



ST. THOMAS COLLEGE OF ARTS AND SCIENCE

Affiliated to the University of Madras | An ISO 9001:2015 Certified Institution

Koyambedu, Chennai- 107



DEPARTMENT OF COMPUTER SCIENCE WITH DATA SCIENCE

PROGRAMME NAME	BACHELOR OF COMPUTER SCIENCE WITH DATA SCIENCE
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PROGRAMME OUTCOMES

PO1: Understand the basic principles and concepts of Computer Science and Data Science with an integrate the knowledge gained in the domain with practical needs of the society and be an ethically and socially responsible Professional

PO2: Explore latest emerging technologies in diverse areas of Computer Science and inculcate skills for successful career, entrepreneurship and higher studies

PO3: Apply the concepts of Computer and practices via emerging technologies and Software development tools to solve pragmatic social concerns.

SEMESTER – I

SUBJECT CODE: TC21A	SUBJECT NAME: INTRODUCTION TO DATA SCIENCE
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CO1	Understand the fundamental concepts of data science.
CO2	Evaluate the data analysis techniques for applications handling large data and demonstrate the data science process.
CO3	Understand the concept of machine learning used in the data science process.
CO4	Visualize and present the inference using various tools.
CO5	Learn to think through the ethics surrounding privacy, data sharing.

SUBJECT CODE: TC211	SUBJECT NAME: DATA SCIENCE USING PYTHON LAB
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CO1	Demonstrate proficiency in handling of loops and creation of functions.
CO2	Identify the methods to create and manipulate lists, tuples and dictionaries.
CO3	Discover the commonly used operations involving regular expressions and file system
CO4	Interpret the concepts of Object-Oriented Programming as used in Python



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SUBJECT CODE: SM3AA SUBJECT NAME: ALLIED 1: MATHEMATICS - I

CO1	Students gain knowledge about basic concepts of Algebra.
CO2	Students gain knowledge about basic concepts of Theory of Equations.
CO3	Students gain knowledge about the basic concepts of Matrices
CO4	Students gain knowledge about basic concepts of Trigonometry and Calculus
CO5	Students gain knowledge about basic concepts of Calculus

SUBJECT CODE: SES1C SUBJECT NAME: HTML (NME)

CO1	To inculcate knowledge in Web basics and HTML basics
CO2	To understand the structure of HTML and various tags.
CO3	To gain knowledge of HTML and basic tools that every web page coder needs to know
CO4	To understand the concepts of tables.
CO5	To implement modern web pages with HTML.

SEMESTER – II

SUBJECT CODE: TC22A SUBJECT NAME: JAVA AND DATA STRUCTURE

CO1	Students will be able to develop Java Standalone applications and Applets
CO2	Choose the appropriate data structure for modeling a given problem.

SUBJECT CODE: TC221 SUBJECT NAME: DATA STRUCTURES USING JAVA LAB

CO1	Write functions to implement linear and non-linear data structure operations
CO2	Suggest appropriate linear and non-linear data structure operations for solving a given problem

SUBJECT CODE: SM3AE SUBJECT NAME: ALLIED 2: MATHEMATICS - II

CO1	Students gain knowledge about basic concepts of Differential Equations.
CO2	Students gain knowledge about basic concepts of Laplace Transforms.
CO3	Students gain knowledge about basic concepts of Vector Analysis.
CO4	Students gain knowledge about basic concepts of Calculus
CO5	Students gain knowledge about basic concepts of Vector Differentiation



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SUBJECT CODE: SE523

SUBJECT NAME: HTML LAB (NME)

CO1	To understand the programming with HTML.
CO2	To apply and design an HTML page with all structure tags.
CO3	To understand the concept of hyperlinks.
CO4	To create an HTML page to demonstrate the usage of frames.
CO5	To implement modern web pages with HTML.

SEMESTER – III

SUBJECT CODE:

SUBJECT NAME: RELATIONAL DATABASE

MANAGEMENT SYSTEM

CO1	Describe basic concepts of database system
CO2	Design a Data model and Schemas in RDBMS
CO3	Competent in use of SQL
CO4	Analyze functional dependencies for designing robust Database

SUBJECT CODE:

SUBJECT NAME: PL/SQL LAB

CO1	Implement the DDL, DML commands and constraints
CO2	Create, Update and query on the database
CO3	Design and implement simple project with Front End and Back End

SUBJECT CODE:

SUBJECT NAME: ALLIED: STATISTICS - I

CO1	To Know the uses of statistics in society
CO2	Organize, manage and present data
CO3	Analyze the statistical data graphically using frequency distribution and cumulative frequency distribution
CO4	Analyze statistical data using measures of central tendency, dispersion and location
CO5	To understand correlation between continuous variables and association between categorical variables



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SEMESTER – IV

SUBJECT CODE:

SUBJECT NAME: DATA ANALYTICS

CO1	Handle missing data in the real-world data sets by choosing appropriate methods
CO2	Summarize the data using basic statistics. Visualize the data using basic graphs and plots
CO3	Identify the outliers if any in the data set
CO4	Choose appropriate feature selection and dimensionality reduction
CO5	Techniques for handling multi-dimensional data

SUBJECT CODE:

