Construct the relationship between two variables and construct the linear and non-linear regression lines for the given data
		CO4	Apply basic concepts of statistics and explains the various methods of descriptive data collection and

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			analysis
		CO5	Develop the solution of problems through MINITAB
20UC0010	Universal Human Values & 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.
20CA2111	Database Management System	CO1	Discuss the importance of creating and maintaining an error free database.
		CO2	Apply different SQL commands to manipulate a database
		CO3	Apply normalize a database
		CO4	Apply transaction concepts in a database
		CO5	Develop database tables and manipulate them using SQL queries
20CA2116	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.
20CA2219	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
20CA3128	Malware Analysis	CO1	Understanding Goals of Malware Analysis
		CO2	Representing X86 Architecture
		CO3	Understanding Traces of Malware
		CO4	Analyzing process of Malware
20CA3244	Technology Management	CO 1	Understand Technology management and development
		CO 2	Understand technology absorption and assessment
		CO 3	Apply Technology diffusion and Information system
		CO 4	Apply Technology at Enterprise level and Global IT

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			strategies
20CA3245	Secure Software Engineering	CO 1	Discuss Security is a Software Issue and what makes Software Secure
		CO 2	Estimate the Requirements Engineering of Secure Software
		CO 3	Analyze Software Security Practices and Knowledge & SDLC
		CO 4	Analyze System Assembly Challenges, Governance and Management
20CA3246	Major Project/ Internship	CO1	Apply basic concepts learnt to solve real-time problems
		CO2	Discuss the IT organization hierarchy and working
		CO3	Identify the tools/network and their functionalities to create and test application/connectivity
		CO4	Summarize the procedures used for creating and testing applications
		CO5	Create real time applications
20CA2112	Linux Administration	CO 1	Describe Linux System Structure
		CO 2	Understand Boot Process of Linux and Software Package Administration
		CO 3	Demonstrate User and Group Administration
		CO 4	Ability to configure NIS, NFS,DNS and DHCP
		CO 5	Ability to configure web, mail and log server.
20CA2113	Information Storage and Management	CO 1	Explain the types of storage and usage in different scenarios
		CO 2	Describe data centre designs
		CO 3	Compare different types of server farms
		CO 4	Discuss data centre construct and back-up/recovery technologies
20CA2114	Principles of Virtualization	CO 1	Describe cloud concepts and types of cloud
		CO 2	Apply Migration and governance in cloud
		CO 3	Enumerate basic concepts of Virtualization
		CO 4	Apply deployment of VMWare
		CO5	Install Virtual PC ,create and manage virtual hard disks

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20CA2115	Network & Information Security	CO 1	Explain various information security concepts
		CO 2	Discuss the need for information security in the internet, and how to manage the risks.
		CO 3	Summarize how to identify and access risks
		CO 4	Describe network infrastructure security and how to monitor a network
20CA2218	Installation and Configuration of Server	CO 1	Explain the components of Windows Server and their functions
		CO 2	Discuss how to configure networking and network services
		CO 3	Explain how to configure and manage Active Directory Domain Services
		CO 4	Apply the functions of the Sub elements of the various components of Windows
		CO 5	Deploying Windows Server Update Services
20CA2220	Introduction to Cloud Computing	CO 1	Describe cloud concepts and types of cloud
		CO 2	Explain how to perform cost management
		CO 3	Identify the need for IT governance in cloud
		CO 4	Study and report various cloud services
		CO 5	Study and report various cloud services
20CA2221	Ethical Hacking	CO 1	Explain the concepts and types of Ethical Hacking
		CO 2	Using tools create hack in scenarios
		CO 3	Experiment with how to perform web hacking
		CO 4	Develop report writing and mitigation
		CO 5	Apply the concepts of ethical hacking using tools and techniques
20CA2222	Cloud Web Services	CO 1	Understand the model of Cloud Computing As A Service
		CO 2	Understand the Networking Basics required for cloud services
		CO 3	Demonstrate the Control of workflow in cloud services
		CO 4	Explain the method of fault tolerance in cloud
		CO 5	Experiment with the cloud
20CA3124	Cloud Information Security	CO 1	Explain importance of Information Security in the Cloud Context
		CO 2	Discuss various concepts of cloud security
		CO 3	Develop the cloud vulnerabilities and threats

