

Programme Matrix: Bachelor of Science – Data Science [2023]



Kristu Jayanti College

AUTONOMOUS Bengaluru

Reaccredited 'A++' Grade by NAAC | Affiliated to Bengaluru North University

FACULTY OF SCIENCES

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Programme Outcomes

After successful completion of B.Sc. Data Science programme, a student will be able to:

PO1: integrate scientific temper; spirit of enquiry, humanism and reform

PO2: apply scientific knowledge and skills ethically for societal development and entrepreneurship

PO3: design, execute and interpret the results of experiments in Data Science involving programming concepts, mathematical, statistical foundation and visualisations techniques

PO4: appraise programming skills by implementing the structure and development methodologies of analytical processing.

PO5: infer a modern scientific IT tool and techniques to solve problems in the area of Data Science.

Date of Approval: 10/2/23

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FACULTY OF SCIENCE
KRISTU JAYANTI COLLEGE AUTONOMOUS
K. Narayanapura, Kothanur PO
Bengaluru - 560077



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I Semester			
Course Type	Course Code	Course Title	Course Outcomes
DSC	21BCA2T311	C Programming	<ol style="list-style-type: none"> understand the basic programming concepts to provide solutions for computational problems implement programs using the concepts of operators, selection and iterative constructs construct modular programs using arrays and strings develop solutions for real world problems with derived data types illustrate the usage of pointers and perform input/output operations on files.
DSC	21BCA2L211	C Programming Practical	<ol style="list-style-type: none"> develop C programs using sequential, conditional and iterative constructs design programs using user defined and derived data types, string operations and functions in C language apply structures, files and pointers in C Program.
DSC	22CDS2T411	Mathematical Foundation for Data Science	<ol style="list-style-type: none"> understand the concepts of differentiation and fundamental theorems in differentiation and apply in problems evaluate line and multiple integrals apply the concepts and theorems of vector calculus solve first order linear, homogeneous and higher order differential equations.
AECC	22CDS2T412	Computing and Programming Fundamentals	<ol style="list-style-type: none"> understand pseudo code, flowchart, algorithm and control structures for computational problems articulate the number system conversions distinguish software and programming paradigms analyze computing paradigms with case study
AECC	22ENG1T312	Musings in English Literature	<ol style="list-style-type: none"> articulate the relevant issues of society through the imbibed knowledge of prose identify and appreciate nuances of poetry implement the basic concepts of grammar and its usage.
AECC	21HIN1T312	Hindi Kahani aur Prayajanmulak Hindi	<ul style="list-style-type: none"> हिन्दी कहानी विधा का ज्ञान ग्रहण करने की क्षमता का विकास। विद्यार्थियों में सामाजिक यथार्थ और मुल्यांकन करने का विकास। विद्यार्थियों में कहानी विधा का वर्णन करने की क्षमता का विकास। विद्यार्थियों में कहानी का विश्लेषण और भाषा कौशल में प्रवीणता।
AECC	22AEN1T311	Listening and Comprehension in English	<ol style="list-style-type: none"> Identify the barriers to listening and describe the key components that contribute to effective listening Use their grammatical knowledge to refine their speech and writing Analyse complex human situations and challenges that emerge from the prescribed texts.

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II Semester			
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DSC	21BCA2T321	Data Structures	<ol style="list-style-type: none"> 1. understand dynamic memory management, recursive functions and data structures. 2. identify suitable sorting and searching algorithms for data structure applications 3. implement operations on linear data structures. 4. summarize the linked list concepts, operations and its application 5. construct tree data structure and perform its operations
DSC	21BCA2L221	Data Structures Practical	<ol style="list-style-type: none"> 1. implements solution to problems using iteration and recursion 2. develop programs for linear data structures and its operations 3. design programs for non-linear data structures and its operation.
DSC	22CDS2T421	Basic Statistical Analysis using R	<ol style="list-style-type: none"> 1. categorization of different types of data, as well as their organization and visual representation 2. formulate summary measures evaluation, such as measures of central tendency, dispersion, skewness and kurtosis 3. perceive the knowledge of correlation, regression analysis, regression diagnostics, partial and multiple correlations 4. identify different types of data reflecting independence and association between two or more attributes.
DSC	22CDS2T422	Operating System and Networks	<ol style="list-style-type: none"> 1. understand the concepts of different operating systems like, compare batch, time sharing, and real time and distributed operating system 2. apply CPU scheduling, disk scheduling, and memory management 3. classify network architectures and interprocess communication 4. formulate the solution for routing and congestion problems using routing algorithm
AECC	22ENG1T322	Glimpses: Readings from English Literature	<ol style="list-style-type: none"> 1. Identify themes and connotations within prose 2. Illustrate literary knowledge to appreciate poetry 3. Construct grammatically correct sentences following the rules of grammar