SUBJECT NAME: DATA ANALYTICS LAB

CO1	Will be able to understand and use python data science libraries as a tool for data analytics
CO2	Will be able to create Python codes for the above techniques
CO3	Will create visualizations using python

SUBJECT CODE:

SUBJECT NAME: ALLIED STATISTICS – II

CO1	To understand the basic concept of Probability
CO2	To identify the characteristics of different discrete and continuous distributions
CO3	To identify the type of statistical situation to which different distributions can be applied
CO4	To comprehend the Sampling distributions
CO5	To understand how to apply statistical tests to get information from data

SUBJECT CODE: ENV4B

SUBJECT NAME: ENVIRONMENTAL STUDIES

CO1	Multidisciplinary nature of environmental studies and resources
CO2	To be familiar with the usage of the Ecosystem
CO3	To understand the concepts of Biodiversity and Conservation
CO4	To get knowledge about Environmental Acts
CO5	To learn about Environmental pollution types, causes, effects and controls



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SEMESTER – V

SUBJECT CODE:

SUBJECT NAME: OPERATING SYSTEM

CO1	Understand the structure and functions of operating system
CO2	Compare the performance of Scheduling Algorithms
CO3	Analyze resource management techniques

SUBJECT CODE:

SUBJECT NAME: COMPUTER NETWORKS

CO1	Analyze different network models
CO2	Describe, analyze and compare a number of data link, network and transport layer
CO3	Analysing key networking protocols and their hierarchical relationship in the conceptual model like TCP/IP and OSI

SUBJECT CODE:

SUBJECT NAME: DATA VISUALIAZATION

CO1	Design and create data visualizations
CO2	Conduct exploratory data analysis using visualization
CO3	Craft visual presentations of data for effective communication
CO4	Use knowledge of perception and cognition to evaluate visualization design alternatives
CO5	Design and evaluate color palettes for visualization based on principles of perception
CO6	Apply data transformations such as aggregation and filtering for visualization
CO7	Use Python to develop interactive visualizations

SUBJECT CODE:

SUBJECT NAME: DATA VISUALIAZATION LAB

CO1	Describe the main concepts of data visualization
CO2	Create ad-hoc reports, data visualizations, and dashboards using Tableau Desktop
CO3	Identifying stories and insights in data
CO4	Preparing data for visualization
CO5	Creating several different charts using Tableau



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SUBJECT CODE: SUBJECT NAME: ELECTIVE : MOBILE APPLICATION DEVELOPMENT FOR MACHINE LEARNING

CO1	Android App Development with Machine Learning
CO2	Targeted user behavior patterns
CO3	Provide suggestions as well as recommendations for search requests
CO4	Suggest apps which will reduce human interference

SUBJECT CODE: SUBJECT NAME: ELECTIVE : MOBILE APPLICATION DEVELOPMENT FOR MACHINE LEARNING – LAB

CO1	Develop components and different Layout for mobile application development framework for android
CO2	Develop Simple GUI application with the Use of Built in components and widgets.
CO3	Create databases to store application data locally
CO4	Test and show the results on emulators or on physical handheld devices

SUBJECT CODE: VAE5Q SUBJECT NAME: VALUE EDUCATION

CO1	To learn about philosophy of Life and Individual qualities.
CO2	To learn and practice social values and responsibilities.
CO3	To learn more about interdependence of all beings.
CO4	To learn more on Social Evils
CO5	To understand the importance of value-based living

SEMESTER – VI

SUBJECT CODE: SUBJECT NAME: CLOUD COMPUTING

CO1	To explain and apply levels of services of Cloud
CO2	To describe the security aspects in the cloud

SUBJECT CODE: SUBJECT NAME: INTERNET OF THINGS

CO1	Use of Devices, Gateways and Data Management in IoT
CO2	Design IoT applications in different domain and be able to analyze their performance
CO3	Implement basic IoT applications on embedded platforms.



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SUBJECT CODE:

SUBJECT NAME: MACHINE LEARNING

CO1	Implement different machine learning algorithm techniques
CO2	Apply the algorithms to a real-world problem, optimize the models learned and report on the expected accuracy that can be achieved by applying the models
CO3	Apply appropriate data sets to the Machine Learning algorithms
CO4	Identify Machine Learning algorithms to solve real world problems
CO5	Apply Machine Learning algorithms to solve real world problems

SUBJECT CODE:

SUBJECT NAME: MACHINE LEARNING LAB

CO1	Design and evaluate the unsupervised models through python in built functions
CO2	Evaluate the machine learning model algorithms by python programming
CO3	Design and apply various reinforcement algorithms to solve real time complex problems
CO4	Design and develop the code for the recommender system using Natural Language processing

SUBJECT CODE:

SUBJECT NAME: BLOCKCHAIN TECHNOLOGY

CO1	State the basic concepts of block chain
CO2	Paraphrase the list of consensus
CO3	Demonstrate and interpret working of Hyper ledger Fabric
CO4	Implement SDK composer tool
CO5	explain the Digital identity for government

SUBJECT CODE:

SUBJECT NAME: MINI PROJECT

CO1	To understand the real time software development environment
CO2	Requirement for developing a computer-based solution already exists and the different stages of system development life cycle is to be implemented successfully
CO3	Projects based on system level implementation
CO4	Each one must independently take different modules of the work and must submit the report
CO5	These are projects which involve research and development