

B.sc (Data Analytics)

Program Outcomes (POs) of B.sc (Data Analytics)		
1	Basic knowledge	An ability to apply knowledge of basic mathematics, science and domain knowledge to solve the computational problems
2	Discipline knowledge	An ability to apply discipline –specific knowledge to solve core and/or applied computational problem
3	Experiments and practice	An ability to plan and perform experiments and practices and to use the results to solve computational problems.
4	Tools Usage	Apply appropriate technologies and tools with an understanding of limitations.
5	Profession and society practice	Demonstrate knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to professional
6	Environment and sustainability	Understand the impact of the computational solutions in societal and environmental contexts, and demonstrate the knowledge and need for sustainable development.
7	Ethics	Apply ethical principles and commit to professional ethics and responsibilities and norms of the professional practice.
8	Individual and team work	Function effectively as an individual, and as a member or leader in diverse/multidisciplinary teams.
9	Communication	An ability to communicate effectively.
10	Life-long learning	Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the context of technological changes.

Course Outcome - B.sc (DA) 1st Semester	
After the completion of the course, students will be able to:	
Mathematics (UGCA 1901):C101	
Course Code	Course Outcomes
C101.1	define various mathematical set notations.
C101.2	explain different logical terms used in basic mathematics.
C101.3	illustrate various operations and formulas by matrix algebra.
C101.4	summarize the finite number of quantities in AP and GP.
Fundamentals of Computer and IT (UGCA1902) : C102	
Course Code	Course Outcomes
C0102.1	explain the concept of input and output devices of Computers.
C0102.2	classify types of computers, their processing and networking with other computing systems and devices.
C0102.3	analyze operating system and its working to solve problems related to operating systems.
C0102.4	describe word processing, Spreadsheet and Presentation Graphics Software skills.
C0102.5	make use of the Internet safely, legally, and responsibly.
Problem solving Using C (UGCA1903): C103	
Course Code	Course Outcomes
C0103.1	construct the logical flow used in programming.
C0103.2	designs algorithms for solving various real life problems.
C0103.3	develop programs using C.
C0103.4	define data types and statements for programs.
C0103.5	explain various concepts of C Programming languages.
Problem solving Using C Laboratory (UGCA1905):C103*	
Course Code	Course Outcomes
C0103*.1	select the right statements for the program
C0103*.2	experiment with different input values
C0103*.3	test output with boundary condition
C0103*.4	distinguish between various control statements and data types.
C0103*.5	develop programs for various problems
Fundamentals of Computer and IT Laboratory (UGCA1906): C102*	
Course Code	Course Outcomes
C0102*.1	explain the Open Office (Word processing, Spreadsheets and Presentation).
C0102*.2	identify the editor, spread sheet and presentation software.

C0102*.3	define documentation and accounting operations.
C0102*.4	plan how to perform presentation skills
English (BTHU103-18): C104	
Course Code	Course Outcomes
C104.1	explain the fundamentals and tools of communication.
C104.2	make use of various Verbal and Non-verbal communication techniques.
C104.3	develop skills in printing jobs through basic understanding of a variety of designing tools.
C104.4	examine the issues relating to the Language of communication.
C104.5	list of Workshops are included to enhance professional skills.
English Laboratory (BTHU104-18):C104*	
Course Code	Course Outcomes: At the end of course, the students will be able to
C104*.1	demonstrate the Basics of Technical Communication
C104*.2	develop the basic proficiency in reading & listening, comprehension, writing and speaking skills among students
C104*.3	formulate in order to comprehend spoken and written English language, particularly the language of their chosen technical field.
C104*.4	select various techniques to enhance verbal communication
C104*.5	make use of various softwares for Technical communication
Human Values, De-addiction and Traffic Rules (HVPE101-18): C105	
Course Code	Course Outcomes
C105.1	determine the essential complementarity between 'VALUES' and 'SKILLS' to ensure sustained happiness and prosperity which are the core aspirations of all human beings.
C105.2	summarize major idea's , values , beliefs and experience that have shaped human history and culture.
C105.3	elaborate The Role of a human being in ensuring harmony in society and nature.
C105.4	distinguish Between ethical and unethical practices and start working out the strategy to actualize a harmonious environment where ever they work.
Mentoring and Professional Development(BMPD102-18): C106	
Course Code	Course Outcomes
C106.1	improve themselves by setting and working towards individual goals.
C106.2	demonstrate the importance of moral & ethical values that exemplify professionalism
C106.3	develop physical fitness, wellness & sports to promote a healthy lifestyle
C106.4	construct various analytical & training methods for their development.
C106.5	utilize physical activity as a tool to manage stress, pressure & work in life.

