

COURSE OUTCOME OF CSE(AIML) DEPARTMENT

3RD SEM

Department	CSE(AIML)
Course Code	ESC-CS301
Title of Course	Analog & Digital Electronics
Nature of Course	Theory
Type of Course	Engineering Science Course
Contact Hours	3L
Total Contact Hours	36
Course Outcome	CO1: Realize the basic operations of different analog components. CO2: Realize basic gate operations and laws Boolean algebra. CO3: Understand basic structure of digital computer, stored program concept and different arithmetic and control unit operations.

Department	CSE(AIML)
Course Code	PCC-CS301
Title of Course	Data Structure & Algorithms
Nature of Course	Theory
Type of Course	Professional Core Courses
Contact Hours	3L
Total Contact Hours	38
Course Outcome	CO1: Differentiate how the choices of data structure & algorithm methods impact the performance of program CO2: Solve problems based upon different data structure & also write programs. CO3: Identify appropriate data structure & algorithmic methods in solving problem. CO4: Discuss the computational efficiency of the principal algorithms for sorting, searching, and hashing. CO5: Compare and contrast the benefits of dynamic and static data structures implementations.

Department	CSE (AIML)
Course Code	PCC-CS302
Title of Course	Computer Organisation
Nature of Course	Theory
Type of Course	Professional Core Courses
Contact Hours	3L
Total Contact Hours	36
Course Outcome	<p>CO1: Understand basic structure of digital computer, stored program concept and different arithmetic and control unit operations.</p> <p>CO2: Understand basic structure of different combinational circuits- multiplexer, decoder, encoder etc.</p> <p>CO3: Understand of design and behaviour of different operations with sequential circuits.</p> <p>CO4: Understand memory and I/O operations.</p> <p>CO5: Learning of Architecture of processor, pipelining, RISC, CISC</p>

Department	CSE (AIML)
Course Code	BSC AIML301
Title of Course	Linear Algebra
Nature of Course	Theory
Type of Course	Basic Science course
Contact Hours	2L
Total Contact Hours	40
Course Out Come	<p>CO1: Understand the concept of real and complex matrices.</p> <p>CO2: Understand the domain of applications of system of linear equations to engineering problems.</p> <p>CO3: Apply the concept linear mapping.</p> <p>CO4: Learn and apply the concept of inner product spaces for understanding engineering problems</p> <p>CO5: Understand linear functional with corresponding applications in the field of computer science.</p> <p>CO6: Design and implement mathematical investigations and projects, including data collection, analysis, and interpretation, and apply appropriate mathematical communication and presentation skills.</p>

Department	CSE (AIML)
Course Code	HS-MC-301
Title of Course	Economics for Engineers (Humanities-II)
Nature of Course	Theory
Type of Course	Humanities & Social Sciences including Management Courses
Contact Hours	3L
Total Contact Hours	36
Course Outcome	CO1: Ability to understand Economic Decisions Making and considering that students will learn to find out Engineering Costs & Estimation. CO2: Ability to learn Cash Flow and also able to calculate Rate of Return Analysis. CO3: Ability to know Inflation and Price Change, Present Worth Analysis. CO4: Ability to learn depreciation and able to analysis the requirement of replacement.

Department	CSE (AIML)
Course Code	ESC391
Title of Course	Analog & Digital Electronics Lab
Nature of Course	Practical
Type of Course	Engineering Science Course
Contact Hours	4P
Total Contact Hours	40
Course Out Come	CO1: Realize the basic operations of different analog components. CO2: Realize basic gate operations and laws Boolean algebra. CO3: Understand basic structure of digital computer, stored program concept and different arithmetic and control unit operations.

