KONGUNADU ARTS AND SCIENCE COLLEGE

(AUTONOMOUS)

COIMBATORE - 641029

DEPARTMENT OF

ARTIFICIAL INTELLIGENCE & MACHINE LEARNING

COURSE OUTCOME

(2025-2026 onwards)

Sub. Code: 25UAI101

Programme Code: 24	B.Sc. Artificial Intelligence and Machine Learning			
Title of the Paper: Core Paper 1 - C and C++ Programming				
Batch 2025 – 2026	**Hours/Week** 5	**Total Hours** 75	**Credits** 4	**Skill Development**

Course Objectives

1. To impart programming basics and fundamentals of C.
2. To make use of decision making and looping constructs for problem solving.
3. To gain understanding of arrays, pointers and file management in C.
4. To learn how to design and implement generic classes with **C++.**
5. To expose knowledge of constructor, destructor and function overloading.
6. To learn how to use pointers and develop code with reusability in C++.

Course Outcomes (CO)

K1 to K5	CO1	Remember the fundamentals of C programming.
	CO2	Understand the solutions for problems using decision making and branching concepts.
	CO3	Apply different operations on arrays, make use of functions, structures & unions and work efficiently with files.
	CO4	Analyze, design and implement C++ programs for complex problems, making good use of the features of the language such as classes &objects, function overloading, constructor and destructor.
	CO5	Evaluate the use of inheritance, pointers and polymorphism in C++.

Sub. Code: 25UAI1CL

Programme Code:24	**B.Sc. Artificial Intelligence and Machine Learning**			
Title of the Paper: Core Practical 1 - C and C++ Programming Lab				
Batch **2025 – 2026**	**Hours/Week** **5**	**Total Hours** **75**	**Credits** **2**	**Skill Development**

Course Objectives

1. To provide exposure to problem-solving through programming
2. To gain hands-on experience with the basic concepts of C/C++ programming language.

Course Outcomes (CO)

K1 to K5	CO1	Remember the basic programming concepts.
	CO2	Understand the use of control structures, arrays and structures.
	CO3	Apply friend functions, classes and objects.
	CO4	Analyze the overloading concepts.
	CO5	Evaluate the features of virtual functions and inheritance.

Sub. Code: 25UAI202

Programme Code:24	**B.Sc. Artificial Intelligence and Machine Learning**			
Title of the Paper: Core Paper 2 – Java Programming				
Batch **2025 – 2026**	**Hours/Week** **5**	**Total Hours** **75**	**Credits** **4**	**Skill Development**

Course Objectives

1. To understand object oriented programming concepts in a Java program.
2. To know the principles of packages, inheritance and interfaces.
3. To introduce the concepts of exception handling, multithreading and I/O streams.
4. To introduce the design of Graphical User Interface using applets and swing controls.

Course Outcomes (CO)

K1 to K5	CO1	Remember the principles of object-oriented programming in Java.
	CO2	Understand the solutions for problems using decision making and branching concepts.
	CO3	Apply inheritance, packages and interfaces.
	CO4	Analyze Java exception handling and applets with real time examples.
	CO5	Evaluate Input / Output file management in Java.

Sub. Code: 25UAI2CM

Programme Code:24	**B.Sc. Artificial Intelligence and Machine Learning**			
Title of the Paper: Core Practical 2 – Java Programming Lab				
Batch **2025 – 2026**	**Hours/Week** **5**	**Total Hours** **75**	**Credits** **2**	**Skill Development**

Course Objectives

1. To learn an object oriented way of solving problems using java.
2. To develop java applications using inheritance and polymorphism.
3. To write programs using interface and package for solving real time problems.
4. To understand how to design applications with threads, I/O streams and exceptions in Java.
5. To create the Graphical User Interface using Applets, AWT Components & Swing Components.

Course Outcomes (CO)

K1 to K5	CO1	Remember object-oriented way of solving problems in Java.
	CO2	Understand Java programs with inheritance and polymorphism concepts.
	CO3	Apply interface and package in Java to solve real time problems.
	CO4	Analyze Java programs with threads, I/O streams and exceptions.
	CO5	Evaluate GUI using Applets, AWT and Swing components.

Sub. Code: 25UAI303

Programme Code: 24	B.Sc. Artificial Intelligence and Machine Learning			
Title of the Paper: Core Paper 3 - Python Programming for Machine Learning				
Batch **2025 – 2026**	**Hours/Week** **4**	**Total Hours** **75**	**Credits** **4**	**Skill Development**

Course Objectives

1. To understand the basic concepts of programming in Python.
2. To write functions and pass arguments in Python.
3. To design program using object oriented concepts and exception handling in python.
4. To work with Numpy and Pandas module in Python.
5.

Course Outcomes (CO)

K1 to K5	CO1	Recall the basic syntax and structure of Python programming language
	CO2	Analyze the logical flow of Python programs involving expressions, statements, and control structures.
	CO3	Develop Python functions, use them for basic computations, and demonstrate the ability to write reusable functions.
	CO4	Develop complex data processing workflows using NumPy's structured arrays and advanced array manipulation techniques
	CO5	Evaluate the performance data analysis workflows using Pandas and visualize the results through various types of plots and graphs in Matplotlib.