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AECC	21KANIT322	Saahithya Sangama II	<ul style="list-style-type: none"> • ಸಾಹಿತ್ಯದಲ್ಲಿ ವ್ಯಕ್ತವಾಗಿರುವ ಮಾನವೀಯ ಮೌಲ್ಯಗಳನ್ನು ಅರಿಯುವರು. • ಸಾಹಿತ್ಯದಲ್ಲಿ ಅಡಗಿರುವ ಸಾಮಾಜಿಕ ಮೌಲ್ಯಗಳನ್ನು ಅರಿಯುವರು. • ಯುದ್ಧದಿಂದಾಗುವ ಅನಾಹುತಗಳನ್ನು ಅರಿಯುವರು. • ಮಾನ್ಯವಿಲ್ಲದ ಜಾತಿ ಬೇಧಭಾವಗಳ ಬಗ್ಗೆ ಅರಿಯುವರು. • ಜೀವನ ಕೌಶಲವನ್ನು ಅಭಿವೃದ್ಧಿ ಪಡಿಸಿಕೊಳ್ಳುವರು.
AECC	21HINIT322	Hindi Kavitha aur Anuvaad Koushal	<ol style="list-style-type: none"> 1. हिन्दी कविता का विश्लेषण एवं समझने की योग्यता का विकास। 2. विद्यार्थियों में सामाजिक यथार्थ और मूल्यांकन करने का विकास। 3. कविता में वर्णित कथा का वर्णन एवं काव्य सृजन करने का विकास। 4. अनुवाद एवं भाषा कौशल में प्राविण्यता।
AECC	22AENIT321	Conversation Practice in English	<ol style="list-style-type: none"> 1. identify the prerequisites of successful speaking skills and implement them where required 2. apply their grammatical skills to produce error-free speech and writing in everyday communication 3. evaluate contemporary issues and appraise literary responses to present crises.

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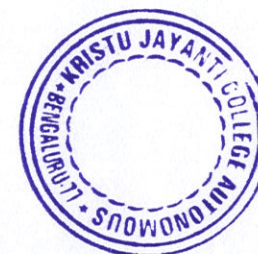
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III Semester			
Course Type	Course Code	Course Title	Course Outcomes
DSC	22CDS2T331	Object Oriented Programming using Java	<ol style="list-style-type: none"> 1. understand the basic object-oriented concepts in java programming. 2. design and analyze reusable programs using the concepts of inheritance, interfaces and packages 3. identify and design the concepts of multithreading and exception handling to develop efficient and error free codes 4. summarize the concept of event driven GUI and create applications using AWT concepts. 5. demonstrate a client server architecture using RMI.
DSC	22CDS2L231	Object Oriented Programming using Java Practical	<ol style="list-style-type: none"> 1. develop java programs using object oriented programming concepts. 2. design GUI based applications using frames. 3. create client server applications using RMI
DSC	22CDS2T332	Relational Database Management System	<ol style="list-style-type: none"> 1. understand the relational model of data 2. develop Entity-Relationship diagrams to illustrate common database use cases 3. apply normalization to enhance the database design 4. determine the concepts in constraints, indexes, views, triggers and exceptional handling 5. create PL/SQL programs to implement the concepts of triggers, cursors and exceptional handling.
DSC	22CDS2L232	Relational Database Management System Practical	<ol style="list-style-type: none"> 1. understand the usage of basic SQL queries. 2. manage primary and foreign key constraints in the database. execute 3. PL/SQL program to insert and retrieve data from database.
DSC	22CDS2T333	Mathematical Concepts of Data Science	<ol style="list-style-type: none"> 1. evaluate basics of matrices like determinant, rank and inverse of a matrix using elementary transformations 2. solve the system of homogeneous and non-homogeneous linear m equations in variables by using concept of rank of matrix, find eigen values and eigen vectors 3. explain vector space, subspace, linear span, basis and dimension 4. interpret linear transformation and fundamental concepts of rank nullity theorem, inner product space.

