KONGUNADU ARTS AND SCIENCE COLLEGE

(AUTONOMOUS)

COIMBATORE - 641029

DEPARTMENT OF

ARTIFICIAL INTELLIGENCE & MACHINE LEARNING

COURSE OUTCOME

(2024-2025 onwards)

Sub. Code: 24UAI101

Programme Code: 24	B.Sc. Artificial Intelligence and Machine Learning			
Title of the Paper: Core Paper 1 - C and C++ Programming				
Batch 2024 – 2025	**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	Understand the fundamentals of C programming.
	CO2	Derive solutions for problems using decision making and branching concepts.
	CO3	Implement different operations on arrays, make use of functions, structures & unions and work efficiently with files.
	CO4	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	Demonstrate how to use inheritance, pointers and polymorphism in C++.

Sub. Code: 24UAI1CL

Programme Code:24	**B.Sc. Artificial Intelligence and Machine Learning**			
Title of the Paper: Core Practical 1 - C and C++ Programming Lab				
Batch **2024 – 2025**	**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	Understand the basic programming concepts.
	CO2	Write simple C programs using control structures, arrays and structures.
	CO3	Explain basic C++ programs using friend functions, classes and objects.
	CO4	Develop C++ programs to implement overloading concepts.
	CO5	Implement programs using C++ features such as virtual functions and inheritance.

Sub. Code: 24UAI202

Programme Code:24	**B.Sc. Artificial Intelligence and Machine Learning**			
Title of the Paper: Core Paper 2 – Java Programming				
Batch **2024 – 2025**	**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	Understand object-oriented programming principles in Java.
	CO2	Develop solutions for problems using decision making and branching concepts.
	CO3	Build Java applications using inheritance, packages and interfaces.
	CO4	Explain Java exception handling and applets with real time examples.
	CO5	Discuss Input / Output file management in Java.

Sub. Code: 24UAI2CM

Programme Code:24	**B.Sc. Artificial Intelligence and Machine Learning**			
Title of the Paper: Core Practical 2 – Java Programming Lab				
Batch **2024 – 2025**	**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)

K3 to K5	CO1	Understand object-oriented way of solving problems in Java.
	CO2	Develop Java programs with inheritance and polymorphism concepts.
	CO3	Solve real time problems using interface and package in Java.
	CO4	Design Java programs with threads, I/O streams and exceptions.
	CO5	Create GUI using Applets, AWT and Swing components.

Sub. Code: 24UAI303

Programme Code: 24	**B.Sc. Artificial Intelligence and Machine Learning**			
Title of the Paper: Core Paper 3 - Python Programming				
Batch **2024 – 2025**	**Hours/Week** **5**	**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.

Course Outcomes (CO)

K1 to K5	CO1	Build basic programs using fundamental programming constructs like variables, conditional logic and looping.
	CO2	Illustrate how to write functions and pass arguments in Python.
	CO3	Implement OOPs and exception handling in Python.
	CO4	Work efficiently with arrays using Numpy in Python.
	CO5	Manipulate data using Pandas and visualize with Matplotlib.

Sub. Code: 24UAI3CN

Programme Code: 24	**B.Sc. B. Sc Artificial Intelligence and Machine Learning**			
Title of the Paper: Core Practical 3 - Python Programming Lab				
Batch **2024 – 2025**	**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	Make use of Decision making and looping constructs for solving basic problems.
	CO2	Illustrate recursive functions in Python.
	CO3	Implement search algorithms in Python.
	CO4	Write python code to demonstrate classes, objects and exceptions.
	CO5	Develop python programs to illustrate Numpy, Pandas and Scikit-learn libraries.

Programme Code: 24	**B.Sc. Artificial Intelligence and Machine Learning**			
Title of the Paper: Allied Paper 3 - Foundations of Robotics				
Batch **2024 – 2025**	**Hours/Week** **5**	**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	Explain the fundamentals of robotics and its components.
	CO2	Discuss uses, benefits and cost analysis of Robotic grippers and end effectors.
	CO3	Elucidate kinematics and dynamics of robotics.
	CO4	Describe importance of machine vision in Robotics.
	CO5	Design and program a robot for performing specific applications.

Sub. Code: 24UAI404

Programme Code: 24	**B.Sc. Artificial Intelligence and Machine Learning**			
Title of the Paper: Core Paper 4 - R Programming				
Batch **2024 – 2025**	**Hours/Week** **5**	**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 the basic data structures in R.
	CO2	Illustrate data manipulation using vector, matrix, array and list in R.
	CO3	Demonstrate working of data frames, factors and tables in R.
	CO4	Explore object oriented programming in R.
	CO5	Implement basic statistical analysis using R package.