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Sub. Code: 25UAI3CN

Programme Code: 24	B.Sc. B. Sc Artificial Intelligence and Machine Learning			
Title of the Paper: Core Practical 3 - Python Programming for Machine Learning Lab				
Batch **2025 – 2026**	**Hours/Week** **4**	**Total Hours** **60**	**Credits** **4**	**Skill Development**

Course Objectives

1. To understand the fundamental concepts of python programming.
2. To learn about recursive functions and searching algorithms in Python.
3. To develop programs using Numpy, Pandas and Scikit-learn libraries.

Course Outcomes (CO)

K3 to K5	CO1	Identify the basic terminologies of Python programming such as data types, conditional statements, looping statements, and functions..
	CO2	Develop programs with the implementation of operators & I/O operations
	CO3	Construct programs with features of Lists, Strings
	CO4	Analyse readable programs with files for Exception handling concepts.
	CO5	Evaluate python programs to illustrate Numpy, Pandas and Scikit-learn libraries.

Sub. Code: 25UAI3A3

Programme Code: 24	**B.Sc. B. Sc Artificial Intelligence and Machine Learning**			
Title of the Paper: Allied Paper 3: Distributed Operating System				
Batch **2025 – 2026**	**Hours/Week** **6**	**Total Hours** **90**	**Credits** **5**	**Employability**

Course Objectives

1. To Describe basic concepts of Operating System and Computer Networks.
2. To understand about naming, security, distributed file system.
3. To understand about message passing, remote procedure calls.
4. Understand the need of distributed shared memory, synchronization.
5. Understand the scope of resource, process management.

Course Outcomes (CO)

K1 to K5	CO1	Gain knowledge of distributed operating system architecture (Knowledge)
	CO2	Illustrate principles and importance of distributed operating system (Understand)
	CO3	Implement distributed client server applications using remote method invocation (Apply)
	CO4	Distinguish between centralized systems and distributed systems (Analyze)
	CO5	. Create stateful and state-less applications (Create)

Sub. Code: 25UAI404

Programme Code: 24	**B.Sc. Artificial Intelligence and Machine Learning**			
Title of the Paper: Core Paper 4 - R Programming				
Batch **2025 – 2026**	**Hours/Week** **4**	**Total Hours** **75**	**Credits** **4**	**Skill Development**

Course Objectives

1. To learn about fundamental data structures of R Programming.
2. To understand the important programming concepts and OOPS in R.
3. To gain understanding of R packages for basic statistics.

Course Outcomes (CO)

K1 to K5	CO1	Understand how to manipulate and operate on these data structures.
	CO2	Implement vectorized operations and perform common vector manipulations.
	CO3	Create and manipulate lists, perform list operations, and apply functions to list components.
	CO4	Apply control statements, Boolean operators, and recursive functions in R programming
	CO5	Analyze and apply statistical and machine learning models in R

Sub. Code: 25UAI4CO

Programme Code: 24	**B.Sc. B. Sc Artificial Intelligence and Machine Learning**			
Title of the Paper: Core Practical 4 - R Programming Lab				
Batch **2025 – 2026**	**Hours/Week** **4**	**Total Hours** **60**	**Credits** **3**	**Skill Development**

Course Objectives

1. To learn to install and configure R and RStudio.
2. To implement data structures and loop functions in R.
3. To execute basic operations in R.

Course Outcomes (CO)

K3 to K5	CO1	Understand the process of user input and how to implement basic functions in R
	CO2	Develop recursion to solve mathematical and computational problems Manipulate data structures such as vectors and data frames
	CO3	Implement R programs to solve problems and perform tasks and data visualization techniques using
	CO4	Evaluate various approaches for solving programming problems
	CO5	Solve mathematical problems, visualize data, and manage data structures efficiently

Sub. Code: 25UAI4A4

Programme Code: 24	**B.Sc. Artificial Intelligence and Machine Learning**			
Title of the Paper: Allied Paper 4 - Design and Analysis of Algorithms				
Batch **2025 – 2026**	**Hours/Week** **6**	**Total Hours** **90**	**Credits** **4**	**Employability**

Course Objectives

1. Gain a deep understanding of fundamental concepts in algorithms and Familiarize oneself with various algorithmic paradigms and techniques, such as divide and conquer, dynamic programming, greedy algorithms, and backtracking.
2. Develop the ability to design efficient algorithms to solve complex computational problems.
3. Become proficient in analyzing the time and space complexity of algorithms Understand the implications of different complexity classes on algorithm efficiency.
4. Learn to choose the appropriate paradigm for solving specific problems and understand their limitations and advantages.
5. Develop strong problem-solving skills through algorithmic challenges and exercises.
6. Learn to decompose complex problems into smaller, manageable sub problems and devise efficient algorithms to solve them.
7. Gain hands-on experience in implementing and analyzing algorithms to solve real-world problems.

Course Outcomes (CO)

K1 to K5	CO1	Understand the fundamentals of algorithmic problem-solving and Recognize the importance of algorithms in computing
	CO2	Apply implement divide and conquer algorithms such as Merge Sort, Quick Sort, and Strassen's Matrix Multiplication.
	CO3	Learn and apply greedy algorithms to solve problems like Minimum Spanning Tree, Huffman Coding, and the Knapsack problem
	CO4	Solve complex problems like Optimum Binary Search Trees, and shortest path algorithms using dynamic programming.
	CO5	Implement hashing techniques such as open hashing and closed hashing to optimize search operations in data structures.