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		CO 4	Identify how cloud and Security works in a seamless model
20CA3125	Windows Azure	CO 1	Understanding Virtual Machine
		CO 2	Managing infrastructure in Azure
		CO 3	Apply storage and SQL in Azure
		CO 4	Apply website and deployment
		CO 5	Experiment Windows Azure practical in a computer lab
20CA3126	Digital Forensics	CO 1	Explain Forensics in Information Technology World
		CO 2	Discuss different data recovering methods
		CO 3	Identify various forensics techniques and their working
		CO 4	Make use of cyber laws and describe them
		CO5	Apply and practice programs on digital forensics
20CA3127	Design and Deployment of Cloud Application	CO 1	Understand the basic concept of hybrid cloud
		CO 2	Understand the management of hybrid cloud in terms of development and deployment
		CO 3	Plan the establishment of hybrid plan
		CO 4	Apply the usage of Azure as a platform for hybrid cloud
20CA2132	Introduction to Data Science with R Programming	CO1	To understand the overview of Data Science, Understand the fundamental syntax of R
		CO2	To understand the importance of mathematics & Statistics in Data Science
		CO3	To understand the role of machine learning techniques, Analyze a data set in R and present findings using the appropriate R packages
		CO4	To know the integrated role of computers and its components in Data Science
		CO5	Ability to write R Scripts
20CA2133	Linear Algebra	CO1	Identify the types of random variables and also apply discrete distributions to analyze various real-world situations
		CO2	Construct the linear equations 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.

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		CO1	To understand importance of data and its types in Exploratory Data Analysis.
20CA2134	Sampling Methods & Exploratory Data Analysis	CO2	To understand difference between EDA and summary statistics in context of interpretation
		CO3	To understand the importance of data pre-processing for Exploratory Data Analysis.
		CO4	To understand the significance of missing value imputations in better EDA interpretations
		CO5	To understand the importance measure of central tendency in describing the quick view of data set
20CA2135	Design and Analysis of Algorithms	CO1	Understand time and space complexity, analyze complexity for problems solvable by divide and conquer technique
		CO2	Apply greedy and dynamic algorithm design methodologies to solve problems.
		CO3	Apply state space tree methods for solving searching problems.
		CO4	Distinguish between P and NP classes of problems and solve complex problems.
		CO5	Choose the appropriate algorithm design techniques to solve any real world problems.
20CA2236	Big Data Analytics	CO1	To understand the basic concept of BigData, different types of Data
		CO2	To understand architecture of Hadoop and YARz
		CO3	To understand about Processing and Storage Layer of Hadoop, internal concept of MapReduce
		CO4	You will understand the concept of Master and Slave Architecture
		CO5	You will learn about cluster management using YARN
20CA2237	Artificial Intelligence	CO1	Understand different types of AI agents
		CO2	Know various AI search algorithms
		CO3	Understand the fundamentals of knowledge representation (logic-based, frame-based, semantic nets), inference and theorem proving
		CO4	Know how to build simple knowledge-based systems
20CA2238	Data Visualization Tools & Techniques	CO1	Understand the need of visualization techniques
		CO2	To explain Static Graphical Techniques
		CO3	To apply Multivariate Graphical Techniques
		CO4	To explain the concept of Graphical Validation and customization
		CO5	Demonstrate and practice programs on data visualization
20CA2239	Data Warehousing &	CO1	Understand stages in building a Data Warehouse

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	Mining	CO2	Apply pre-processing techniques for data cleansing
		CO3	Analyze and evaluate performance of algorithms for Association Rules.
		CO4	Analyze Classification and Clustering algorithms
		CO5	Evaluate mining techniques like classification, clustering and association rules on data objects
20CA3140	Optimization Techniques	CO1	To design algorithms, the repetitive use of which will lead reliably to finding an approximate solution
		CO2	Evaluate and measure the performance of an algorithm.
		CO3	Understand optimization techniques using algorithms.
		CO4	Investigate, study, develop, organize and promote innovative solutions for various applications.
20CA3140	Optimization Techniques	CO1	To design algorithms, the repetitive use of which will lead reliably to finding an approximate solution
		CO2	Evaluate and measure the performance of an algorithm.
		CO3	Understand optimization techniques using algorithms.
		CO4	Investigate, study, develop, organize and promote innovative solutions for various applications.
20CA3141	Soft Computing	CO1	Understand the extensions from intelligent systems to soft computing through knowledge representation.
		CO2	Understand and apply fuzzy concepts, fuzzification, defuzzification and Fuzzy Inference Systems
		CO3	Apply the working of various types of Neural Networks and applications
		CO4	Apply the biological and nature inspired evolutionary algorithms
		CO5	Develop and implement neuro, fuzzy and genetic concepts learnt using open source tools
20CA3142	DevOps with Cloud	CO1	Understand the Emergence of DevOps
		CO2	Understand DevOps Principles and Aspects of IT DevOps Agile Skills Association
		CO3	Apply the Cultural Aspects of a DevOps Team
		CO4	Understand Emergence of Cloud Technology and Principles
20CA3143	Machine Learning	CO1	To understand the basic concepts of statistical learning

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			methods and models
		CO2	To understand the importance of supervised learning in classifying class labels for prediction
		CO3	To understand the different algorithms related to classification techniques
		CO4	To understand the assumptions in estimating regression coefficients using OLS method
		CO5	To understand the concepts of hypothesis testing in parametric and nonparametric classification techniques

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