Kalinga University
Information Technology
Bachelor Of Computer Application

PO

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1	Gain an understanding in various areas of information technology for higher studies.
2	Apply good network and database design methods for program development.
3	Develop programming skills, learn applications, packages, programming languages and modern techniques of IT
4	Gives overview of the topics in IT like operating system, web development, trouble shooting, and software skills.
5	Apply modern tools and techniques to analyze concepts being applied to the system or data available

PSO

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CO

S.No.	Course Code	Course Name	Course Outcome (CO's) - Description
1	BCA101	Mathematics - I	**CO1:** Student will be able to perform Mathematical Operations like Set operations, Matrix operations
			CO2: Student will be able to perform Statistical operations like mean, mode, and median on given datasets.
			CO3: Understand and practice Mathematical relations and functions & probability theory.
			CO4: Understand and practice Determinant, Matrices& Logic.
2	BCA102	Fundamentals of Information Technology	**CO1:** Describe Computer System evolution, Characteristics and Types.
			CO2: Select Need base System Hardware and Software.
			CO3: Describe the OS, Types of OS, Batch File and features.
			CO4: Describe the Use, Process, Types and Topologies of Computer Communication.
			CO5: Outline Office Suit components with specific application.List Open Office Software
			CO6: Apply Word Processing Tools including Document Formatting, Using Graphics, Working with Macro and Mail Merge.
			CO7: Apply Spread Sheet Tools including Worksheet formatting, Using Functions, Graphics and Charts
			CO8: Create effective Presentation Using Animation and Transition.
3	BCA103	Programming for Problem Solving Using 'C++	**CO1:** List and Demonstrate Basic Terminology Used in Computer Programming Write, Compile and Debug Programs in C and C++ Language.
			CO2: Understand and Apply Variable, Conditional Statements, Loops, Functions in C and C++.
			CO3: Practice Pointers, Structure, Union and Class in Programming.
			CO4: Explain and Differentiate the Process of Problem Solving Using Procedural and Object Oriented Programming Language.
			CO5: Understand and Practice Object Oriented Programming Concepts in C++
4	BCA104A	Environmental Studies	**CO1:** Understand and appreciate the multidisciplinary nature of environmental studies and recognize its connections with various fields of science and humanities
			CO2: Analyze the utilization of land resources and its impact on land-use change, land degradation, soil erosion, and desertification
			CO3: Define and distinguish between levels of biological diversity, including genetic, species, and ecosystem diversity

			CO4: Define and classify environmental pollution, including its types, causes, effects, and control measures
			CO5: Analyze the impacts of human population growth on the environment, human health, and welfare.
5	BCA105	Digital Electronics	**CO1:** Understand the concepts of various components to design stable analog circuits.
			CO2: Represent numbers and perform arithmetic operations
			CO3: Minimize the Boolean expression using Boolean algebra and design it using logic gates.
			CO4: Analyze and design combinational circuit
			CO5: Design and develop sequential circuits
			CO6: Translate real world problems into digital logic formulations using VHDL
6	BCA201	Statistical Methods	**CO1:** at the end of the course the student will able to learn to Understand/(Solve the problems using) the advanced statistical approaches, Identify the statistical methods for solving geospatial problems, apply the advanced statistical methods for image processing and to use geo-statistics for studying spatially varying phenomena
7	BCA202	Data Structures Using C++	**CO1:** Understand the concept and usage of data types, dynamic memory management and data structures.
			CO2: Implement stack and queues algorithms
			CO3: Implement linked list data structures
			CO4: Implement graphs data structures
			CO5: Implement tree and sorting in data structures
			CO6: Choose the appropriate data structures to solve complex real life problems
8	BCA203	Database Management Systems (DBMS)	**CO1:** Understand Data, Database system and its architecture.
			CO2: Apply ER modeling and Relational Database design using Normalization.
			CO3: Apply concepts of database storage and querying.
			CO4: Understand Concurrency, Recovery and Security mechanism in DBMS.
			CO5: Understand Current advances in DBMS.
9	BCA204	Financial Accounting	**CO1:** Upon Understand and apply fundamental accounting concepts, principles and conventions
			CO2: Record basic accounting transactions and prepare annual financial statements for a sole proprietorship business.
			CO3: Record accounting transactions for Bills of Exchange, Consignment Account, Joint Venture Account, Final Account.