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AECC	21ENGI332	Symphony of English Literature	<ol style="list-style-type: none"> 1. identify the themes and relevant issues through the study of prose and poetry 2. develop the skill to identify the pertinent themes and characters in the novel 3. implement new approaches in speaking and writing skills
AECC	21KANIT332	Saahithya Sangama III	<ul style="list-style-type: none"> • ಸಾಹಿತ್ಯದಲ್ಲಿ ಅಡಗಿರುವ ವಿವಿಧ ಸಾಮಾಜಿಕ ಮೌಲ್ಯ ಮತ್ತು ಜನಾಭಿಮಾನಗಳನ್ನು ಅರಿಯುವುದು. • ಭಾಷಾ ಶಿಲಪವನ್ನು ಅಭಿವೃದ್ಧಿ ಪಡಿಸಿಕೊಳ್ಳುವುದು. • ವಿದ್ಯಾರ್ಥಿಗಳು ತಮ್ಮ ಜೀವನದ ವರ್ತಮಾನದ ಘಟನೆಗಳ ಕುರಿತು ಚರ್ಚಿಸುವುದು. • ಹರಿಹರಯ ವಯಸ್ಸಿನಲ್ಲಿ ಅರಿಯಬೇಕಾಗಿರುವ ಕಾಂತ್ಯ-ಸೌಹಾರ್ದತೆಯ ಕುರಿತು ವಿಶ್ಲೇಷಿಸುವುದು. • ಜೀವನದಲ್ಲಿ ಮಾನವನು ಬೆಳೆಸಿಕೊಳ್ಳಬೇಕಾದ ಬಹುಮುಖ್ಯ ಅದರ್ಶ, ತತ್ವಗಳ ಕುರಿತು ಚರ್ಚಿಸುವುದು.
AECC	21HINI332	Hindi Natak Sahitya aur Sanchar Maadhyam evam Hindi	<ol style="list-style-type: none"> 1. हिन्दी नाटक विधा को समझना और अभिनय करने की योग्यता का विकास। 2. विद्यार्थियों में सामाजिक यथार्थ और मुल्यांकन करने का विकास। 3. नाटक लेखन और पठन में रुचि एवं सृजनात्मक कौशल्य का विकास। 4. संचार माध्यम कला में प्राविण्यता।
AECC	21AENI331	Essential English Reading	<ol style="list-style-type: none"> 1. Recognize the techniques of effective reading and demonstrate their competence in comprehension. 2. Articulate their thoughts and structure written compositions as needed in official contexts 3. Formulate their responses to contemporary challenges that emerge from the prescribed texts.

