



Koneru Lakshmaiah Education Foundation

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

Accredited by NAAC as 'A++' Approved by AICTE ISO 21001:2018 Certified
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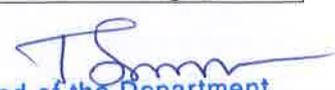
Department of Computer Science and Applications

Program: BCA

Academic Year :2022-2023

Course Code	Course Title	Co.No.	Description of the Course Outcome
22UC1101	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
22CA1104	Mathematics for Computer Science	CO1	Understand fundamental concepts to solve problems of matrices
		CO2	Demonstrate differential calculus, differentiation rules and identify a method for solving and interpreting the results.
		CO3	Develop 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	Apply partial differential equations and identify method for solving PDE's
22CA1101	Programming Solving Through Programming	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

lc. kumar kumar


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		CO5	Evaluate programs using basic and advanced concepts of C language
22CA1102	Computer Organization & Architecture	CO1	Explain different logic gates and K-maps of variable length
		CO2	Discuss the functionality of combinational and sequential circuits
		CO3	Demonstrate the working of registers in computer organization and design
		CO4	Organize the working of micro programmed control and CPU with memory organization
22UC0009	Ecology & Environment (BS2)	CO1	Understanding the importance of Environmental education and conservation of natural resources
		CO2	Understanding the Ecosystems ,biodiversity and their
		CO3	Understand global Environmental issues, pollution
		CO4	Understand the knowledge on solid waste management, disaster management and EIA process
22CA1103	Essentials of Information Technology	CO1	Understand the architectural design of a computer, hardware peripherals and various concepts of Operating systems
		CO2	Outline Programming fundamentals and User interface designs
		CO3	Summarize the fundamentals of Computer networks.
		CO4	Construct Software attributes, Specifications and Software Requirement Specification Document
		CO5	Analyze and Explore data through Word Processing, Spreadsheet applications and Presentations
22UC1202	English Proficiency (HSS2)	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.
22CA1205	Operating System	CO1	Explain overview of Operating System and basic Operating systems
		CO2	Discover Process state and scheduling with different algorithms
		CO3	Apply Process Synchronization and Dead lock prevention and avoidance.

10.10.2020


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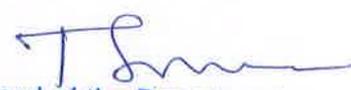
		CO4	Organize various paging concepts and its algorithms
22CA1206	Data Structures	CO1	Explain various data structures and memory management of different types of data structure.
		CO2	Summarize the working of linear data structure like Link llist, Stack and Queue
		CO3	Compare linear and non-linear data structure
		CO4	Summarize the working of different searching technique and sorting technique and their application.
		CO5	Evaluate programs to demonstrate the functionality of different data structures, sorting algorithms, searching algorithms, etc.
22CA1207	Object Oriented Programming	CO1	Understand the behaviour of programs involving the basic programming constructs of Java.
		CO2	Explain the concept of class and objects with access control to represent real world entities.
		CO3	Identify the different predefined classes and methods in packages
		CO4	Apply thread concepts to establish develop inter process communication
		CO5	Develop applications using java concepts.
22CA1210	Database Management Systems	CO1	Demonstrate the importance of creating and maintaining an error free database.
		CO2	Apply different SQL commands to manipulate a database
		CO3	Apply normalization methods in database
		CO4	Apply transaction concepts in a database
		CO5	Create database tables and manipulate them using SQL queries
22CA1209	Web and Social Media Technologies		
		CO1	Understand semantics of web page, its elements and attributes.
		CO2	Outline the basic concepts of CSS and utilize them for making of static web pages.
		CO3	Demonstrate the various social media platforms and their usages

12.11.2024


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		CO4	Understand the usage of outcasts of social media
		CO5	Develop web pages using HTML, CSS and makes use of social media platforms for creating accounts.
22CA2109	Software Engineering	CO1	Demonstrate the requirement of software development for various applications.
		CO2	Explain how to reduce the complexity to transition from one phase in software development to another.
		CO3	Summarize different testing concepts
		CO4	Develop and manage a software development project
22CA2110	Mobile Application Development	CO1	Explain various concepts of mobile programming that make it unique from programming for other platforms.
		CO2	Classify mobile applications on their design pros and cons
		CO3	Utilize rapid prototyping techniques to design and develop sophisticated mobile interfaces
		CO4	Summarize mobile applications for the Android operating system that use basic and advanced phone features.
		CO5	Evaluate applications to the Android marketplace for distribution.
22CA2111	Computer Networks	CO1	Demonstrate 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	Explain different WAN technologies, topologies and other basic networking concepts.
		CO4	Show how to troubleshoot a network.
22CA2112	Web Development using Python	CO1	Understand basic programming skills in core Python
		CO2	Apply basic principles of Python programming language
		CO3	Solve database and GUI applications.
		CO4	Develop program Python applications
		CO5	Evaluate the skill of designing Graphical user Interfaces in Python
22UC2103	Design Thinking &	CO1	Understand the importance of Design thinking process