Department	CSE (AIML)
Course Code	PCC-CS 391
Title of Course	Data Structure & Algorithm Lab
Nature of Course	Practical
Type of Course	Professional Core Courses
Contact Hours	4P
Total Contact Hours	36
Course Out Come	CO1: Differentiate how the choices of data structure & algorithm methods impact the performance of program. CO2: Solve problems based upon different data structure & also write programs. CO3: Identify appropriate data structure & algorithmic methods in solving problem. CO4: Discuss the computational efficiency of the principal algorithms for sorting, searching, and hashing. CO5: Compare and contrast the benefits of dynamic and static data structures implementations.

Department	CSE
Course Code	PCC-CS 392
Title of Course	Computer Organisation Lab
Nature of Course	Practical
Type of Course	Professional Core Courses
Contact Hours	4P
Total Contact Hours	32
Course Out Come	<p>CO1: Analyze and verify integrated circuit functionalities including multiplexers, decoders, encoders, and comparators using truth tables.</p> <p>CO2: Develop and implement specialized digital circuits such as BCD adders and Carry-Look-Ahead Adders to enhance computational efficiency and speed.</p> <p>CO3: Utilize multiplexer units to design and assemble composite Arithmetic Logic Units (ALU), demonstrating advanced circuit integration skills.</p> <p>CO4: Apply an ALU chip and other digital components to execute complex arithmetic operations and manage memory effectively through read and write operations using RAM IC.</p> <p>CO5: Experiment with memory expansion techniques by cascading RAM ICs for both vertical and horizontal expansion, advancing understanding of scalable digital system configurations.</p>

Department	CSE (AIML)
Course Code	PCC-CS393
Title of the Course	IT Workshop (Sci Lab/MATLAB/Python/R)
Nature of Course	Practical
Type of Course	Professional Core Courses
Contact Hours	4
Total Contact Hours	40
Course Outcomes	<p>CO1: To master an understanding of scripting & the contributions of scripting languages.</p> <p>CO2: Design real life problems and think creatively about solutions.</p> <p>CO3: Apply a solution in a program using R/Matlab/Python.</p> <p>CO4: To be exposed to advanced applications of mathematics, engineering and natural sciences to program real life problems.</p>

4TH SEM

Department	CSE
Course Code	PCC-CS401
Title of the Course	Discrete Mathematics
Nature of Course	Theory
Type of Course	Professional Core Course
Contact Hours	3L
Total Contact Hours	36
Course Outcomes	<p>CO1: Express a logic sentence in terms of predicates, quantifiers, and logical connectives.</p> <p>CO2: Derive the solution for a given problem using deductive logic and prove the solution based on logical inference.</p> <p>CO3: Classify its algebraic structure for a given a mathematical problem.</p> <p>CO4: Evaluate Boolean functions and simplify expressions using the properties of Boolean algebra.</p> <p>CO5: Develop the given problem as graph networks and solve with techniques of graph theory.</p> <p>CO6: Design and implement mathematical investigations and projects, including data collection, analysis, and interpretation, and apply appropriate mathematical communication and presentation skills.</p>

Department	CSE (AIML)
Course Code	PCCAIML 401
Title of the Course	Artificial Intelligence
Nature of Course	Theory
Type of Course	Professional Core Course
Contact Hours	3L
Total Contact Hours	34
Course Outcomes	<p>CO1: Remember the fundamental concepts of AI, intelligent agents, problem solving and search techniques.</p> <p>CO2: Understand various search algorithms like uniform cost, heuristic, adversarial and constraint satisfaction methods.</p> <p>CO3: Apply knowledge representation and reasoning techniques using logic, rules and probabilities.</p> <p>CO4: Understand natural language processing concepts and machine learning approaches.</p> <p>CO5: Apply expert system methodologies for knowledge acquisition and representation.</p>

Department	CSE (AIML)
Course Code	PCCAIML 402
Title of the Course	Optimization Techniques
Nature of Course	Theory