Course Outcome - B.sc (DA) 2nd Semester	
After the completion of the course, students will be able to:	
Probability and Statistics(UGCA1985): C201	
Course Code	Course Outcomes
C201.1	analyzing different random variables and functions.
C201.2	summarize the basic concepts of probability.
C201.3	describe various statistical formulas.
C201.4	calculate averages of different type of data.
Database Management Systems(UGCA1922): C202	
Course Code	Course Outcomes
C202.1	explain basic concepts of DBMS.
C202.2	discover, using SQL, solutions to a broad range of query and data update problems.
C202.3	demonstrate an understanding of normalization theory and apply such knowledge to the normalization of a database.
C202.4	examine the concept of Transaction and Query processing in DBMS.
Object Oriented Programming using C++(UGCA1909): C203	
Course Code	Course Outcomes
C203.1	elaborate the programming from real world examples.
C203.2	explain Object oriented approach for finding Solutions to various problems with the help of C++ language.
C203.3	construct computer based solutions to various real-world problems using C++.
C203.4	make use of various concepts of object oriented approach towards problem solving.
Object Oriented Programming using C++ Laboratory (UGCA1910): C203*	
Course Code	Course Outcomes
C203*.1	explain programming from real world examples.
C203*.2	discuss Object oriented approach for finding Solutions to various problems with the help of C++ language.
C203*.3	construct computer based solutions to various real-world problems using C++
C203*.4	make use of various concepts of object oriented approach towards problem solving
Probability and Statistics Laboratory (UGCA1985): C201*	
Course Code	Course Outcomes
C201*.1	demononstrate and use of open source statistical tool.

C201*.2	apply various operations/ formulas using open source statistical tool.
C201*.3	make use of various measures of dispersion.
C201*.4	make use of probability functions.
Database Management Systems Laboratory(UGCA1922): C202*	
Course Code	Course Outcomes
C202*.1	develop to understand various queries and their execution
C202*.2	discover database using SQL DML/DDI commands.
C202*.3	define and enforce integrity constraints on a database
C202*.4	explain Programming PL/SQL including stored procedures, stored functions, cursors, packages
C202*.5	construct design new database and modify existing ones for new applications and reason about the efficiency of the result
Environmental Studies(EVS102-18): C204	
Course Code	Course Outcomes
C204.1	identify the environmental problems at local and national level through literature and general awareness.
C204.2	examine the visiting wildlife areas, environmental institutes and various personalities who have done practical work on various environmental Issues.
C204.3	choose environmental issues and critically analyze them to explore the possibilities to mitigate these problems.
C204.4	identify about their roles and identities as citizens, consumers and environmental actors in a complex, interconnected world.
Mentoring and Professional Development(BMPD202-18): C205	
Course Code	Course Outcomes
C205.1	improve themselves by setting and working towards individual goals.
C205.2	demonstrate the importance of moral & ethical values that exemplify professionalism
C205.3	develop physical fitness, wellness & sports to promote a healthy lifestyle
C205.4	construct various analytical & training methods for their development.
C205.5	utilize physical activity as a tool to manage stress, pressure & work in life.

Course Outcome - B.sc (DA) 3rd Semester	
After the completion of the course, students will be able to:	
Operating System (UGCA1923): C301	
Course Code	Course Outcomes
C301.1	evaluate various types of operating systems.

