Programme Matrix: Bachelor of Computer Applications [2019 Batch]

Kristu Jayanti College
AUTONOMOUS Bengaluru
Reaccredited 'A' Grade by NAAC | Affiliated to Bengaluru North University

FACULTY OF SCIENCE

BCA

Programme Educational Objectives

PEO1: To empower the students with current trends in the domains of computation and programming.

PEO2: To update the students with cross cutting technology, software tools and applications.

PEO3: To nurture the students with employability skills and professional ethics.

Programme Outcome

After the successful completion of three year BCA Programme, the graduate will be able to:

PO1: Apply professional and social skills to cater to the needs of the industry, society and global scientific community.

Programme Specific Outcomes

After the successful completion of three year BCA Programme, the graduate will be able to:

PSO1: Appraise the current trends of knowledge in domains of computational sciences.

PSO2: Apply professional skills to solve problems in global computer applications industry.

PSO3: Develop software to cater to the needs of the organization, nation and region.

Programme Matrix: Bachelor of Computer Applications [2019 Batch]

I Semester

Course Type	Course Code	Course Title	Course Outcome
AECC	AEN103A11	**Additional English I**	1.To introduce the learners to new ideas, topical issues and new styles of writing. 2.To initiate debates, discussions and new thinking in the 'grey areas'.
AECC	HIN103B11	**Hindi I**	• हिन्दी साहित्य के गद्य विधाओं का विश्लेषण करने की क्षमता का विकास • विद्यार्थियों में सामाजिक यथार्थ का मूल्यांकन करने का ज्ञान • सृजनात्मक कौशल्य में परिपूर्णता • गद्य विधाओं के अध्ययन करने के बाद सामाजिक मूल्यों का ज्ञान प्राप्त • अनुवाद कला और भाषा में परिशुद्धता
AECC	KAN103B11	**Kannada I**	• ಜಾನಪದ& ಶಿಷ್ಟ ಸಾಹಿತ್ಯದ ವ್ಯತ್ಯಾಸಚರ್ಚೆ ಮಾಡುವರು • ಸಾಮಾಜಿಕ ಸಮಾನತೆ ಮತ್ತು ಜೀವನಮೌಲ್ಯಗಳ ಪುನರಾವಲೋಕನ ಮಾಡುವರು • ಗ್ರಾಮೀಣ ಸಂಸ್ಕೃತಿಯನ್ನು ವಿವರಿಸುವರು • ಕನ್ನಡ ಭಾಷಾಪ್ರೇಮವನ್ನುಇತರೆ ಭಾಷೆಗಳೊಂದಿಗೆ ಹೋಲಿಕೆ ಮಾಡುವರು
AECC	ENG103A11	**English I**	1. To attune young minds to concerns and issues which have a broad and wide scope of use and application to life. 2. To cut across the history of creative expression in focusing primarily on the core values that governs human lives.
DSCC	BCA204A11	**Basic Electronics**	1. Analyze analog electronic circuits using network theorems. 2. Demonstrate the working and concept of solid state electronics. 3. Explain the fundamental concepts of basic gates, universal gates, combinational and sequential circuits.
DSCC	BCA204A12	**Programming in C**	1. Design flowchart and algorithms for C program. 2. Construct sequential, iterative problems and input/output operations on text files. 3. Differentiate between decision control structures and loop control structures. 4. Representation through arrays, functions, function using pointers, structures and unions.
DSCC	BCA204A13	**Computing and Programming Fundamentals**	1. Prepare pseudo code, flowchart, algorithm and control structures for computational problems. 2. Distinguish software and programming paradigms. 3. Analyze computing paradigms with case study.
DSCL	BCA2L2A11	**Electronics Practical**	1. Build the circuit with basic logic gates and universal gates. 2. Design flip-flops, combinational and sequential circuits using logic gates.
DSCL	BCA2L2A12	**Programming in C Practical**	1. Trace sequential, decision making and iterative C programs. 2. Design user defined data types and functions in C language.