10	BCA205A	English	**CO1:** Understand the theory of communication, including its types, modes, mediums, channels, and barriers
			CO2: Differentiate between verbal and non-verbal communication, understanding their role in personal, social, and business contexts
			CO3: Develop proficiency in various speaking skills, including monologues, dialogues, group discussions, interviews, and public speeches
			CO4: Master close reading techniques and the analysis of a text in terms of audience, purpose, content, theme, tone, mood, stylistic devices, and structure
			CO5: Practice various writing skills, including report writing, note-taking, letter writing, tabloids, diary entries, open letters, essays, newsletter and magazine articles, skits, and short stories.
11	BCA301	Programming in Java	**CO1:** Explain the object oriented concepts and apply them for solving real problems.
			CO2: Demonstrate and apply the various features Java SDK to develop, run and debug java programs
			CO3: Apply java technology to develop the small applications, utilities, and web applications.
			CO4: Apply events management and layout managers using awt, swing, jdbc and servlet for developing the software for various problems
12	BCA302	Web Development with PHP	**CO1:** Develop programs using HTML and PHP.
			CO2: Develop PHP Program using Character set, variables, data types, conditional and iterative statements, functions etc.
			CO3: Develop WebPages using built-in functions related to string manipulation, mathematical, date and time etc
			CO4: Develop Web pages using Arrays, Web forms, files, and databases with PHP
13	BCA303	Design and Analysis of Algorithm	**CO1:** To learn a strong foundation about algorithms.
			CO2: To learn different techniques for writing algorithm
			CO3: To apply the techniques for producing algorithm for different problems.
14	BCA304	Operating System	**CO1:** Understand, identify and describe the services provided by operating systems.
			CO2: Understand and solve problems involving process control, mutual exclusion, synchronization and deadlock.
			CO3: Implement processor scheduling, synchronization and disk allocation algorithms for a given scenario.
			CO4: Understand different types of operating system.
			CO1: Ability to recognize a business opportunity that fits the individual student

15	BCA305	Entrepreneurship Development	**CO2:**	Demonstrate the understanding of how to launch the individual's entrepreneurial career
			CO3:	To inculcate the spirit of entrepreneurship in students and make them job creators instead of job seekers
16	BCA306A	Embedded Systems	**CO1:**	Explain hardware and software design requirements of Embedded Systems
			CO2:	Discuss the architecture of 8051 processor
			CO3:	Describe 8051 Processor Addressing modes and instruction sets
			CO4:	Use Embedded C for writing basic programs for embedded systems
			CO5:	Examine the use of various Embedded C programming constructs for writing programs for embedded systems
17	BCA306B	Natural Language Processing	**CO1:**	Understand the computational properties of natural languages and the commonly used algorithms for processing linguistic information
			CO2:	Understand the information retrieval techniques using NLP
			CO3:	Apply mathematical techniques that are required to develop NLP
			CO4:	Analyze various NLP algorithms and text mining NLP applications
			CO5:	Design real world NLP applications such as machine translation, text categorization, text summarization, information extraction by
			CO6:	applying NLP techniques.
18	BCA306C	Enterprise Resource Planning	**CO1:**	Understand the concept of Enterprise Resource Planning (ERP) and its significance in modern business operations
			CO2:	Evaluate the decision-making process for ERP implementation, including the consideration of hidden costs
			CO3:	Analyze how ERP systems cater to various business units, including Finance, Manufacturing, Human Resources, Materials Management, Quality Management, and Sales and Distribution
			CO4:	Evaluate the ERP market landscape, including key players such as SAP AG, Oracle Corporation, and others
			CO5:	Assess the benefits of ERP implementation in terms of time reduction, resource utilization, performance improvement, customer satisfaction, flexibility, quality enhancement, and accuracy.
		Computer Graphics &	**CO1:**	Understand the fundamental concepts and applications of computer graphics.
			CO2:	Implement algorithms for drawing 2D primitives like lines and circles using DDA and Bresenham's algorithms.

19	BCA401	Computer Graphics & Multimedia Application	**CO3:**	Understand window-to-viewport transformation in 2D graphics and concepts of parallel and perspective projection in 3D graphics
			CO4:	Understand fractal geometry methods and their applications in computer graphics.
			CO5:	Design animation sequences and understand computer animation languages.
20	BCA402	Software Engineering and Testing	**CO1:**	To classify the various Software Process Models
			CO2:	To understand the Software Testing Concepts
			CO3:	To implement the Software Quality and Control Concepts
			CO4:	To Design the Test cases and to get familiarity over Automated Testing tools
21	BCA403	Data Mining and Warehousing	**CO1:**	To know the basic concepts of data mining
			CO2:	To classify & cluster the data
			CO3:	To use association rules on data.
			CO4:	To introduce the concept of data warehousing
			CO5:	To recover data in case of data loss
22	BCA404	Optimization Techniques	**CO1:**	Explain the fundamental knowledge of Linear Programming and Dynamic Programming problems
			CO2:	Use classical optimization techniques and numerical methods of optimization.
			CO3:	Describe the basics of different evolutionary algorithms
			CO4:	Enumerate fundamentals of Integer programming technique and apply different techniques to solve various optimization problems arising from engineering areas.
23	BCA405	Computer Network	**CO1:**	Understand and explain Data Communications System and its components
			CO2:	Understand Computer Network basics and OSI and TCP/IP model
			CO3:	Understand Networks switching, error detection and error correction techniques.
			CO4:	Identify the different types of network devices and their functions
			CO5:	Familiarity with the various protocols of computer networks.
24	BCA406A	Green Computing	**CO1:**	Acquire expertise for improving the energy efficiency for laptops and personal computers by reducing the power consumption requirements
			CO2:	Assess enterprise-wide and personal computing and computing energy consumption
			CO3:	Recognize the necessity for long-term sustainability in IT
			CO4:	Formulate plans for reducing IT heating and cooling requirements
			CO5:	Evaluate the regulatory and governance issues surrounding IT
			CO6:	Choose the best sustainable hardware for their applications
			CO1:	Explain the fundamental concepts of a digital image processing System