Sub.Code:25UAI505

Programme Code: 24	**B.Sc. Artificial Intelligence and Machine Learning**			
Title of the Paper : Core Paper 5 - Machine Learning Techniques				
Batch	**Hours/Week**	**Total Hours**	**Credits**	**Skill Development**
2025 – 2026	**6**	**90**	**5**	

Course Objectives

1. To understand the basics of machine learning and learning system.
2. To introduce different types of linear models and applications.
3. To gain the understanding of constructing decision trees and probabilistic model.
4. To understand the concepts of tree and probabilistic models.
5. To implement the graphical models in machine learning.

Course Outcomes (CO)

K1 to K5	CO1	Understanding of the brain and the neuron model in machine learning contexts.
	CO2	Describe linear models and multi-layer perceptrons (MLP) in machine learning.
	CO3	Analyze the strengths and weaknesses of various probabilistic models, such as Gaussian Mixture Models
	CO4	Apply dimensionality reduction techniques and genetic algorithms for optimization problems.
	CO5	Implement a tracking method using Hidden Markov Models for a given problem.

Sub. Code:25UAI506

Programme Code: 24	**B.Sc. Artificial Intelligence and Machine Learning**			
Title of the Paper : Core Paper 6 - Introduction to Artificial Intelligence				
Batch **2025 – 2026**	**Hours/Week** **5**	**Total Hours** **75**	**Credits** **4**	**Skill Development**

Course Objectives

1. To represent and manipulate the knowledge using AI.
2. To learn different learning methods in AI to solve problems in real time applications.
3. To identify suitable machine learning algorithms for various type of learning problems.

Course Outcomes (CO)

K1 to K5	CO1	Remember the basic building blocks of AI. .
	CO2	Understand the various problem solving methods
	CO3	Apply symbolic notations to represent knowledge and reasoning to manipulate and derive new knowledge.
	CO4	Analyze different Planning methods to solve problems in real time applications.
	CO5	Evaluate learning from observation.

Sub. Code : 25UAI5CP

Programme Code: 24	**B.Sc. Artificial Intelligence and Machine Learning**			
Title of the Paper : Core Practical 5 - Machine Learning Techniques Lab				
Batch **2025 – 2026**	**Hours/Week** **6**	**Total Hours** **90**	**Credits** **4**	**Skill Development**

Course Objectives

1. To implement learning algorithms in machine learning using Python.
2. To build decision tree classification model in Python.
3. To write python code to build a Neural Network with Back propagation.
4. To demonstrate how classifiers work with Python code.
5. To evaluate the classifier model using Java API.

Course Outcomes

K3 to K5	CO1	Design and implement new learning algorithms in machine learning using Python.
	CO2	Apply a decision tree algorithm to build a classification model using Python.
	CO3	Evaluate the effectiveness of different activation functions and learning rates in a Neural Network with Backpropagation, and justify their impact on training performance."
	CO4	Analyze the various components and steps involved in the implementation of different classifiers in python.
	CO5	Apply a classifier model using Java classes/API

Sub Code : 25UAI5CQ

Programme Code: 24	B.Sc. Artificial Intelligence and Machine Learning			
Title of the Paper : Core Practical 6 - Data Analytics and Visualization Lab				
Batch **2025 – 2026**	**Hours/Week** **6**	**Total Hours** **90**	**Credits** **4**	**Skill Development**

Course Objectives

1. To understand the fundamental concepts of python programming.
2. To learn about recursive functions and searching algorithms in Python.
3. To develop programs using Numpy, Pandas and Scikit-learn libraries

Course Outcomes (CO)

K1 to K5	CO1	Remember the usage of simple data set in Advanced Excel.
	CO2	Understand the creations of various types of charts in Advanced Excel.
	CO3	Apply the concept of customization and formatting in Advanced Excel.
	CO4	Analysing and implementing the formatting, sorting, filtering techniques in Power Bi.
	CO5	Evaluatingaggregation, mapping, and interactive controls in Power Bi.

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Sub. Code: 25UAI607

Programme Code:	**B.Sc. Artificial Intelligence and Machine Learning**			
Title of the Paper: Core Paper 7 – Natural Language Processing				
Batch **2025 – 2026**	**Hours/Week** **5**	**Total Hours** **75**	**Credits** **4**	**Employability**

Course Objectives

1. To establish foundational understanding of NLP concepts.
2. To gain knowledge on syntactic parsing in NLP.
3. To describe elements of semantic analysis in NLP.
4. To appreciate the significance of NLG and machine translation.
5. To analyze various NLP techniques for information extraction.

Course Outcomes (CO)

K1 to K5	CO1	Recall the principles and concepts of Natural Language Processing
	CO2	Understand the techniques of text processing
	CO3	Analyze the issues in text data processing and identifying suitable methods
	CO4	Demonstrate how NLG and machine translation are used in real-world scenarios.
	CO5	Evaluate the limitations and advantages of various NLP techniques for extracting information.

Sub. Code: 25UAI608

Programme Code:	**B.Sc. Artificial Intelligence and Machine Learning**			
Title of the Paper: Core Paper 8 – Block Chain Technology				
Batch **2025 – 2026**	**Hours/Week** **4**	**Total Hours** **60**	**Credits** **4**	**Skill Development**

Course Objectives

1. To understand the fundamentals and types of block chain.
2. To know how smart contract works with block chain.
3. To study the benefits and use cases of block chain types.
4. To acquire knowledge on real life applications of block chain.