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	Innovation (HSS3)		for contextualized problems
		CO2	Analyze, define, and ideate for solutions
		CO3	Develop and test the prototype made
		CO4	Explore the fundamentals of entrepreneurship skills for transforming the challenge into an opportunity
22CA21C1	Cloud Architecture	CO1	Classify cloud computing importance and services
		CO2	Relate cloud services & models.
		CO3	Explain Virtualization and its applications.
		CO4	Apply cloud services using web services Cloud to utilize cloud resources.
		CO5	Measure various cloud services using web services Cloud for building and deploying applications.
22CA21D1	Data Warehousing & Mining	CO1	Understand stages in building a Data Warehouse
		CO2	Apply pre-processing techniques for data cleaning
		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
22CA21A1	Artificial Intelligence	CO1	Introduction to AI, Understand about intelligence, knowledge and Artificial Intelligence, techniques of AI as a State space search, Production Systems.
		CO2	Problem solving by Search, Heuristic Search, Randomized search techniques and Finding Optimal paths
		CO3	Application of the appropriate methodologies for problem decompositions, planning and constraint data constraint satisfactions.
		CO4	Understand Knowledge Representation using Predicate Logic, Representing Knowledge using Rules, Semantic Nets, Frames and Conceptual dependencies.
		CO5	Experiment the theoretical concepts to conduct various experiments on Search Techniques and Language Representation and processing using AI .

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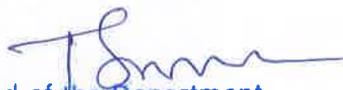
22CA2111	Essentials of IoT		
		CO1	Explain the fundamental principles of Internet Of Things with Raspberry PI
		CO2	Summarize knowledge in OSI Network Layers and versions of internet protocols
		CO3	Outline IOT design components
		CO4	Understand IOT technologies and deployment models
		CO5	Evaluate and establish communication among IOT devices
22UC2105	Essential Life Skills (HSS4)	CO1	Updating grammar concepts and receptive skills to demonstrate in placement tests
		CO2	Enhancing their Self-awareness and character to be confident during the Interview.
		CO3	Distinguishing different styles and forms of writing skills and using them while documenting
		CO4	Able to present and communicate themselves effectively during discussions.
22CA2213	Java Full Stack Development	CO 1	Apply JDBC API, JUnit Testing Framework and XML Concepts to build Console and Web Applications
		CO 2	Solve Servlets, JSP, Hibernate, Spring and Spring Boot to build web applications and Enterprise Level applications.
		CO 3	Analyze the design of linear data structures for real world problems
		CO 4	Analyze alternate algorithm techniques to solve optimization related problems in the real-world scenario.
		CO 5	Evaluate applications using JDBC and JSP
22CA2214	Object Oriented Analysis & Design	CO 1	understand the fundamentals of object modelling
		CO 2	understand and differentiate Unified Process from other approaches.
		CO 3	Compare static and dynamic UML diagrams with implementation.
		CO 4	Develop the software design with design patterns.
		CO 5	Evaluate the software against its requirements specification

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22CA22C2	Cloud Information Security	CO 1	Explain importance of Information Security in the Cloud Context
		CO 2	Demonstrate various concepts of cloud security
		CO 3	Develop the cloud vulnerabilities and threats
		CO 4	Identify how cloud and Security works in a seamless model
		CO 5	Measure Cloud Information security issue in Cloud Computing
22CA22D2	Statistics for Data Science	CO1	Explain the basic concepts of statistics and explains the various methods of descriptive data collection and analysis
		CO2	Show the probability distribution of a random variable, based on real-world situation, and use it to compute expectation and variance
		CO3	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 analysis
		CO5	Measure Statistical data using SPSS or Minitab tools
22CA22A2	Data Mining in Business Intelligence	CO1	Explain the concepts of Business Intelligence and data warehouse
		CO2	Summarize trends in data warehousing and data Mining
		CO3	Outline classification, Cleaning and description of Data Mining and know where they apply in Business
		CO4	Apply basic concepts, Market basket analysis and algorithm and generating rules
		CO5	Estimate Business Intelligence data using data mining methods
22CA22I2	Microprocessor and Microcontroller	CO1	Understanding the architecture and instruction set of 8086 microprocessors.
		CO2	Identify a detailed software and hardware structure of the microprocessor.
		CO3	Illustrate how the different peripherals are interfaced with microprocessor.