25	BCA406B	Image Processing	**CO2:** Apply techniques for enhancing digital images
			CO3: Examine the use of Fourier transforms for image processing in the frequency domain
			CO4: Compare various Image compression standards and morphological Operation
			CO5: Identify various Applications of Image Processing
26	BCA406C	Big Data Analytics	**CO1:** Understand the concept of Big Data and its importance in modern data-driven applications
			CO2: Understand the Hadoop Distributed File System (HDFS) and its architecture.
			CO3: Guide students through the process of downloading and getting started with Spark.
			CO4: Define NoSQL databases, their types, and where they are used.
27	BCA501	Mobile Application Development	**CO1:** Describe Android platform, Architecture and features.
			CO2: Design User Interface and develop activity for Android App
			CO3: Use Intent, Broadcast receivers and Internet services in Android App.
			CO4: Design and implement Database Application and Content providers.
			CO5: Use multimedia, camera and Location based services in Android App.
			CO6: Discuss various stages in Android App publishing.
28	BCA502	Linux Server Administration	**CO1:** Write shell program for simple problem
			CO2: Use of basic commands of Linux.
			CO3: Analyze the need for security measures for Linux sever.
			CO4: Managing user account in Linux.
			CO5: Install and configure Email Sever, DNS, FTP etc.
29	BCA503	Cloud Computing	**CO1:** Define Cloud Computing and memorize the different Cloud service and deployment models
			CO2: Describe importance of virtualization along with their technologies
			CO3: Use and Examine different cloud computing services
			CO4: Analyze the components of Google Cloud platform
			CO5: Describe the key components of Amazon web Service
			CO6: Design & develop backup strategies for cloud data based on features.
30	BCA504A	Artificial Intelligence and Machine Learning	**CO1:** Interpret Artificial Intelligence concepts intelligence concepts
			CO2: Apply Artificial intelligence techniques for problem solving
			CO3: Analyze the fundamentals of machine learning, the learning algorithms and the paradigms of supervised and un-supervised learning

			CO4:	Identify methods to improve machine learning results for better predictive performance
31	BCA504B	Advance Neural Network & Deep Learning	**CO1:**	Recognize the characteristics of deep learning models that are useful to solve real-world problems
			CO2:	Understand different methodologies to create application using deep nets.
			CO3:	Identify and apply appropriate deep learning algorithms for analyzing the data for variety of problems.
			CO4:	Implement different deep learning algorithms
			CO5:	Design the test procedures to assess the efficacy of the developed model.
			CO6:	Combine several models in to gain better results
32	BCA504C	Internet Of Things	**CO1:**	After completion of the course, the students will be able to understand the working of Raspberry Pi, its features and how various components can be used with Pi. The students will be able to understand IoT practically
33	BCA505A	Digital Marketing and Business Analytics	**CO1:**	Understand the role of Digital Marketing Remembering
			CO2:	Demonstrate use of various Digital Marketing Tools.
			CO3:	Discuss key element of Digital Marketing Strategy
			CO4:	Understand use of Digital Marketing Tools for Digital Marketing Campaigns
			CO5:	Assess / Measure the effectiveness of the Digital Marketing Campaigns
			CO6:	Demonstrate practical skills using common digital marketing tools like SEO, SEM, Content Marketing
34	BCA505B	Ethical Hacking	**CO1:**	Recall the networking, sql, and encryption algorithm concepts to further study ethical hacking techniques, threats, tools and
			CO2:	prevention against attacks.
			CO3:	Understand ethical hacking concepts, cases, ethics and cyberlaws.
			CO4:	Apply available hacking tools to find a solution to a given hacking issue
			CO5:	Analyze and classify the real-world hacking cases and situations.
35	BCA505C	IT Security	**CO1:**	Explain various security concepts and apply them in daily cyber use.
			CO2:	Configure firewall and other security setting in computer
			CO3:	Perform the malware and spam email identification, analysis, virus scanning and cleaning and other services using security tools
			CO4:	Explain and practice the Cyber Law, Ethics, and Intellectual Property Rights, Patent and Trademark and Design Law