C301.2	explain different resource managements performed by operating system.
C301.3	define the architecture in terms of functions performed by different types of operating systems.
C301.4	analyze the performance of different algorithms used in design of operating system components.
C301.5	compare the key properties of different types of operating systems.
Data Warehouse and Mining (UGCA1931): C302	
Course Code	Course Outcomes
C302.1	explain the need of Data Warehousing & Mining.
C302.2	evaluate the Transactional and Analytical data models.
C302.3	analyze the real-life applications where data mining can be applied.
C302.4	apply different data mining algorithms on wide range of data sets.
Data Structures (UGCA 1915): C303	
Course Code	Course Outcomes
C303.1	apply appropriate constructs of Programming language, coding standards for application development.
C303.2	select appropriate data structures for problem solving and programming.
C303.3	illustrate the outcome of various operations on data structures.
C303.4	identify appropriate searching and/or sorting techniques for wide range of problems and data types.
C303.5	distinguish between various types of data structures
Operating System Laboratory (UGCA1926): C301*	
Course Code	Course Outcomes
C301*.1	discuss the installation and configuration of different operating systems
C301*.2	explain programs for different scheduling algorithms
C301*.3	evaluate various commands in Vi editor
C301*.4	identify the dual boot installation
C301*.5	demonstrate commands in shell programming
Data Warehouse and Mining Laboratory (UGCA1937): C302*	
Course Code	Course Outcomes
C302*.1	apply different data mining tools used to analyze data.
C302*.2	evaluate different data mining algorithms to analyze data.
C302*.3	define effective visualization for representing data.
C302*.4	classify programming using WEKA/ R tool.
Data Structures Laboratory (UGCA 1918): C303*	
Course Code	Course Outcomes
C303*.1	develop programs using Dynamic memory allocation
C303*.1	create different data structures in C/ C++

C303*.1	define various operations of all data structures in programming language.
C303*.1	illustrate the outcome of various operations with the help of examples.
C303*.1	create programs to implement various types of searching and sorting algorithms
Programming in Python(UGCA1914): C304	
Course Code	Course Outcomes
C304.1	explain environment, datatypes, operators used in Python.
C304.2	compare Python with other programming languages.
C304.3	outline the use of control structures and numerous native data types with their methods.
C304.4	design user defined functions, modules, files, and packages and exception handling methods.
C304.5	show solutions for Object Oriented Programming Concepts.
Programming in Python Laboratory (UGCA1914): C304*	
Course Code	Course Outcomes
C304*.1	simplify various programming like data types and control structures of Python.
C304*.2	demonstrate different data structures.
C304*.3	construct modules and functions.
C304*.4	illustrate concept of object oriented programming.
C304*.5	determine file handling.
Mentoring and Professional Development(BMPD202-18): C305	
Course Code	Course Outcomes
C305.1	improve themselves by setting and working towards individual goals.
C305.2	demonstrate the importance of moral & ethical values that exemplify professionalism
C305.3	develop physical fitness, wellness & sports to promote a healthy lifestyle
C305.4	construct various analytical & training methods for their development.
C305.5	utilize physical activity as a tool to manage stress, pressure & work in life.

Course Outcome - B.sc (DA) 4th Semester	
After the completion of the course, students will be able to:	
Data Visualization (UGCA2004): C401	
Course Code	Course Outcomes
C401.1	make use of basic and advanced techniques of information visualization and scientific visualization.

C401.2	explain the techniques of the visualization process.
C401.3	show the view of visual perception, the visualized data and the actual visualization, interaction and distorting techniques.
C401.4	define various perception tools and techniques.
Digital Marketing(UGCA1947): C402	
Course Code	Course Outcomes
C402.1	define new media such as mobile, search and social networking.
C402.2	how to use digital marketing for multiple goals within a larger marketing and/or media strategy.
C402.3	explain the major digital marketing channels - online advertising: Digital display, video, mobile, search engine, and social media.
C402.4	evaluate a comprehensive digital marketing plan and strategy.
R Programming (UGCA1946): C403	
Course Code	Course Outcomes
C403.1	identify the key components of R programming Language.
C403.2	define the concept of data Science.
C403.3	differentiate between vectors and arrays.
C403.4	outline the usage of data frames, lists, factors, tables and R structures.
Big Data Analytics (UGCA2006):C404	
Course Code	Course Outcomes
C404.1	explain the need of Big Data.
C404.2	define the architecture of Big Data.
C404.3	show environment for creating Big Data Applications.
C404.4	analyze basic applications of Big Data.
Data Visualization Laboratry (UGCA2005):C401*	
Course Code	Course Outcomes
C401*.1	design effective data visualizations to communicate information to the viewer.
C401*.2	identify appropriate data that can be used in order to create a visualization.
C401*.3	organize data and visualizations in order to prepare them for reuse.
C401*.4	implement visualization applications.
Digital Marketing Laboratry (UGCA1953): C402*	
Course Code	Course Outcomes
C402*.1	familiarizing with the key elements of a digital marketing strategy.
C402*.2	define common digital marketing tools such as SEO, Social media and Blogs.
C402*.3	learn to manage the major digital marketing channels.