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		CO4	Analyze merits and demerits of various applications of the microprocessors
		CO5	Evaluate applications of microprocessor 8086 instruction set
22FL3055	GERMAN LANGUAGE - Foreign Language (HSS6)	CO1	Understand the German language, with greeting wishes, alphabets, and numbers learning.
		CO2	Comprehend the German articles and conjugation with present, past, and future tense
		CO3	Characterize to build a sentence with suitable prepositions, questions, and possessive pronouns, and the importance of four
		CO4	Understand about how to move in public places, such as shopping centres, restaurants, tourist places, etc, and preparation of them for German A1 level examination
22UC2204	Corporate Readiness Skills (HSS7)	CO1	Understand the importance of business correspondence and utilize proper format, content, and tools for improved results.
		CO2	Apply the techniques of writing and use standardized business vocabulary in formal communication.
		CO3	Understand the properties of numbers, solving the problems on divisibility rules, unit's digit, remainders, averages. Using the concept of Allegations, solving the problems on mixtures, Understanding the concept of surface areas and volumes, solving the 2D & 3D figures.
		CO4	Understand the three dimensions of a cube and answer questions PC)5 2 Based on the concept of 3-D rotation. Understand the concept of Binary Logic and the techniques used
22CA31C3	Ethical Hacking	CO 1	Demonstrate the concepts and types of Ethical Hacking
		CO 2	Demonstrate tools to create hack in scenarios
		CO 3	Model how to perform web hacking
		CO 4	Develop report writing and mitigation
		CO 5	Evaluate the components of ethical hacking using tools and techniques

K. Kanan Kanan


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22CA31D3	Machine Learning	CO1	understand the basic concepts of statistical learning methods and models
		CO2	understand the importance of supervised learning in classifying class labels for prediction
		CO3	Identify different algorithms related to classification techniques
		CO4	Develop assumptions in estimating regression coefficients using OLS method
		CO5	Evaluate applications using classification techniques
22CA31I3	Electronics and Sensor Technology	CO1	Understand the role of sensor and actuators in real time aspects and Analog and Digital Actuators.
		CO2	Construct the role of signal conditioning circuits and Impedance Matching circuits
		CO3	Understand different generation of sensors for the development of IoT based Networks
		CO4	Analyze the role of different Energy management in IoT
		CO5	Evaluate IoT application with sensors and actuators
22CA32C4	Cloud Web Services	CO 1	Summarize the model of Cloud Computing As A Service
		CO 2	Illustrate 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 AWS Cloud
22CA32D4	Big Data Analytics	CO1	understand the basic concept of BigData, different types of Data
		CO2	understand architecture of Hadoop and YARz
		CO3	Outline Processing and Storage Layer of Hadoop, internal concept of MapReduce
		CO4	Demonstrate the concept of Master and Slave Architecture
		CO5	Evaluate cluster management using YARN
22CA32A4	Robotic Process Automation	CO1	Explain the RPA Foundations and RPA Skills.
		CO2	Understand the Process Methodologies and Requirements for RPA Environment Planning.

K. Venkatesh


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		CO3	Demonstrate the Process and Methodology of BOT Development.
		CO4	Outline the Deployment, Monitoring and Data Preparation Methodologies.
		CO5	Implementation of BOT Development Process and Verification using the RPA Tools [UI Path].
22CA3214	IoT Design and Development	CO1	Explain IoT, Enabling Technologies, (IoTWF) Standardized Architecture, Core IoT Functional Stack, Functional blocks of an IoT ecosystem, Sensors, Actuators, Smart Objects and Connecting Smart Objects
		CO2	Illustrating IoT Protocols, Physical and MAC layers, Security of IEEE 802.15.4, 802.11ah and Lora WAN, Network Layer, Application Transport Methods
		CO3	Demonstrating IoT Design and Development, Overview of IoT supported Hardware, IoT applications in home, infrastructures, buildings, security, Industries, Home appliances
		CO4	Solving and Scheduling IoT Data Analytics. IoT Data Analytics Challenges, Organizing in IoT/M2M, Supporting Services-Computing Using a Cloud Platform for IoT/M2M Applications/Services
		CO5	Evaluate IOT Applications
22CA32C5	Design and Development 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
		CO5	Evaluate Applications using AWS cloud
22CA32D5	Data Visualization	CO1	Understand the need of visualization techniques
		CO2	explain Static Graphical Techniques
		CO3	apply Multivariate Graphical Techniques
		CO4	Model the concept of Graphical Validation and customization
		CO5	Evaluate programs on data visualization using Tableau

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			or Jupyter tool
22CA32A5	Deep Learning	CO1	Explain the concepts of Perception, Back Propagation, PCA, Singular Value Decomposition
		CO2	Compare Autoencoders, Regularization, Denoising, Convolutional Neural Networks,
		CO3	Construct Long Short Term Memory (LSTM) Restricted Boltzmann Machines, Deep Dream, GRU, Neural style transfer,
		CO4	Build Markov models, Markov networks, Markov chains, Variational autoencoders, Autoregressive Models, and Generative Adversarial Networks (GANs).
		CO5	Implement basic neural networks, optimization algorithms, engine vector decomposition, various types of autoencoders, batch normalization, convolutional neural networks
22CA32I5	Advance Embedded System	CO1	Understanding the key features of embedded systems
		CO2	Understanding the Hardware fundamentals of Embedded systems
		CO3	Comprehending multithreaded programs on arduino software package under Linux platform
		CO4	Applying the peripheral interfacing in embedded system environment
		CO5	Evaluate and develop a applications of Embedded systems

K. Karan Karan
Academic Professor I/C

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HOD-CSA

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