Sub. Code: 24UAI4CO

Programme Code: 24	B.Sc. B. Sc Artificial Intelligence and Machine Learning			
Title of the Paper: Core Practical 4 - R Programming Lab				
Batch 2024 – 2025	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 basics in R programming in terms of constructs and control statements.
	CO2	Illustrate the basic data types in R.
	CO3	Apply R programming for vector operations.
	CO4	Write programs in R for basic statistical functions.
	CO5	Execute matrix operations using R functions.

Sub. Code: 24UAI4A4

Programme Code: 24	B.Sc. Artificial Intelligence and Machine Learning			
Title of the Paper: Allied Paper 4 - Big Data Analytics				
Batch **2024 – 2025**	**Hours/Week** **5**	**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	Understand the fundamentals of Big data and its applications.
	CO2	Explain the components of Hadoop and HDFS configurations.
	CO3	Describe the anatomy of HDFS file operations and daemons in Hadoop cluster.
	CO4	Elucidate Apache Hadoop architecture in big data.
	CO5	Build machine learning model for data analysis using R.

Sub.Code:24UAI505

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**
2024 – 2025	**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	Understand the basic concepts of machine learning and different types of learning systems.
	CO2	Explain different types of linear models and their applications.
	CO3	Use tree based classification and regression for solving real time problems.
	CO4	Apply dimensionality reduction, evolutionary models and genetic algorithms for real time applications.
	CO5	Analyze various probabilistic graphic models and tracking methods in machine learning.

Sub. Code:24UAI506

Programme Code: 24	**B.Sc. Artificial Intelligence and Machine Learning**			
Title of the Paper : Core Paper 6 - Introduction to Artificial Intelligence and Machine Learning				
Batch **2024 – 2025**	**Hours/Week** **6**	**Total Hours** **90**	**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	Understand the basic building blocks of AI. .
	CO2	Implement various problem solving methods to create solution for complex problems.
	CO3	Express symbolic notations to represent knowledge and reasoning to manipulate and derive new knowledge.
	CO4	Apply different learning methods to solve problems in real time applications.
	CO5	Choose suitable machine learning algorithms for various types of learning problems.

Sub Code : 24UAI507

Programme Code: 24	B.Sc. Artificial Intelligence and Machine Learning			
Title of the Paper : Core Paper 7 - Deep Learning				
Batch **2024 – 2025**	**Hours/Week** **6**	**Total Hours** **90**	**Credits** **4**	**Skill Development**

Course Objectives

1. To understand the basics of machine learning and neural networks.
2. To illustrate the use of tensor flow for deep learning.
3. To study the overview and applications of Convolution Neural Networks.
4. To understand the working of RNN with real time applications.
5. To learn algorithms and real world applications of Reinforcement Learning.
6.

Course Outcomes (CO)

K1 to K5	CO1	Understand the basics of machine learning and neural networks.
	CO2	Illustrate the use of tensor flow for deep learning
	CO3	Explain the overview and applications of Convolution Neural Networks.
	CO4	Demonstrate the working of RNN with real time applications.
	CO5	Explore algorithms and real world applications of Reinforcement Learning.

Sub. Code : 24UAI5CP

Programme Code: 24	**B.Sc. Artificial Intelligence and Machine Learning**			
Title of the Paper : Core Practical 5 - Machine Learning Lab				
Batch **2024 – 2025**	**Hours/Week** **5**	**Total Hours** **75**	**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 Naïve Bayes Classifiers work with Python code.
5. To evaluate the Naïve Bayes classifier model using Java API.
6.

Course Outcomes

K3 to K5	CO1	Implement learning algorithms in machine learning using Python.
	CO2	Build decision tree classification model in Python.
	CO3	Write python code to build a Neural Network with Backpropagation.
	CO4	Demonstrate how Naïve Bayes Classifiers work with Python code.
	CO5	Evaluate the Naïve Bayes classifier model using Java API.

Sub. Code: 24UAI608

Programme Code:	**B.Sc. Artificial Intelligence and Machine Learning**			
Title of the Paper: Core Paper 8 – Natural Language Processing				
Batch **2024 – 2025**	**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	Explain challenges, applications and language models in NLP.
	CO2	Examine word level and syntactic analysis in NLP.
	CO3	Describe how semantic analysis differs from the lexical analysis and importance of WSD in NLP.
	CO4	Explore the significance of NLG and machine translation.
	CO5	Discuss NLP techniques used for extracting information.