C402*.4	execute a comprehensive digital marketing strategy and plan.
R Programming Laboratory (UGCA1952) : C403*	
Course Code	Course Outcomes
C403*.1	write programs for arrays and matrices.
C403*.2	execute data frames and lists.
C403*.3	differentiate between arrays from vectors.
C403*.4	implement factors in R
C403*.5	execute minor projects using R.
Mentoring and Professional Development(BMPD402-18): C405	
Course Code	Course Outcomes
C405.1	improve themselves by setting and working towards individual goals.
C405.2	demonstrate the importance of moral & ethical values that exemplify professionalism
C405.3	develop physical fitness, wellness & sports to promote a healthy lifestyle
C405.4	construct various analytical & training methods for their development.
C405.5	utilize physical activity as a tool to manage stress, pressure & work in life.

Course Outcome - B.sc (DA) 5th Semester	
After the completion of the course, students will be able to:	
Web Designing (UGCA1927): C501	
Course Code	Course Outcomes
C501.1	create pages with simple tags in HTML.
C501.2	design webpages with multiple sections or frames.
C501.3	explain how to link webpages through hypertext or images a links.
C501.4	outline the key web designing concepts using java script.
C501.5	design forms with special controls using HTML.
Web Designing Laboratory (UGCA1928): C501*	
Course Code	Course Outcomes
C501*.1	design pages with simple tags in HTML.
C501*.2	create web pages with Audio and Video content in it.
C501*.3	illustrate the movement from one web page to another.
C501*.4	implement advanced web designing concepts using java script.
C501*.1	execute a small web based project for the benefit of society.
Distributed Databases (UGCA2031): C502	
Course Code	Course Outcomes

C502.1	design trends in distributed systems.
C502.2	apply network virtualization in distributed environment.
C502.3	build remote method invocation and objects.
C502.4	identify issues in distributed database systems and reliability techniques.
Computer Networks(UGCA1913): C503	
Course Code	Course Outcomes
C503.1	outline the characteristics of various protocols.
C503.2	define different network technologies and their application.
C503.3	identify Hardware and software components for designing network.
C503.4	compare the performance of different network media.
C503.5	identify various configuration settings.
Linux Operating System (UGCA2021): C504	
Course Code	Course Outcomes
C504.1	define the evolution of Open Source operating systems.
C504.2	select environment for working on open source operating system like Linux.
C504.3	explain resource management in Linux.
C504.4	design scripts in Linux.
C504.5	elaborate user level privileges.
Computer Networks Laboratory (UGCA1916): C503*	
Course Code	Course Outcomes
C503*.1	outline the key features of various protocols.
C503*.2	implement network configuration settings for an operating system.
C503*.3	prepare different types of cables for networking.
C503*.4	design network model using network simulation tool.
C503*.5	implement various setting on FTP, Proxy and other servers.
Linux Operating System (UGCA2024): C504*	
Course Code	Course Outcomes
C504*.1	prepare the environment for installation and use of Linux operating system.
C504*.2	implement C programs using gcc compiler.
C504*.3	implement virtualization and write Shell Scripts.
C504*.4	execute commands related to grantinf and revoking user priviledges.
Minor Project: C505*	
Course Code	Course Outcomes
C505*.1	demonstrate a sound technical knowledge of their selected project topic
C505*.2	demonstrate a sound technical knowledge of their selected project topic