Programme Matrix: Bachelor of Computer Applications [2019 Batch]

II Semester

Course Type	Course Code	Course Title	Course Outcome
AECC	AEN103A21	**Additional English II**	1. To provide the young learners an introduction to new ideas and issues that bear relevance to our life today. 2. To give the students an opportunity to develop values that will help them adapt to the changing world.
AECC	HIN103B21	**Hindi II**	• काव्य अध्ययन मे संगीतात्मक शैली को समझ लेता है • काव्य विश्लेषण करने की क्षमता • काव्य में निहित विचारों का मूल्यांकन • काव्य सृजन करने का कौशल्य • व्याकरणिक भाषा का ज्ञान एवं स्पष्टता
AECC	KAN103B21	**Kannada II**	• ಕನ್ನಡ ಸಾಹಿತ್ಯದಲ್ಲಿನ ಭಾಷಾ ಮಡಿವಂತಿಕೆಯ ವಿವರಣೆ ತಿಳಿಯುವರು • ಪುರಾಣ ಕಾವ್ಯಗಳಲ್ಲಿನ ಸಾಂಸ್ಕೃತಿಕ ಮುಖಾಮುಖಿಯ ವಿಶ್ಲೇಷಣೆ ಮಾಡುವರು • ನಾಟಕಗಳಲ್ಲಿನ ಪರಿಸರ ವರ್ಣನೆಯ ಮನರಾವಲೋಕನ ಕೈಗೊಳ್ಳುವರು • ವೃತ್ತಿಆಧಾರಿತ ವ್ಯವಸ್ಥೆ ಬಗ್ಗೆ ಚರ್ಚಿಸುವರು
AECC	ENG103A21	**English II**	1. Discuss the use of animal imagery and hypersensitive characters in the twentieth century writings 2. Describe poetic style and its devices in the english verses of the victorian age 3. Analyze poems and sonnets regarding existentialist and metaphysical themes 4. Discover and implement new strategies of grammar in speaking english language 5. Integrate the prominence of media and the elements of advertising by creating media awareness
AECC	NES102A01	**Environmental Science**	1. Discuss the overexploitation of natural resources. 2. Appraise the components of ecosystem. 3. Assess the conservation of biodiversity. 4. Criticize the mitigation process of natural disasters. 1. Survey the effects of pollution in the environment. 2. Recommend the various policies for the betterment of environment.
DSCC	BCA204A21	**Data Structures**	1. Explain data structures, dynamic memory management and usage of pointer variables. 2. Differentiate operations associated with arrays, linked lists, stacks, queues and trees. 3. Design recursive procedures, sorting and searching algorithms for data structure applications.
DSCC	BCA204A22	**Programming in Java**	1. Compare Procedural and Object-oriented Programming Paradigms. 2. Construct windows and frame based GUI applications using control fundamentals. 3. Construct windows and AWT based applications using control fundamentals.

Programme Matrix: Bachelor of Computer Applications [2019 Batch]

DSCC	BCA204A23	**Mathematical Foundation in Computer Applications**	1. Solve system of equations in three variables using Cramer's rule and matrix method. 2. Evaluate inverse of a matrix using formula and Cayley Hamilton theorem. 3. Explain algebraic structures, vector dot product, cross product, scalar triple product and vector triple product. 4. Use the equations of line and plane. Evaluate derivative and integral.
DSCL	BCA2L2A21	**Data Structures Practical**	1. Write programs explaining the data structures operations. 2. Develop programs for searching and sorting techniques. 3. Execute recursive functions for tower of Hanoi, binomial coefficient and GCD.
DSCL	BCA2L2A22	**Programming in Java Practical**	1. Build sequential, decision making and iterative Java programs. 2. Design GUI based applications using applets and frames.

Programme Matrix: Bachelor of Computer Applications [2019 Batch]

III Semester

Course Type	Course Code	Course Title	Course Outcome
AECC	ENG103A31	English III	1. State the problems of a man and the significance of parental affection in real life 2. Review the historical background of true events in roman history 3. Extrapolate the reflections on the lives of writers in literary genres 4. Interpret the significance of english literature in the forms of movies and serials in media 5. Formulate the structure of oral and written presentations and develop speaking skills
DSCC	BCA204A31	Visual Programming	1. Design graphical user interface using multiple forms, modules, menus and VB.Net controls. 2. Analyze VB.Net controls to resolve defects and revise existing code. 3. Integrate connectivity between user interface and the database.
DSCC	BCA204A32	Database Management System	1. Explain the concepts of relational data model, normalization, database design and relational algebra. 2. Construct ER model for data tables and formulating SQL queries on data. 3. Illustrate data retrieval and hashing techniques.
DSCC	BCA204A33	Operating System Concepts and LINUX	1. Compare batch, time sharing, real time and distributed operating systems. 2. Explain system calls and services, virtual machines, file access and file allocation methods. 3. Demonstrate CPU scheduling, disk scheduling, page replacement algorithms and process synchronization. 4. Analyze the critical section problems, deadlocks and storage management. 5. Design shell scripts using UNIX tools and utility commands.
DSCC	BCA204A34	Probability and Statistics	1. Analyze univariate data using measures of central tendency, measures of dispersion and skewness. 2. Evaluate bivariate data set using correlation and linear regression. 3. Apply addition and multiplication probability law. 4. Discriminate probability distributions as discrete -binomial, poisson; and continuous- normal. 5. Relate test of significance for means, difference of mean, proportions, difference of proportions, chi-square test for independences of attributes and goodness of fit.
DSCL	BCA2L2A31	Visual Programming Practical	1. Create VB.Net programs using logical alternatives, variables, constants, forms and multiple array techniques. 2. Manage connectivity between user interface and the database.
DSCL	BCA2L2A32	Database Management System Practical	1. Manage primary and foreign key constraints in the database. 2. Execute PL/SQL program to insert and retrieve data from database.