Course Outcomes (CO)

K1 to K5	CO1	Recall the fundamental concepts of Blockchain technology and its components, including the origin, blocks, and types of blockchain.
	CO2	Understand and explain the consensus mechanism in blockchain, decentralization, and distribution in blockchain networks
	CO3	Evaluate the effectiveness of different consensus protocols, including Proof of Burn and Sybil Attacks
	CO4	Analyze case studies on naive blockchain construction and hash cash implementation, exploring real-world blockchain applications and challenges.
	CO5	Apply applications of blockchain in various industries, including banking, healthcare, energy, real estate, and supply chains.

Sub.Code : 25UAI609

Programme Code: 24	**B.Sc. Artificial Intelligence and Machine Learning**			
Title of the Paper: Core Paper 9 – Generative AI				
Batch **2025 – 2026**	**Hours/Week** **5**	**Total Hours** **75**	**Credits** **4**	**Employability**

Course Objectives

1. Understand the core concepts of AI, unsupervised learning, classification, regression, clustering, and reinforcement learning.
2. Gain insight into the role and impact of Generative AI in modern applications, including natural language processing and image generation.
3. Learn about advanced generative models, including Boltzmann Machines, Autoencoders, and GANs, and their challenges.
4. Critically analyze the ethical concerns, privacy issues, and social implications related to the widespread use of Generative AI.
5. Explore the exponential growth patterns of AI technologies and trends towards Artificial General Intelligence (AGI).
6. Develop the ability to critically engage with the future of AI, including its potential effects on industry, jobs, and society.

Course Outcomes (CO)

K1 to K5	CO1	Define and recall the key concepts of AI, including unsupervised learning, classification, regression, clustering, and dimensionality reduction.
	CO2	Explain the difference between discriminative and generative AI models.
	CO3	Apply unsupervised learning techniques such as clustering, dimensionality reduction, and reinforcement learning to real-world problems.
	CO4	Analyze the challenges faced by Generative AI technologies, particularly in GANs and their application in image generation.
	CO5	Design innovative solutions and applications using Generative AI techniques to address complex problems in diverse fields (e.g., entertainment, healthcare, business).

Sub. Code : 25UAI6CR

Programme Code: 24	**B.Sc. Artificial Intelligence and Machine Learning**			
Title of the Paper: Core Practical 7 - Natural Language Processing Lab				
Batch	**Hours/Week**	**Total Hours**	**Credits**	**Skill Development**
2025 – 2026	**5**	**75**	**4**	

Course Objectives

1. To calculate similarity between words using NLP.
2. To know the significance of word sense disambiguation in NLP applications.
3. To learn the process of POS tagging and Lexical analyser.
4. To solve real time applications of semantic and sentiment analysis.

Course Outcomes (CO)

K3 to K5	CO1	Assess the effectiveness of various NLP libraries in computing word similarity.
	CO2	Implement word sense disambiguation techniques in an NLP application to improve accuracy.
	CO3	Recall the steps needed to perform part-of-speech (POS) tagging using the NLTK library.
	CO4	Analyze how the lexical analyzer identifies and classifies tokens in a sentence, and how it handles different sentence structures.
	CO5	Recall the concepts of semantic and sentiment analysis, and their importance in natural language processing (NLP).

Sub Code: 25UAI6Z1

Programme Code: 24	B.Sc. Artificial Intelligence and Machine Learning			
Title of the Paper: Project and Viva Voce***				
Batch 2025 – 2026	**Hours/Week 4**	**Total Hours 60**	**Credits 5**	**Employability/ Entrepreneurship**

Course Objectives

1. To acquire the knowledge about selecting the task based on their course skills.
2. To get the knowledge about analytical skills for solving the selected task.
3. To get confidence by implementing the task in a real time projects.

Course Outcomes (CO)

K3 to K5	CO1	Apply the programming skills for solving the project.
	CO2	Analyze the task and collect necessary information about the software development.
	CO3	Evaluating and Testing the task based on the software.
	CO4	Implementing the software for getting the Report.
	CO5	Implementing and analyzing real time project

MAJOR ELECTIVES

Programme Code: 24	B.Sc. Artificial Intelligence and Machine Learning			
Title of the Paper: Elective Paper - Internet of Things				
Batch	**Hours/Week**	**Total Hours**	**Credits**	**Employability**
2025 – 2026	**5**	**75**	**5**	

Course Objectives

1. To understand the fundamentals of Internet of Things.
2. To learn about the basics of IoT protocols.
3. To build a small low cost embedded system using Raspberry Pi.
4. To apply the concept of Internet of Things in the real world scenario.

Course Outcomes (CO)

K1 to K5	CO1	Analyze various protocols for IoT .
	CO2	Develop web services to access/control IoT devices.
	CO3	Design a portable IoT using Rasperry Pi.
	CO4	Deploy an IoT application and connect to the cloud.
	CO5	Analyze applications of IoT in real time scenario.