C505*.3	design engineering solutions to complex problems utilising a systems approach
C505*.4	construct an engineering project.
C505*.5	explain the knowledge, skills and attitudes of a professional engineer.
Summer Institutional Training: C506*	
Course Code	Course Outcomes
C506*.1	apply knowledge and skills they learned in previous classes to solve real-life problems.
C506*.2	make use of techniques, skills and modern engineering tools for engineering practice.
C506*.3	develop communication, interpersonal and other critical skills in the job interview process
C506*.4	adapt the professional and ethical responsibilities.
C506*.5	analyze the functioning of internship organization and recommend changes for improvement in processes.
Mentoring and Professional Development(BMPD202-18): C507*	
Course Code	Course Outcomes
C507*.1	improve themselves by setting and working towards individual goals.
C507*.2	demonstrate the importance of moral & ethical values that exemplify professionalism
C507*.3	develop physical fitness, wellness & sports to promote a healthy lifestyle
C507*.4	construct various analytical & training methods for their development.
C507*.5	utilize physical activity as a tool to manage stress, pressure & work in life.

Course Outcome - B.sc (DA) 6th Semester	
After the completion of the course, students will be able to:	
Advance Web Technologies(UGCA2019): C601	
Course Code	Course Outcomes
C601.1	define web data and XML document handling.
C601.2	explain AJAX and relevance.
C601.3	how to perform basic CRUD database operations in a Dynamic Website.
C601.4	summarize web services and their development.
Advance Web Technologies Laboratry (UGCA2020): C601*	
Course Code	Course Outcomes
C601*.1	provide skills to design and develop dynamic web sites.

C601*.2	work independently for database programming for web applications.
C601*.3	define the concepts of jQuery methods, AJAX, Bootstrap and REACT.
C601*.4	connect Website with an Database Server and perform basic CRUD operations.
C601*.5	develop market ready website, to be used by clients.
Recommender Systems(UGCA2037): C602	
Course Code	Course Outcomes
C602.1	explain basic techniques and problems in the field of recommender systems.
C602.2	evaluate the types of recommender systems: non-personalized, content based, collaborative filtering.
C602.3	apply algorithms and techniques to develop Recommender Systems that are widely used in the Internet industry.
C602.4	develop state-of-the-art recommender systems.
Cloud Computing(UGCA1936): C603	
Course Code	Course Outcomes
C603.1	define the concept of cloud computing.
C603.2	outline the benefits of migrating to a cloud solution for different applications.
C603.3	compare different virtualization technologies.
C603.4	identify various resources needed to build cloud.
C603.5	explain various security threats to cloud.
Machine Learning(UGCA1950): C604	
Course Code	Course Outcomes
C604.1	define the concept of machine learning.
C604.2	outline the key characteristics of machine learning algorithms.
C604.3	compare the performance of different machine learning algorithms.
C604.4	design solution for basic problems using machine learning algorithms.
C604.5	explain the concept of reinforcement learning.
Cloud Computing Laboratry (UGCA1942): C603*	
Course Code	Course Outcomes
C603*.1	identify major commercial projects in the field of cloud computing.
C603*.2	design basic cloud applications.
C603*.3	execute basic functionalities of open source tools like Open Stack.
C603*.4	implement virtualization.
C603*.5	define major services provided by cloud service provider.
Machine Learning Laboratry(UGCA1956): C604*	
Course Code	Course Outcomes

C604*.1	differentiate between various data types.
C604*.2	implement programs for various Learning algorithms
C604*.3	compare different machine learning algorithms.
C604*.4	choose the right algorithm for different problems.
C604*.5	apply Machine Learning algorithms to solve real world problems.
Major Project : C605*	
Course Code	Course Outcomes
C605*.1	demonstrate a sound technical knowledge of their selected project topic
C605*.2	demonstrate a sound technical knowledge of their selected project topic
C605*.3	design engineering solutions to complex problems utilising a systems approach
C605*.4	construct an engineering project.
C605*.5	explain the knowledge, skills and attitudes of a professional engineer.
Mentoring and Professional Development(BMPD602-18): C606*	
Course Code	Course Outcomes
C606*.1	improve themselves by setting and working towards individual goals.
C606*.2	demonstrate the importance of moral & ethical values that exemplify professionalism
C606*.3	develop physical fitness, wellness & sports to promote a healthy lifestyle
C606*.4	construct various analytical & training methods for their development.
C606*.5	utilize physical activity as a tool to manage stress, pressure & work in life.