Programme Matrix: Bachelor of Computer Applications [2019 Batch]

IV Semester

Course Type	Course Code	Course Title	Course Outcome
AECC	ENG103A41	**English IV**	1. Recognize, define, and identify poetic terms and genres 2. Examine novels analytically and interpretively, to identify literary elements of plot, character, setting, tone, point of view, theme, style, symbol, metaphor, and image 3. Analyze the characters and themes of one act plays 4. Acquire vital employability skills and employment opportunities with in-depth knowledge of cv, cover letter, report writing and paragraph writing
DSCC	BCA204A41	**Software Engineering**	1. Analyze software components and process models in software development life cycle. 2. Prepare the plan, design, schedule and assessing the risks in project management. 3. Categorize software metrics, testing and maintenance of a project.
DSCC	BCA204A42	**Concepts of Data Warehouse and Data Mining**	1. Explain data warehouse architecture and data mining functionalities. 2. Design data warehouse with dimensional modelling and applying OLAP operations on data cubes. 3. Compare association, classification, clustering and prediction techniques in data mining.
DSCC	BCA204A43	**Data Communication and Networks**	1. Classify network technologies and protocols using OSI reference model and TCP/IP model. 2. Analyze network devices, topologies and IEEE 802.1 to 802.11 standards. 3. Apply error detection and correction of transmitted data using forward error correction techniques. 4. Formulate the solution for routing and congestion problems using routing algorithms.
DSCP	BCA2P2A41	**Software Engineering Project**	1. Design project development phases using waterfall, prototyping, spiral and agile model. 2. Manage the workflow of the project using Gantt chart.
SEC	SSP4L2A01	**Soft Skills Practices**	1. Build verbal/oral communication, leadership and listening skills. 2. Perform group discussion, presentations and personal interview.

Programme Matrix: Bachelor of Computer Applications [2019 Batch]

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Course Type		Course Code	Course Title	Course Outcome
DSCC		BCA204A51	Web Programming Using PHP	1. Illustrate the installation, configuration of XAMPP and parsing PHP code. 2. Create webpage using conditional statement, looping constructs, array, string, math and array built-in functions. 3. Apply cookies and session management in PHP web page. 4. Demonstrate connectivity of PHP webpage with MYSQL database.
DSCC		BCA204A52	Computer Architecture	1. Design computational process using arithmetic, logic and shift operators. 2. Summarize the concepts of parallel processing, pipelining and inter-processor communication. 3. Classify the memory organization techniques and methods of data transfer between memory and I/O device. 4. Compare the performance of architectural schemes and address design issues based on speed, technology, cost and performance.
DSCL		BCA2L2A51	Web Programming Using PHP Practical	1. Design PHP program using control structures and string functions. 2. Manage PHP webpage connectivity with cookies and mysql database.
DSCP		BCA2P2A51	Enterprise Computing Project	1. Design web-based application using ASP.Net framework. 2. Manage connectivity of web-based application with SQL Server.
Elective Group*	DSEC	BCAA04A51	Computer Graphics	1. Demonstrate DDA, Bresenham's algorithms and Geometric transformations. 2. Explain raster and random scan techniques in 2D and projection in 3D graphics. 3. Design graphics programs using opengl API and C graphics library functions.
	DSEL	BCAAL2A51	Computer Graphics Practical	1. Develop C program using DDA, Bresenham's algorithms and pie chart. 2. Design opengl programs for Sierpinski Gasket, animation and menu driven graphics package.
	DSEC	BCAB04A51	Cloud Computing Concepts	1. Compare distributed, grid and cloud computing based on objectives, architecture, characteristics and benefits. 2. Assess cloud computing services and deployment models. 3. Illustrate database, compute, queuing, application, security, and deployment and management services by cloud service providers. 4. Create cloud based applications using service oriented architecture, model view controller and cloud component model.
	DSEL	BCABL2A51	Cloud Computing Concepts Practical	1. Manage virtual machines using cloud web services.