Smart Classroom / PowerPoint Presentation / Seminar / Quiz / Discussion / Flipped Class

Programme Code: 24	B.Sc. Artificial Intelligence and Machine Learning			
Title of the Paper: Elective Paper - Open Source Systems				
Batch **2025 – 2026**	**Hours/Week** **5**	**Total Hours** **75**	**Credits** **5**	**Employability**

Course Objectives

1. To introduce the fundamentals of Open source and Linux system.
2. To learn basic concepts of SQL statements.
3. To gain knowledge on fundamental concepts of PHP.
4. To understand core aspects of programming and features of the Python language.
5. To gain proficiency in Perl scripting.

Course Outcomes (CO)

K1 to K5	CO1	Assess the effectiveness of Open Source software versus proprietary software in terms of cost, security, and scalability."
	CO2	Recall and define MySQL commands.
	CO3	Develop complex PHP scripts using various concepts.
	CO4	Assess the advantages and disadvantages of using Python for various programming tasks.
	CO5	Evaluate the efficiency of the Perl script you wrote and identify any areas for improvement

Programme Code: 24	B.Sc. Artificial Intelligence and Machine Learning			
Title of the Paper: Elective Paper - Digital Forensics				
Batch	**Hours/Week**	**Total Hours**	**Credits**	**Employability**
2025 – 2026	**5**	**75**	**5**	

Course Objectives

1. To understand basic methodology of digital forensics.
2. To gain skills in digital evidence
3. To learn how to handle data acquisition and evidence gathering in digital forensic
4. To understand process, techniques and tools of digital evidences
5. To know the number of artifacts unique and specific to Windows and Linux system

Course Outcomes (CO)

K1 to K5	CO1	Remember the basics of digital forensic.
	CO2	Understand on Investigation and analyze digital evidence with cyber forensic.
	CO3	Apply on data acquisition and evidence gathering in digital forensic.
	CO4	Analyze on digital evidences.
	CO5	Evaluate on number of artifacts unique and specific to Windows and Linux system.

Programme Code: 24	B.Sc. Artificial Intelligence and Machine Learning			
Title of the Paper: Elective Paper - Data Analytics and Visualization				
Batch **2025 – 2026**	**Hours/Week** **5**	**Total Hours** **75**	**Credits** **5**	**Employability**

Course Objectives

1. Gain a deep understanding inAdvanced Excel.
2. Develop the ability to design efficient Data Analysis and Automation techniques.
3. Become proficient in Power BI.
4. Develop strong visualizations and relationships in Power BI.
5. Gain hands-on experience in implementing, analyzing and publishing Reports.

Course Outcomes (CO)

K1 to K5	CO1	Remember the Advanced Excel Functions and Formulas.
	CO2	Understand the Advanced Excel Data Analysis and Automation.
	CO3	Apply the Power BI in ecosystem and components.
	CO4	Analyse the Power BI Visualization and Modelling techniques.
	CO5	Evaluate the Power BI Service to publish reports.

Programme Code: 24	B.Sc. Artificial Intelligence and Machine Learning			
Title of the Paper: Elective Paper - Virtual Reality				
Batch 2025 – 2026	**Hours/Week 5**	**Total Hours 75**	**Credits 5**	**Employability**

Course Objectives

1. To understand the basics of virtual reality.
2. To study about basic geometric transformation and generic model of VR.
3. To develop animated virtual environment and compare with physical simulation.
4. To gain knowledge on applications and future of virtual reality.

Course Outcomes (CO)

K1 to K5	CO1	Understand the fundamentals of virtual reality.
	CO2	Recall basic geometric transformation and generic VR systems.
	CO3	Analyze on animate virtual environment and compare VR simulation with physical simulation.
	CO4	Evaluate basic components of VR and use of VRML.
	CO5	Implement on various applications and future of VR.

Programme Code: 24	B.Sc. Artificial Intelligence and Machine Learning			
Title of the Paper: Elective Paper - Artificial Intelligence in Cyber Security				
Batch **2025 – 2026**	**Hours/Week** **5**	**Total Hours** **75**	**Credits** **5**	**Employability**

Course Objectives

1. To gain knowledge on AI concepts and AI tools for cyber security.
2. To give AI solutions for cyber security threats.
3. To detect network anomaly and prevent frauds with GANs.
4. To evaluate AI arsenal and to prevent authentication abuse.

Course Outcomes (CO)

K1 to K5	CO1	Remember the basic concepts of AI and its tools for cyber security.
	CO2	Understand AI solutions for cyber security threats.
	CO3	Apply the fundamentals of Network anomaly detection with AI and authentication abuse prevention.
	CO4	Analyze the working knowledge fraud prevention with cloud AI solutions.
	CO5	Evaluate algorithms to test AI arsenal.

Programme Code: 24	B.Sc. Artificial Intelligence and Machine Learning			
Title of the Paper: Elective Paper - Design Thinking				
Batch **2025 – 2026**	**Hours/Week** **5**	**Total Hours** **75**	**Credits** **5**	**Employability**

Course Objectives

1. To understand the overview of design thinking.
2. To identify the key habits and attitudes of design thinking.
3. To study design thinking research methodology.
4. To understand the role of feedback in design thinking.
5. To apply design thinking in logistic industry.

Course Outcomes (CO)

K1 to K5	CO1	Understand the fundamentals of design thinking.
	CO2	Recall the key habits and attitudes of design thinking.
	CO3	Analyze the research methods for design thinking.
	CO4	Assess user feedback and loop
	CO5	Evaluate design thinking in Logistics industry.

