DEPARTMENT OF COMPUTER SCIENCE WITH DATA ANALYTICS

Programme: B.Sc., Computer Science with Data Analytics

PO No.	Programme Outcomes Upon completion of the B.Sc. Degree Programme the graduate will be able to
PO-1	Acquiring knowledge of mathematics, statistics, science and computing appropriately to model the software applications, configure software platforms and analyse real time data in heterogeneous domains.
PO-2	The ability to design, implement, and evaluate a computational system to meet desired needs within realistic constraints.
PO-3	The ability to choose and apply appropriate techniques, skills, tools and methodologies to solve data science tasks.
PO-4	Communicating data science options and limitations that could meet organizational needs.
PO-5	Enhancing the understanding of professional, ethical, legal, security and social issues and responsibilities for the computing profession

PSO No.	Programme Specific Outcomes Upon completion of these courses the student would
PSO-1	Students will be able to employ algorithmic problem-solving skills to the problem at hand, including defining clear requirements to a problem, decomposing the problem, using efficient strategies to arrive at an algorithmic solution, and implementing solutions through programming in a suitable high-level language.
PSO-2	Students will be able to employ algorithmic problem-solving skills to the problem at hand, including defining clear requirements to a problem, decomposing the problem, using efficient strategies to arrive at an algorithmic solution, and implementing solutions through programming in a suitable high-level language.
PSO-3	Students will be able to visualize, curate, and prepare data for use with a variety of statistical methods and models / Software packages and recognize how the quality of the data and the means of data collection may affect conclusions.
PSO-4	Students will be able to think creatively, conceptualizing real-world problems from different perspectives and apply modern data science methods to one or more domains of application.
PSO-5	Students will be able to think creatively, conceptualizing real-world problems from different perspectives and apply modern data science methods to one or more domains of application.

Course Title	PROBLEM SOLVING AND PROGRAMMING IN C	
CODE	20DAUC101	
CO No.	Course Outcomes	Knowledge Level
CO-1	Demonstrate the basic concepts of Algorithms to solve problems	K2
CO-2	Define the fundamentals of C Programming	K1
CO-3	Distinguish between branching and looping concept	K4
CO-4	Understand Array Data structure, Functions, Structure, Union and Pointers to solve complex problems	K3
CO-5	Apply File concepts to data storage and manipulation	K3

Course Title	PROGRAMMING IN C LAB	
CODE	20DAUCP01	
CO No.	Course Outcomes	Knowledge Level
CO-1	Demonstrate branching and looping constructs	K2
CO-2	Distinguish between Iteration and Recursion	K4
CO-3	Construct C programs using arrays and functions	K3
CO-4	Make use of Pointers in C Programs	K3
CO-5	Build C programs for Biological Problems	K3

Course Title	DESCRIPTIVE STATISTICS	
CODE	20DAUA101	
CO No.	Course Outcomes	Knowledge Level
CO-1	Acquire knowledge about Statistical Methods and apply Diagrammatic and graphical representation	K2
CO-2	Analyze and infer the type of data by using measures of central value	K3
CO-3	Understand and apply measures of dispersion	K4
CO-4	Analyze the data and apply the Skewness, Kurtosis, Moments and Curve Fitting	K3
CO-5	Recognize and apply correlation and regression methods for finding the association between the dependent and independent variables.	K3

Course Title	DIGITAL FUNDAMENTALS AND ARCHITECTURE	
CODE	20DAUC202	
CO No.	Course Outcomes	Knowledge Level
CO-1	Acquire Knowledge on number systems and Boolean algebra	K2
CO-2	Interpret logic functions, circuits, truth tables, and Boolean algebra expressions for logic gates	K3
CO-3	Simplify the Boolean expressions and circuits using Karnaugh Maps	K3
CO-4	Outline the fundamentals of combinational logic design, Flip-Flop, computer buses, I/O Peripherals and various data transfer techniques	K2
CO-5	Outline the concept of Memory Organization and mapping Techniques	K2

Course Title	JAVA PROGRAMMING	
CODE	20DAUC203	
CO No.	Course Outcomes	Knowledge Level
CO-1	Understand the concept of object oriented programming through Java	K2
CO-2	Illustrate the syntax and semantics of Java	K2
CO-3	Apply the concept of Inheritance, Modularity, Concurrency and data persistence to develop java program	K3
CO-4	Apply the concept of Exceptions handling and Develop java programs for applets and graphics programming	K3
CO-5	Understand the fundamental concepts of AWT controls and layouts	K2

Course Title	JAVA PROGRAMMING LAB	
CODE	20DAUCP02	
CO No.	Course Outcomes	Knowledge Level
CO-1	Demonstrate the creation of objects, classes and methods and the concepts of constructor, methods overloading, Arrays, branching and looping	K2
CO-2	Develop Java programs using Strings, Interfaces and Packages	K3
CO-3	Construct Java programs using Multithreaded Programming and Exception Handling	K3
CO-4	Build Java programs for Applets and Graphics programming	K3
CO-5	Create data files and Design a page using AWT controls in Java programming	K3

Course Title	APPLIED PROBABILITY AND STATISTICS	
CODE	20DAUA202	
CO No.	Course Outcomes	Knowledge Level
CO-1	Understand and use various probability theories to solve real problem of Data Analytics.	K3
CO-2	Understand and use various probability distributions for different machine learning related task.	K3
CO-3	Perform hypothesis testing for specific domain	K3
CO-4	Perform tests of Significance for Small Samples and apply Chi Square Test	K4
CO-5	Understand and apply F-Test and Techniques for ANOVA	K3