				2. Design applications for warehouse, upload documents and host static website in cloud.
	DSEC	BCAC04A51	Big Data Analytics	1. Explain the applicative aspects of big data. 2. Analyze large scale analytical tools to solve big data problems. 3. Create big data models to gather, manage and query the data sets using data mining techniques.
Elective Group for Students who had opted for Data Analytics	DSEL	BCACL2A51	Data Analytics Using R Practical	1. Create boxplot, bar chart, pie chart, histogram, ogives, scatter plot. 2. Formulate discrete and continuous frequency distribution tables. 3. Calibrate correlation and regression statistical analysis. 4. Develop test of significance for means, difference of mean, proportions, difference of proportions, chi-square test for goodness of fit and independence of attribute.
	DSEC	BCAD04A51	NoSQL Database Concepts	1. Compare graph, key-value pairs, document-oriented and column-oriented NOSQL databases. 2. Explain the architecture, define objects, load data, query data and performance of MONGODB. 3. Evaluate competency in NOSQL and relational database query.
	DSEL	BCADL2A51	NoSQL Database Practical	1. Formulate RDBMS queries with nosql databases. 2. Create structures for advance queries using nosql database.

Programme Matrix: Bachelor of Computer Applications [2019 Batch]

VI Semester

Course Type		Course Code	Course Title	Course Outcome
DSCC		BCA204A61	**Design and Analysis of Algorithms**	1. Design space and time efficient algorithms. 2. Analyze time complexity for searching and sorting algorithms. 3. Evaluate optimization problems using greedy method and dynamic programming techniques. 4. Compare traversal techniques for trees and graphs. 5. Create state space trees using backtracking.
DSCC		BCA204A62	**Artificial Intelligence**	1. Evaluate heuristic, best first, mean end analysis, game playing and minimize search techniques. 2. Illustrate functional predicates, conditional, list and array using Lisp, syntax and semantics of knowledge based systems. 3. Explain Natural Language processing methods, Neural network architecture and expert system.
DSCP		BCA2P4A61	**Project**	1. Design application software using programming languages. 2. Manage connectivity between front end and back end application.
Elective Group*	DSEC	BCAA04A61	**Mobile Application**	1. Demonstrate the principles of Android and windows Operating System. 2. Explain techniques of using Android software development tools. 3. Develop android programs and deploy on virtual mobile device.
	DSEL	BCAAL2A61	**Mobile Application Practical**	1. Create GUI applications using built in widgets and components. 2. Customize android applications with layouts and rich interactive interface.
	DSEC	BCAB04A61	**Multimedia Tools and Application**	1. Classify the usage of multimedia elements and editing tools. 2. Interpret lossy and lossless compression algorithms for text and image. 3. Apply image, audio, video, animation capturing, processing and rendering. 4. Techniques in multimedia environment develop multimedia projects using authoring tools.
	DSEL	BCABL2A61	**Multimedia Tools and Application Practical**	1. Customize brochures, banners, invitations and newsletters using photoshop, corel draw and publisher. 2. Manage audio and video tracks using a/v editing tools. 3. Develop multimedia projects using authoring tools.
Elective Groups for Students who had opted for Data Analytics	DSEC	BCAC04A61	**Big Data Analytics Using Python**	1. Design python programs using string, lists, dictionaries, and tuples and set data types. 2. Apply the object oriented concepts, functions and file handling in python programs. 3. Select NumPy, pandas and mathplotlib packages to analyze and visualize the data.
	DSEL	BCACL2A61	**Big Data Analytics Using Python Practical**	1. Adopt object oriented concepts, user defined data types, functions and data science concepts in python.

				2. Develop python programs using sequential, decision making and iterative constructs.
	DSEC	**BCAD04A61**	**Data Visualization Techniques**	1. Illustrate stories and dashboards from datasets and extract the insights of data. 2. Construct data visualization using charts, histogram and box plots. 3. Analyze datasets visually using tableau.
	DSEL	**BCADL2A61**	**Data Visualization Practical**	1. Design dashboards and stories for datasets. 2. Formulate data visualization for pivot table, bubble chart, box plot and guage using QlikView.