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IV Semester			
Course Type	Course Code	Course Title	Course Outcomes
DSC	22CDS2T341	Probability and Inferential Statistics	<ol style="list-style-type: none"> 1. acquire knowledge of basic concept of probability theory and laws governing them 2. apply addition and multiplication probability law and discriminate probability distributions as discrete -binomial, Poisson; and continuous- normal 3. understand testing of hypotheses. Relate to tests of significance for means, difference of mean, proportions, difference of proportions and independence of attributes. 4. Differentiate parametric and non-parametric tests.
DSC	22CDS2L241	Probability and Inferential Statistics Practical	<ol style="list-style-type: none"> 1. perceive the concept of basic probability and its terminologies 2. understand the calculation concept of random variables and identify the characteristics of discrete distributions- binomial, Poisson, negative binomial, geometric, hyper geometric and continuous distribution- normal 3. calibrate type I error, type II error and develop test of significance for means, difference of mean, proportions, and difference of proportions 4. apply non –parametric tests.
DSC	22CDS2T342	Concepts of Datawarehousing and Datamining	<ol style="list-style-type: none"> 1. understand the concepts of data warehousing and data mining 2. apply the methodologies used for analysis of data 3. analyze various techniques which enhance the data modelling 4. discuss and compare various approaches with other techniques in data mining
DSC	22CDS2L242	Concepts of Datawarehousing and Datamining Practical	<ol style="list-style-type: none"> 1. learn how to build data mining model and query it 2. understand the algorithms of data mining by implementing with the real time dataset 3. develop skills by using the data mining software for solving practical problems
DSC	22CDS2T343	Foundation of Data Science	<ol style="list-style-type: none"> 1. understand the basic concepts in data science and apply them in real-world problems 2. use appropriate tools and technology to collect, process, transform, summarize, and visualize data. 3. identify the categorical and numerical data types in each data set
AECC	21ENG1T342	Ruminations of English Literature	<ol style="list-style-type: none"> 1. articulate the relevant social issues and thematic representation in prose and poetry 2. analyse the characters, plot, setting and themes of novel 3. acquire vital employability skills and employment opportunities with in-depth knowledge of writing skills

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AECC	21KANIT342	Saahithya Sangama IV	<p>ಸಾಹಿತ್ಯದಲ್ಲಿ ಅಡಗಿರುವ ವಿವಿಧ ಸಾಮಾಜಿಕ ಪೌಲ್ಯ ಮತ್ತು ಜವಾಬ್ದಾರಿಗಳನ್ನು ಅರಿಯುವರು.</p> <p>ಭಾಷಾ ಕೌಶಲವನ್ನು ಅಭಿವೃದ್ಧಿ ಪಡಿಸಿಕೊಳ್ಳುವರು.</p> <p>ವಿದ್ಯಾರ್ಥಿಗಳು ತಮ್ಮ ಜೀವನದಲ್ಲಿ ಧಾರ್ಮಿಕ ಸಹಿಷ್ಣುತೆಯ ಮಹತ್ವವನ್ನು ಚರ್ಚಿಸುವರು.</p> <p>ಶ್ರೀಸಾಮಾನ್ಯನ ಬದುಕಿನ ಸಮಸ್ಯೆಗಳು, ಬವಣೆಗಳು ಹಾಗೂ ಪರಿಹಾರಗಳನ್ನು ವಿಶ್ಲೇಷಿಸುವರು.</p> <p>ದಮನಿತ ಲೋಕದ ಶೋಷಣೆಯ ಭಿನ್ನ ರೂಪಗಳ ಕುರಿತು ಚರ್ಚಿಸುವರು.</p>
AECC	21HINIT342	Hindi Laghu Upanyas aur Bhasha Ke Vividh roop	<ul style="list-style-type: none"> • हिंदी उपन्यासों का ज्ञान ग्रहण और समझने की योग्यता का विकास। • विद्यार्थियों में सामाजिक यथार्थ और मुल्यांकन करने का विकास। • लघु उपन्यास की कथा का वर्णन और विश्लेषण करने की क्षमता का विकास। • भाषा के विविध रूपों एवं भाषा कौशल में प्राविण्यता।
AECC	21AENIT341	Fundamentals of English Written Communication	<ol style="list-style-type: none"> 1. Examine the features of effective writing and demonstrate their skills in complex, non-formulaic writing 2. Identify and fix common stylistic errors in written English 3. Analyze the representation of cross-cutting issues in literary works.
AECC	21INCIT341	India and Indian Constitution	<ol style="list-style-type: none"> 1. Evaluate the philosophy of the Constitution and its structure 2. Appraise the powers and functions of various offices under the Constitution 3. Analyze the Indian values, Ideals and the role of Constitution in a Democracy.

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