Programme Code: 24	B.Sc. Artificial Intelligence and Machine Learning			
Title of the Paper: Elective Paper - Image and Speech Processing				
Batch **2025 – 2026**	**Hours/Week** **5**	**Total Hours** **75**	**Credits** **5**	**Employability**

Course Objectives

1. To understand the fundamentals of digital image.
2. To explain image enhancement approaches in spatial domain.
3. To learn the fundamental concepts of color image segmentation.
4. To study time domain methods for speech processing.
5. To analyze Linear Predictive Coding of speech signals.

Course Outcomes (CO)

K1 to K5	CO1	Understand digital image and speech fundamentals.
	CO2	Recall image enhancement approaches in spatial domain.
	CO3	Analyze fundamental concepts of color image segmentation.
	CO4	Evaluate time domain methods for speech processing.
	CO5	Analyze Linear Predictive Coding of speech signals.

Programme Code: 24	B.Sc. Artificial Intelligence and Machine Learning			
Title of the Paper: Elective Paper - Database Management Systems				
Batch **2025 – 2026**	**Hours/Week** **5**	**Total Hours** **75**	**Credits** **5**	**Employability**

Course Objectives

1. To learn the purpose of database systems and ER model.
2. To understand the relational model in DBMS and SQL fundamentals.
3. To provide knowledge about transaction processing and concurrency control.
4. To study data storage and query processing in database.

Course Outcomes (CO)

K1 to K5	CO1	Recall the purpose of database systems and ER model.
	CO2	Understand the relational model in DBMS for problem solving.
	CO3	Apply on manipulate data using SQL commands.
	CO4	Evaluate transaction processing and concurrency control in database.
	CO5	Analyze data storage and query processing in DBMS.

Programme Code: 24	B.Sc. Artificial Intelligence and Machine Learning			
Title of the Paper: Elective Paper - Data Mining and Warehousing				
Batch **2025 – 2026**	**Hours/Week** **5**	**Total Hours** **75**	**Credits** **5**	**Employability**

Course Objectives

1. To learn components and architecture of data warehouse.
2. To study business analysis tools in data warehouse.
3. To gain knowledge on tasks and functionalities of data mining.
4. To use mining frequent patterns, association rule & correlations in real time applications.
5. To learn different clustering analysis and its applications.

Course Outcomes (CO)

K1 to K5	CO1	Recall the components and architecture of data warehouse.
	CO2	Understand business analysis framework in data warehouse.
	CO3	Analyze tasks and functionalities of data mining.
	CO4	Apply mining frequent pattern, association rule & correlation in real time applications.
	CO5	Evaluate the output of different clustering procedures.

Programme Code: 24	B.Sc. Artificial Intelligence and Machine Learning			
Title of the Paper: Allied Paper 3 - Foundations of Robotics				
Batch 2025 – 2026	Hours/Week 6	Total Hours 75	Credits 5	Employability

Course Objectives

1. To learn the basics of robotics.
2. To understand the robot end effectors.
3. To learn the techniques used in robot mechanics.

Course Outcomes (CO)

K1 to K5	CO1	Remember the fundamentals of robotics and its components.
	CO2	Understand uses, benefits and cost analysis of Robotic grippers and end effectors.
	CO3	Apply the techniques of kinematics and dynamics of robotics.
	CO4	Analyze the importance of machine vision in Robotics.
	CO5	Evaluate the design and program for performing specific robotic applications.

Programme Code: 24	B.Sc. Artificial Intelligence and Machine Learning			
Title of the Paper: Allied Paper 4 - Big Data Analytics				
Batch **2025 – 2026**	**Hours/Week** **6**	**Total Hours** **75**	**Credits** **5**	**Employability**

Course Objectives

1. To understand big data platform and its use-cases.
2. To provide an overview of Hadoop and HDFS.
3. To know about anatomy of file operations in HDFS and Hadoop daemons.
4. To learn the architecture of Hadoop YARN and MapReduce.
5. To learn the role of R in Machine Learning and Data Analytics.

Course Outcomes (CO)

K1 to K5	CO1	Remember the fundamentals of Big data and its applications.
	CO2	Understand the components of Hadoop and HDFS configurations.
	CO3	Apply the HDFS file operations and daemons in Hadoop cluster.
	CO4	Analyze Apache Hadoop architecture in big data.
	CO5	Evaluate the machine learning model for data analysis using R.

Programme Code:24	B.Sc. Artificial Intelligence and Machine Learning			
Title of the Paper: Core Paper 10 - Artificial Neural Networks and Fuzzy Logic				
Batch 2025 – 2026	Hours/Week 5	Total Hours 75	Credits 4	Employability

Course Objectives

1. To understand the fundamentals of neural networks.
2. To explain the unsupervised neural network model with real life examples.
3. To show the differences and similarities between fuzzy sets and classical sets theories.

Course Outcomes (CO)

K1 to K5	CO1	Remember the basic concepts of neural networks.
	CO2	Under the algorithms used in unsupervised neural network models.
	CO3	Apply the technologies, principles of crisp set and fuzzy set.
	CO4	Analyze on crisp and fuzzy relations.
	CO5	Evaluate adaptive neuro fuzzy based inference systems and neuro fuzzy control with real life examples.

