

DEPARTMENT OF ARTIFICIAL INTELLIGENCE AND DATA SCIENCE

code of subject	Name of subject	CO No.	Course Outcomes
BTES301	Engineering Mathematics – III	1	Students able to apply the concepts and properties of Laplace transformation
		2	Students able to apply the concepts of inverse Laplace Transform with its property to solve Linear Differential Equation with given initial conditions.
		3	Students able to find Fourier transform of given function by using properties and identities
		4	Students able to Solve various partial differential equations such as one and two dimensional heat flow equations with appropriate way.
		5	Students able to Construct required analytic function and Evaluate contour integral using residue and Cauchy's integral theorem
BTAIC302	An Introduction to Artificial Intelligence	1	Discuss Meaning, Scope and Stages of Artificial Intelligence
		2	Understand and Implement Problem Space and Search Strategies for Solving problems.
		3	Discuss the Search Techniques and Knowledge Representation.
		4	Select most appropriate path finding algorithm amongst available candidate solution
		5	Apply search for solving Constraint Satisfaction Problems
BTAIC303	Data Structure and Algorithm using Python	1	Write programs using basic concepts of Python Programming
		2	Apply the concepts of functional and object oriented Programming to solve given problem.
		3	Implement algorithms for linear data structures like arrays, linked structures, stacks, queues
		4	Implement algorithms for non-linear data structures like Trees and Graphs.
		5	Discuss the computational efficiency of the principal algorithms for sorting, searching, and hashing
BTESC304	Computer Architecture & Operating Systems	1	Understand the theory and architecture of central processing unit & Analyze some of the design issues in terms of speed, technology, cost, performance

		2	Use appropriate tools to design verify and test the CPU architecture & Learn the concepts of parallel processing, pipelining and inter processor communication
		3	Understand the architecture and functionality of central processing unit & Exemplify in a better way the I/O and memory organization, Memory management systems, Virtual Memory
		4	Describe and explain the fundamental components of a computer operating system
		5	Define, restate, discuss, and explain the policies for scheduling, deadlocks, memory management, synchronization, system calls, and file systems.
BTESC305	Digital Logic & Signal Processing	1	Use the basic logic gates and various reduction techniques of digital logic circuit in detail
		2	Understand mathematical description and representation of various signals and systems
		3	Develop input output relationship for linear shift invariant system and understand the convolution operator for discrete time system
		4	Understand use of different transforms and analyze the discrete time signals and systems
		5	Understand the concept of correlation, regression and spectral density
BTAIC401	Data Analysis	1	Apply preprocessing techniques to convert raw data so as to enable further analysis
		2	Apply exploratory data analysis and create insightful visualizations to identify patterns
		3	Understand how to derive the probability density function of transformations of random variables and use these techniques to generate data from various distributions
		4	Understand the statistical foundations of data science and analyze the degree of certainty of predictions using statistical test and models
		5	Introduce machine learning algorithms for prediction and to derive insights
BTAIC402	Database Management System	1	Master the basic concepts of relational DBMS and its types
		2	Perform various types of operations on relational databases using DDL, DML, DCL in SQL
		3	Understand the concept of how non-relational databases differ from relational databases from a practical perspective
		4	Master the basic concepts of designing NoSQL database management system.
		5	Able to Identify what type of NoSQL database to implement based on business requirements

BTHM403	Basic Human Rights	1	To understand the history of human rights
		2	To respect others caste, religion, region and culture.
		3	To be aware of their rights as Indian citizens
		4	To be able to understand the importance of groups and communities in the society
		5	To be able to realize the philosophical and cultural basis and historical perspective of human rights
BTBS404	Probability Theory and Random Processes	1	Students will be able to Understand the fundamental knowledge of the concepts of probability and have knowledge of standard distributions which can describe real life phenomenon
		2	Students will be able to Understand the basic concepts of one and two dimensional random variables and apply in engineering applications
		3	Students will be able to Understand and apply the concept of correlation and spectral densities
		4	Students will be able to Understand and apply the concept of Linear Regression
		5	Students will have Knowledge about Estimating and testing a hypothesis, using critical values to draw conclusions and determining probability of making errors in hypothesis tests
BTAIPE405B	Image Processing & Computer Vision	1	To implement fundamental image processing techniques required for computer vision
		2	Understand Image formation process
		3	To perform morphological operations on image.
		4	Extract features form Images and do analysis of Images
		5	To develop applications using computer vision techniques
BTAIC501	Computer Network and Cloud Computing	1	Analyze the requirements for a given organizational structure and select the most appropriate networking architecture and technologies
		2	Specify and identify deficiencies in existing protocols, and then go onto select new and better protocols.
		3	Have a basic knowledge of installing and configuring networking applications
		4	Understand the different cloud computing environments
		5	Apply concepts of virtualization and various cloud services to design, develop and deploying cloud applications.
BTAIC502	Machine Learning	1	Develop a good understanding of fundamental principles of machine learning