Sub. Code: 24UAI609

Programme Code:	**B.Sc. Artificial Intelligence and Machine Learning**			
Title of the Paper: Core Paper 9 – Block Chain Technology				
Batch	**Hours/Week**	**Total Hours**	**Credits**	**Skill Development**
2024 – 2025	**4**	**60**	**4**	

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	Understand the fundamentals of block chain.
	CO2	Explain public block chain system and how smart contract works with block chain.
	CO3	Describe the benefits of private block chain and its use-cases.
	CO4	Elucidate the technology behind initial coin offering.
	CO5	Summarize real life applications of block chain.

Sub. Code : 24UAI610

Programme Code:24	B.Sc. Artificial Intelligence and Machine Learning			
Title of the Paper: Core Paper 10 - Artificial Neural Networks and Fuzzy Logic				
Batch	**Hours/Week**	**Total Hours**	**Credits**	**Employability**
2024 – 2025	**5**	**75**	**4**	

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	Understand the basic concepts of neural networks.
	CO2	Explain the algorithms used in unsupervised neural network models.
	CO3	Differentiate crisp set and fuzzy set.
	CO4	Explore crisp and fuzzy relations.
	CO5	Discuss adaptive neuro fuzzy based inference systems and neuro fuzzy control with real life examples.

Sub. Code : 24UAI6CQ

Programme Code: 24	**B.Sc. Artificial Intelligence and Machine Learning**			
Title of the Paper: Core Practical 6 - Natural Language Processing Lab				
Batch	**Hours/Week**	**Total Hours**	**Credits**	**Skill Development**
2024 – 2025	**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	Compute word similarity using NLP libraries.
	CO2	Apply word sense disambiguation in NLP applications.
	CO3	Implement part of speech tagging with NLTK.
	CO4	Design and implement lexical analyzer of a sentence using Python.
	CO5	Implement semantic and sentiment analysis for real time applications.

Sub Code: 24UAI6Z1

Programme Code: 24	**B.Sc. Artificial Intelligence and Machine Learning**			
Title of the Paper: Project and Viva – Voce* **				
Batch 2024 – 2025	**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.
	CO3	Evaluate the task based on the software.
	CO4	Test the project for its successful implementation.
	CO5	Implement and maintain the developed system.

Programme Code: 24	B.Sc. Artificial Intelligence and Machine Learning			
Title of the Paper: Elective Paper - Internet of Things				
Batch **2024 – 2025**	**Hours/Week** **5**	**Total Hours** **75**	**Credits** **5**	**Employability**

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.

Programme Code: 24	B.Sc. Artificial Intelligence and Machine Learning			
Title of the Paper: Elective Paper - Open Source Systems				
Batch **2024 – 2025**	**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	Understand the fundamentals of Open Source and Linux.
	CO2	Explain MySQL commands with examples.
	CO3	Work with fundamental concepts of PHP language.
	CO4	Identify core aspects of programming and features of the Python language.
	CO5	Write and execute simple script using Perl.

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**
2024 – 2025	**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	Understand basics of digital forensic.
	CO2	Investigate and analyze digital evidence with cyber forensic.
	CO3	Explore data acquisition and evidence gathering in digital forensic.
	CO4	Examine and analyze digital evidences.
	CO5	Discuss 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 **2024 – 2025**	**Hours/Week** **5**	**Total Hours** **75**	**Credits** **5**	**Employability**

Course Objectives

1. To learn attribute and its types in data analytics.
2. To understand the basic probabilistic theory, analytic pipeline and dimensionality reduction methods.
3. To acquire knowledge on data mining techniques for analysis.
4. To study data visualization techniques for data analysis.
5. To gain exposure on data analytics techniques using R.

Course Outcomes (CO)

K1 to K5	CO1	Understand data attribute types.
	CO2	Explain basic probability theory, analytic pipeline and dimensionality reduction methods.
	CO3	Classify data mining techniques used for analysis with real time examples.
	CO4	Explore data analysis using data visualization techniques.
	CO5	Implement data analytics techniques for real world problems using R.

Programme Code: 24	B.Sc. Artificial Intelligence and Machine Learning			
Title of the Paper: Elective Paper - Virtual Reality				
Batch 2024 – 2025	**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	Explain basic geometric transformation and generic VR systems.
	CO3	Animate virtual environment and compare VR simulation with physical simulation.
	CO4	Describe basic components of VR and use of VRML.
	CO5	Identify 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 **2024 – 2025**	**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	Understand the basic concepts of AI and its tools for cyber security.
	CO2	Derive AI solutions for cyber security threats.
	CO3	Understand the fundamentals of Network anomaly detection with AI and authentication abuse prevention.
	CO4	Demonstrate working knowledge fraud prevention with cloud AI solutions.
	CO5	Evaluate algorithms and to test AI arsenal.