SKILL BASED SUBJECTS (SBS)

Sub Code : 24UGC3S1

Programme Code: 24	**B.Sc. Artificial Intelligence and Machine Learning**			
Title of the Paper: Skill Based Subject 1 - Cyber Security				
Batch **2025 – 2026**	**Hours/Week** **2**	**Total Hours** **30**	**Credits** **3**	**Skill Development**

Course Objectives

- The course introduces the basic concepts of Cyber Security
- To develop an ability to understand about various modes of Cyber Crimes and Preventive measures
- To understand about the Cyber Legal laws and Punishments

Course Outcomes (CO)

K1 to K5	CO1	To Understand the Concepts of Cybercrime and Cyber Frauds
	CO2	To Know about Cyber Terrorism and its preventive measures
	CO3	To Analyze about the Internet, Mobile Phone and E-commerce security issues
	CO4	To Understand about E-mail and Social Media Issues
	CO5	To Describe about various legal responses to Cybercrime

Sub Code: 25UAI4S2

Programme Code: 24	**B.Sc. Artificial Intelligence and Machine Learning**			
Title of the Paper: Skill Based Subject 2 – MongoDB Lab				
Batch 2025 – 2026	**Hours/Week 2**	**Total Hours 30**	**Credits 3**	**Skill Development**

Course Objectives

1. Understand the installation and configuration of MongoDB on Windows.
2. Learn how to create and manage databases and collections in MongoDB.
3. Implement CRUD (Create, Read, Update, Delete) operations effectively.
4. Explore advanced querying techniques, indexing, and performance optimization in MongoDB.

Course Outcomes (CO)

K3 to K5	CO1	Remember to Install and configure simple database applications on Windows and set up a working environment.
	CO2	Understand to Install and configure MongoDB on Windows and set up a working environment. Create, modify, and delete databases and collections in MongoDB.
	CO3	Apply document-level operations, including insertion, updating, and deletion.
	CO4	Analyse the performance of projection, sorting, limiting, and skipping methods to retrieve specific data efficiently.
	CO5	Evaluate the indexing techniques to optimize query performance in MongoDB.

Sub Code: 24UBI6S3

Programme Code: 24	**B.Sc. Artificial Intelligence and Machine Learning**			
Title of the Paper: Skill Based Subject 3 – Basics of IPR				
Batch 2025 – 2026	**Hours/Week 2**	**Total Hours 30**	**Credits 3**	**Skill Development**

Course Objectives

- To create awareness about recent trends in IPR and Innovation
- To explore the basic concepts IPR
- To focus upon trademarks, copyrights, patents, industrial designs and traditional knowledge.
- To learn more about managing IP rights and legal aspects.

Course Outcomes (CO)

K1 to K5	CO1	Know about basic concepts of IPR and patent
	CO2	Understand copyrights, industrial designs and geographical indication of goods.
	CO3	Differentiate between trademarks and trade secrets
	CO4	Acquire knowledge on parotection of traditional knowledge and plant varieties.
	CO5	Manage and protect IP Rights

EXTRA DEPARTMENT COURSE (EDC)

Sub.Code: 25UAI5XL

Programme Code: 23	B.Sc. Artificial Intelligence and Machine Learning			
Title of the Paper :EDC - Fundamental of Internet and Web Design Lab				
Batch 2025 – 2026	**Hours/Week** 2	**Total Hours** 30	**Credits** 3	**Employability**

Course Objectives

1. Students will learn to create well-structured, semantic HTML documents and style them effectively using CSS.
2. Students will gain proficiency in writing clean and efficient code, adhering to best practices in web development.
3. Students will be introduced to JavaScript programming concepts and learn how to use it to enhance the interactivity and functionality of web pages.
4. Impart knowledge and essential skills necessary to use the internet and its various components.
5. Use Google Apps for education effectively and to Create and develop various forms in Google and understand the concepts MS-Excel in advance

Course Outcomes (CO)

K 1 to K 5	**CO1**	Remember to design a HTML webpage
	CO2	Understand the structured content, heading styles and paragraphs
	CO3	Apply image and its properties
	CO4	Analyze the Google Drive
	CO5	Evaluate Google Forms.

PART IV
GENERAL BOARD PAPERS

Sub Code : 25EVS101

Programme Code: 24	**B.Sc Artificial Intelligence and Machine Learning**		
Title of the Paper : PART IV – Environmental Studies**			
Batch	**Hours / Week**	**Total Hours**	**Credits**
2025-2026	**2**	**30**	**2**

Course Objectives

1. The course will provide students with an understanding and appreciation of the complex interactions of man, health and the environment. It will expose students to the multi-disciplinary nature of environmental health sciences.

2. To inculcate knowledge and create awareness about ecological and environmental concepts, issues and solutions to environmental problems.
3. To shape students into good "Ecocitizens" thereby catering to global environmental needs.

4. This course is designed to study about the types of pollutants including gases, chemicals petroleum, noise, light, global warming and radiation as well as pollutant flow and recycling and principles of environmental pollution such as air, water and soil.

5. The course will address environmental stress and pollution, their sources in natural and workplace environments, their modes of transport and transformation, their ecological and public health effects, and existing methods for environmental disease prevention and remediation.