		2	Formulation of a Machine Learning problem
		3	Develop a model using supervised/unsupervised machine learning algorithms for classification/prediction/clustering
		4	Evaluate performance of various machine learning algorithms on various data sets of a domain.
		5	Design and Concrete implementations of various machine learning algorithms to solve a given problem using languages such as Python
BTAIHM503C	Knowledge Reasoning and AI Ethics	1	Apply the knowledge and reasoning based concepts
		2	Specify and identify the logical agents.
		3	Apply Probabilistic Reasoning & Uncertainty along with rules.
		4	Understand the human psychology and social ethics to use AI
		5	Apply concepts of virtualization and various cloud services to design, develop and deploying cloud applications.
BTAIPE504B	Soft Computing	1	Summarize the basic concept of soft computing and Neural network
		2	Choose appropriate activation and loss functions for neural network
		3	Demonstrate working of Feedforward and Backpropagation learning propagation.
		4	Implement simple neural network in python.
		5	Understand the need of fuzzy logic and genetic algorithm.
BTAIOE505C	Software Engineering and Testing	1	To use the techniques, skills, and modern engineering tools necessary for engineering practice.
		2	To design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability.
		3	To apply software testing knowledge and its processes to software applications.
		4	To identify various software testing problems and solving software testing problems by designing and selecting software test models, criteria, strategies and methods.
		5	To apply the techniques learned to improve the quality of software development
BTAIC601	Deep Learning	1	Implement deep learning models in Python using the Keras/PyTorch library and train them with real world datasets.
		2	Design convolution networks for image classification.

		3	Perform regularization, training optimization, and hyper parameter selection on deep models.
		4	Apply Recurrent Neural Networks for text and sequence classification.
		5	Apply Generative Deep Learning for denoising and Generating images
BTAIC602	Advanced Machine Learning	1	Develop a good understanding of fundamental of unsupervised learning.
		2	Formulation of Association Rules Mining and Recommendation Systems
		3	Interpret a model using Reinforcement Learning.
		4	Evaluate the time series data.
		5	Design and Concrete implementations using boosting.
BTAIPE603D	Web Development	1	Implement and analyze behavior of web pages using HTML and CSS
		2	Apply the client-side technologies for web development
		3	Apply the client-side technologies for web development
		4	Analyze the Web services and frameworks
		5	Apply the server side technologies for web development
BTAIOE604A	Big Data Analysis	1	Identify Big Data and its Business Implications.
		2	List the components of Hadoop and Hadoop Eco-System
		3	Access and Process Data on Distributed File System
		4	Develop Big Data Solutions using Hadoop Eco System
		5	Use Big data Framework, security and governance.
BTAIHM605B	Employability and Skills Development	1	Improve the soft skills and communication.
		2	Empower Arithmetic and Mathematical Reasoning and Analytical Reasoning and Quantitative Ability
		3	Use of grammar.
		4	Development in interview skills.
		5	Develop problem solving techniques.
BTAIC701	Natural Language Processing	1	Understand the basics of Natural language processing.
		2	Analyze the different language models and vector semantics.
		3	Understand the sequence labelling for text analysis.
		4	Implement text classification and sentiment analysis systems
		5	Implement recurrent network for language models and illustrate the NLP applications

BTAIC702	Advanced Computer Vision	1	Demonstrate a solid understanding of fundamental computer vision & image processing concepts.
		2	Apply various computer vision algorithms and techniques in image processing
		3	Apply various computer vision algorithms and techniques to solve real-world engineering problems, such as object recognition, motion analysis, and texture
		4	Analyze and interpret results obtained from computer vision algorithms, and critically evaluate their performance and limitations
		5	Implement and evaluate computer vision algorithms using programming languages and libraries commonly used in the field, such as Python and OpenCV
BTAIC703	Data Engineering	1	Understand the importance of data engineering and its workflow in managing and integrating data from various sources.
		2	Apply advanced data manipulation techniques using Excel functions and tools for efficient data processing.
		3	Utilize Power BI to connect, transform, and model data from diverse sources into meaningful relationships
		4	Employ Tableau to prepare and transform data through connections, blending, and calculated fields.
		5	Integrate and automate data pipelines across tools to streamline data workflows and promote collaboration.
BTAIPE704D	Full Stack Development	1	Implement and analyze behavior of web pages using HTML and CSS
		2	Apply the client-side technologies for web development
		3	Analyze the concepts of Servlet and JSP
		4	Analyze the Web services and frameworks
		5	Apply the server side technologies for web development
BTAIOE705D	Mobile Application Development	1	Understand Android architecture, activities and their life cycle.
		2	Apply the knowledge to design user interface using Android UI and Component.
		3	Describe Memory and File Operations in Android.
		4	Manage System Database, remote database operations using web services and Firebase
		5	Apply knowledge of map, location services, graphics, android system and background services.