Course Title	FUNDAMENTALS OF DATA STRUCTURES AND ALGORITHMS	
CODE	20DAUC304	
CO No.	Course Outcomes	Knowledge Level
CO-1	Understand the basic concepts of data structures and algorithms, how arrays, stacks, queues	K1
CO-2	Enhance the knowledge of Linked List and dynamic storage management.	K2
CO-3	Demonstrate the concept of Non Linear Data Structures	K3
CO-4	Demonstrate the concept of external sorting and Hash Tables	K3
CO-5	Design and implement various sorting and searching algorithms for applications and understand the concept of file organizations.	K2

Course Title	DATA ANALYTICS WITH PYTHON PROGRAMMING	
CODE	**20DAUC305**	
CO No.	**Course Outcomes**	**Knowledge Level**
CO-1	Apply decision making and repetition structures in program design.	K2
CO-2	Develop functions to improve readability of programs	K1
CO-3	Design the programs using Python data types such as tuples, strings, lists and dictionaries	K3
CO-4	Adopt file and exception handling mechanisms	K3
CO-5	Ability to build python program to solve real world problems	K3

Course Title	PRINCIPLES OF DATA SCIENCE	
CODE	**20DAUC306**	
CO No.	**Course Outcomes**	**Knowledge Level**
CO-1	Understand Data sources, generations, data formats, Data Evolution, Data from various domains	K2
CO-2	Learn Big Data Characteristics What, Why, When, Limitation of traditional approaches and models. Applications	K1
CO-3	Understand Current Analytical Architecture, Drivers of Big Data, Emerging Big Data Ecosystem & key roles	K2
CO-4	Enhance the knowledge of phase I in Data Analytics Lifecycle	K3
CO-5	Acquire knowledge of Data Preparation, Model Planning, Model Building, Communicate Results, Operationalize	K3

Course Title	DATA ANALYTICS WITH PYTHON PROGRAMMING LAB	
CODE	**20DAUCP03**	
CO No.	**Course Outcomes**	**Knowledge Level**
CO-1	Demonstrate branching and looping concepts	K2
CO-2	Develop code using Lists and Tuples	K2
CO-3	Construct programs using Strings, Functions and Sets	K3
CO-4	Build Code for Problems using numPy	K3
CO-5	Develop code using pyplot	K3

Course Title	LINEAR ALGEBRA	
CODE	**20DAUA303**	
CO No.	**Course Outcomes**	**Knowledge Level**
CO-1	Explain the concept/theory in linear algebra, to develop dynamic and graphical views to the related issues of the chosen topics as outlined in "course content," and to formally prove theorems	K2
CO-2	Recognize the basic applications of the chosen topics and their importance in the modern science	K3
CO-3	Develop simple mathematical models, and apply basic linear algebra techniques learned from the chosen topics to solve simple problems	K3
CO-4	Report and communicate effectively with others and present mathematical results in a logical and coherent fashion	K4
CO-5	Appraise the power and beauty of mathematics, and solve problems	K3

Course Title	DATABASE MANAGEMENT SYSTEMS	
CODE	20DAUC407	
CO No.	Course Outcomes	Knowledge Level
CO-1	Understand the basic concepts of DBMS, Data Modeling and Normalization	K1
CO-2	Understand and construct database using Structured Query Language (SQL) in Oracle9i environment	K2
CO-3	Attain a good practical skill of managing and retrieving of data using Data Manipulation Language (DML)	K2
CO-4	Understand and use built-in functions and enhance the knowledge of handling multiple tables	K3
CO-5	Learn basics of PL/SQL and develop programs using Cursors, Procedures, Functions, Package and Trigger	K2

Course Title	INTERNET AND WEB PROGRAMMING	
CODE	20DAUC408	
CO No.	Course Outcomes	Knowledge Level
CO-1	Understand the concept of Internet, XHTML document and create a basic web page using forms and Tables.	K2
CO-2	Create document with different styles and Identify the positioning of web page elements using Cascading Style Sheets.	K2
CO-3	Understand the basic concepts of JAVA SCRIPT.	K3
CO-4	Describe the concept of Arrays and Functions.	K3
CO-5	Develop applications using Objects and Events.	K3

Course Title	PRINCIPLES OF OPERATING SYSTEMS	
CODE	20DAUC409	
CO No.	Course Outcomes	Knowledge Level
CO-1	Understand the basic concepts of a process and its states	K1
CO-2	Acquire the knowledge of real storage and virtual storage	K2
CO-3	Procure the facts of processor scheduling by means of various scheduling algorithms	K2
CO-4	Understand the basic operations on primary and secondary storage disks	K3
CO-5	Get awareness about the functions of a file system. Able to relate UNIX and LINUX operating system	K2

Course Title	INTERNET AND WEB PROGRAMMING LAB	
CODE	20DAUCP04	
CO No.	Course Outcomes	Knowledge Level
CO-1	Design and develop their own web page	K2
CO-2	Design and develop programs using CSS	K2
CO-3	Implement the concept of functions in JavaScript	K3
CO-4	Implement the concept of arrays and strings.	K3
CO-5	Develop applications using Events and Objects.	K4

Course Title	DATA COMMUNICATION AND NETWORKING	
CODE	**20DAUA404**	
CO No.	**Course Outcomes**	**Knowledge Level**
CO-1	Understand data communication, TCP/IP and the OSI model.	K1
CO-2	Compare various types of transmission media and multiplexing	K2
CO-3	Demonstrate different error detection and correction, switching concepts.	K2
CO-4	Clarify networking and internetworking devices and network security	K3
CO-5	Understand Standard Client-Server Protocols	K3