Programme Code: 24	B.Sc. Artificial Intelligence and Machine Learning			
Title of the Paper: Elective Paper - Design Thinking				
Batch **2024 – 2025**	**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	Recognize the key habits and attitudes of design thinking.
	CO3	Appraise the research methods for design thinking.
	CO4	Understand user feedback and loop
	CO5	Apply 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 **2024 – 2025**	**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	Describe image enhancement approaches in spatial domain.
	CO3	Review the fundamental concepts of color image segmentation.
	CO4	Explore 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 **2024 – 2025**	**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	Explain the purpose of database systems and ER model.
	CO2	Apply the relational model in DBMS for problem solving.
	CO3	Manipulate data using SQL commands.
	CO4	Perform transaction processing and concurrency control in database.
	CO5	Describe 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 2024 – 2025	**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	Understand the components and architecture of data warehouse.
	CO2	Explain business analysis framework in data warehouse.
	CO3	Understand tasks and functionalities of data mining.
	CO4	Apply mining frequent pattern, association rule & correlation in real time applications.
	CO5	Interpret the output of different clustering procedures.

Sub Code : 24UGC3S1

Programme Code: 24	**B.Sc. Artificial Intelligence and Machine Learning**			
Title of the Paper: Skill Based Subject 1 - Cyber Security				
Batch 2024 – 2025	**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: 24UAI4S2

Programme Code: 24	**B.Sc. Artificial Intelligence and Machine Learning**			
Title of the Paper: Skill Based Subject 2 - Ethical Hacking				
Batch 2024 – 2025	**Hours/Week 2**	**Total Hours 30**	**Credits 3**	**Skill Development**

Course Objectives

1. To learn types of cyber attacks, vulnerabilities and hacking tools.
2. To study scanning and enumeration process in hacking.
3. To know about password cracking techniques.
4. To know the programming languages used by security professionals.
5. To gain knowledge on different types and tools of penetration testing.

Course Outcomes (CO)

K1 to K5	CO1	Understand the fundamentals of hacking.
	CO2	Investigate the process of scanning and enumeration in hacking.
	CO3	Explore various password cracking techniques used by hackers.
	CO4	Identify various programming languages used by security professional.
	CO5	Analyze types and tools of penetration testing.

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 2024 – 2025	**Hours/Week 2**	**Total Hours 30**	**Credits 2**	**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

Sub Code : 24UAI5X1

Programme Code: 24	**B.Sc. Artificial Intelligence and Machine Learning**			
Title of the Paper: : Extra Departmental Course - Mobile Application Development				
Batch **2024 – 2025**	**Hours/Week** **2**	**Total Hours** **30**	**Credits** **3**	**Entrepreneurship**

Course Objectives

1. To understand the steps to create Android Application using Android Studio.
2. To learn components and orientation Android screen.
3. To use views to design user interface of Android app.
4. To create content provider and messaging in Android.
5. To develop Android services and threading.

Course Outcomes (CO)

K1 to K5	CO1	Understand how to create Android Application using Android Studio.
	CO2	Explain Android screen components and orientation.
	CO3	Design their UI of android app using views.
	CO4	Create content provider and messaging in Android.
	CO5	Develop services and threading in Android.

Sub Code : 24EVS101

Programme Code: 24	**B.Sc Artificial Intelligence and Machine Learning**		
Title of the Paper : PART IV – Environmental Studies**			
Batch	**Hours / Week**	**Total Hours**	**Credits**
2024-2025	**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: 24VED201

Programme Code: 24	B. Sc Artificial Intelligence and Machine Learning		
Title of the Paper : Value Education - Moral And Ethics**			
Batch 2024-2025	**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)

After completing the course the students:

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

Sub. Code : 24UHR3N1

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**
2024 - 2025	**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 : 24UWR4N2

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 **2024 - 2025**	**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.

Sub.Code: 24UAI5IT

Programme Code:24		B. Sc Artificial Intelligence and Machine Learning		
Coursecode: 24UAI5IT		**Internship Training**		
Batch:2024 - 2025	**Semester** V	**Hours/ Week** -	**Total Hours** -	**Grade**

Course objective

1. To provide an opportunity to work in industry / institute under the mentorship of an industrial personnel.
2. To develop key skill sets that are industry relevant for future placements.
3. To have a flavor of corporate life in an industry sector.
4. To build strength, sprit of team work and self-confidence.
5. To prepare the students to comprehend industrial problem.