Course Outcomes

On successful completion of the course, the students will be able to

K1 to K5	CO 1	Understand how interactions between organisms and their environments drive the dynamics of individuals, populations, communities and ecosystems
	CO2	Develop an in depth knowledge on the interdisciplinary relationship of cultural, ethical and social aspects of global environmental issues
	CO3	Acquiring values and attitudes towards complex environmental socio-economic challenges and providing participatory role in solving current environmental problems and preventing the future ones
	CO4	To gain inherent knowledge on basic concepts of biodiversity in an ecological context and about the current threats of biodiversity
	CO5	To appraise the major concepts and terminology in the field of environmental pollutants, its interconnections and direct damage to the wildlife, in addition to human communities and ecosystems

Sub Code: 25VED201

Programme Code: 24	B. Sc Artificial Intelligence and Machine Learning		
Title of the Paper : Value Education - Moral And Ethics**			
Batch **2025-2026**	**Hours / Week** **2**	**Total Hours** **30**	**Credits** **2**

Course Objectives

- To impart Value Education in every walk of life.
- To help the students to reach excellence and reap success.
- To impart the right attitude by practicing self introspection.
- To portray the life and messages of Great Leaders.
- To insist the need for universal brotherhood, patience and tolerance.
- To help the students to keep them fit.
- To educate the importance of Yoga and Meditation.

Course Outcomes (CO)

K1 to K5	CO1	will be able to recognize Moral values, Ethics, contribution of leaders, Yoga and its practice
	CO2	will be able to differentiate and relate the day to day applications of Yoga and Ethics in real life situations
	CO3	can emulate the principled life of great warriors and take it forward as a message to self and the society
	CO4	will be able to Analyse the Practical outcome of practicing Moral values in real life situation
	CO5	could Evaluate and Rank the outcome of the pragmatic approach to further develop the skills

NON MAJOR ELECTIVE (NME)

Sub. Code : 25UHR3N1

Programme Code : 24	**B. Sc Artificial Intelligence and Machine Learning**		
Title of the Paper : Part IV - Non Major Elective - 1 ** Human Rights			
Batch	**Hours / Week**	**Total Hours**	**Credits**
2025 - 2026	**2**	**30**	**2**

Course Objectives

1. To prepare for responsible citizenship with awareness of the relationship between Human Rights, democracy and development.
2. To impart education on national and international regime on Human Rights.
3. To sensitive students to human suffering and promotion of human life with dignity.
4. To develop skills on human rights advocacy
5. To appreciate the relationship between rights and duties
6. To foster respect for tolerance and compassion for all living creature.

K1 to K5	CO1	To understand the hidden truth of Human Rights by studying various provisions in the Constitution of India
	CO2	To acquire overall knowledge regarding the Feminist perspectives in the Liberative Empowerment of Women
	CO3	To gain knowledge about various gender roles and stereotypes involved in the comprehension of gender equality and women's rights.
	CO4	To comprehend the legal provisions and policies that foreground the safety of children in the society and to promote awareness.
	CO5	To gain enhanced knowledge about sexual and gender minorities to recognize, celebrate and acknowledge the diversified forms of gender expressions and rights.

Sub. Code : 25UWR4N2

Programme Code : 24	**B. Sc Artificial Intelligence and Machine Learning**		
Title of the Paper : Part IV - Non Major Elective – 2 ** : Women's Rights			
Batch	**Hours / Week**	**Total Hours**	**Credits**
2024 - 2025	**2**	**30**	**2**

Course Objectives

- To know about the laws enacted to protect Women against violence.
- To impart awareness about the hurdles faced by Women.
- To develop a knowledge about the status of all forms of Women to access to justice.
- To create awareness about Women's rights.
- To know about laws and norms pertaining to protection of Women.
- To understand the articles which enables the Women's rights.
- To understand the Special Women Welfare laws.
- To realize how the violence against Women puts an undue burden on healthcare services.

Course Outcomes (CO)

After Completion of the Course the student will be able to

K1 to K5	CO1	Appraise the importance of Women's Studies and incorporate Women's Studies with other fields
	CO2	Analyze the realities of Women Empowerment, Portrayal of Women in Media, Development and Communication
	CO3	Interpret the laws pertaining to violence against Women and legal consequences
	CO4	Contribute to the study of the important elements in the Indian Constitution, Indian Laws for Protection of Women
	CO5	Spell out and implement Government Developmental schemes for women and create awareness on modernization and impact of technology on Women

Programme Code : 24	B. Sc Artificial Intelligence and Machine Learning		
Title of the Paper : Part IV- Non Major Elective 3 – Consumer Affairs			
Batch **2025 - 2026**	**Hours / Week** **2**	**Total Hours** **30**	**Credits** **2**

Course Objectives

1. To familiarize the students with their rights and responsibilities as a consumer.
2. To understand the procedure of redress of consumer complaints.
3. To know more about decisions on Leading Cases by Consumer Protection Act.
4. To get more knowledge about Organizational set-up under the Consumer Protection Act
5. To impart awareness about the Role of Industry Regulators in Consumer Protection
6. To understand Contemporary Issues in Consumer Affairs

Course Outcomes (CO)

K1 to K5	CO1	Able to know the rights and responsibility of consumers.
	CO2	Understand the importance and benefits of Consumer Protection Act.
	CO3	Applying the role of different agencies in establishing product and service standards.
	CO4	Analyse to handle the business firms' interface with consumers.
	CO5	Assess Quality and Standardization of consumer affairs.