Type of Course	Professional Core Course
Contact Hours	3L
Total Contact Hours	30
Course Outcomes	<p>CO 1 : Understand the key concepts and use of applications of various optimization techniques .</p> <p>CO2 : Learn to formulate the optimization problems (linear and non linear)related to real life .</p> <p>CO 3 : Learn to solve the optimization problems (linear and non linear) with various techniques / algorithms .</p> <p>CO 4 : Learn to identify the optimization techniques to solve the real life problems .</p> <p>CO 5 : Learn to apply the concept of optimization techniques in decision making situations .</p>

Department	CSE (AIML)
Course Code	PCC-CS404
Title of the Course	Design and Analysis of Algorithms
Nature of Course	Theory
Type of Course	Professional Core Course
Contact Hours	3L
Total Contact Hours	36
Course Outcomes	<p>CO 1: PCC-CS404.1: Analyze worst-case running times of algorithms using asymptotic analysis and validate algorithm correctness rigorously.</p> <p>CO 2: PCC-CS404.2: Describe the greedy paradigm and apply it to develop algorithms for relevant problem-solving situations.</p> <p>CO 3: PCC-CS404.3: Explain the divide-and-conquer paradigm and synthesize algorithms, solving recurrence relations to assess computational complexity.</p> <p>CO 4: PCC-CS404.4: Articulate the dynamic-programming paradigm and design algorithms for problem-solving, analyzing computational complexity.</p> <p>CO 5: PCC-CS404.5: Model engineering problems using graphs and develop corresponding algorithms for problem resolution.</p> <p>CO 6: PCC-CS404.6: Explore methods for analyzing randomized algorithms and define approximation algorithms, computing their approximation factors for efficient problem-solving.</p>

Department	CSE (AIML)
Course Code	BSC401
Title of the Course	Biology
Nature of Course	Theory
Type of Course	Basic Science Course
Contact Hours	2L
Total Contact Hours	33

Course Outcomes	<p>CO1: Describe how biological observations of the 18th Century that lead to major discoveries.</p> <p>CO2: Convey that classification per section is not what biology is all about but highlights the underlying criteria, such as morphological, biochemical, and ecological.</p> <p>CO3: Highlight the concepts of recessiveness and dominance during the passage of genetic material from parent to offspring.</p> <p>CO4: Convey that all forms of life have the same building blocks and yet the manifestations are as diverse as one can imagine.</p> <p>CO5: Classify enzymes and distinguish between different mechanisms of enzyme action.</p> <p>CO6: Identify DNA as a genetic material in the molecular basis of information transfer.</p> <p>CO7: Analyse biological processes at the reductionistic level.</p> <p>CO8: Apply thermodynamic principles to biological systems.</p> <p>CO9: Identify and classify microorganisms.</p>
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Department	CSE (AIML)
Course Code	MC401
Title of the Course	Environmental Science
Nature of Course	Theory
Type of Course	Mandatory Course
Contact Hours	2L
Total Contact Hours	38
Course Outcomes	<p>CO1: To understand the natural environment and its relationships with human activities.</p> <p>CO2: To apply the fundamental knowledge of science and engineering to assess environmental and health risks.</p> <p>CO3: To develop guidelines and procedures for health and safety issues obeying the environmental laws and regulations.</p> <p>CO4: Acquire skills for scientific problem solving related to air, water, noise & land pollution.</p>

Department	CSE (AIML)
Course Code	PCCAIML 491
Title of the Course	Artificial Intelligence Lab
Nature of Course	Practical
Type of Course	Professional Core Course
Contact Hours	4P
Total Contact Hours	44
Course Outcomes	<p>CO1: Apply and implement fundamental AI concepts and techniques, such as problem solving, search algorithms (DFS, BFS, A*, Hill Climbing), and knowledge representation using Prolog, demonstrating proficiency in developing AI-based solutions.</p> <p>CO2: Design and develop intelligent systems and problem-solving models using various AI approaches, including logic-based representation, structured representation, and inheritance search, to solve real-world problems like the Traveling Salesman Problem, 8 Puzzle, and Tower of Hanoi.</p> <p>CO3: Utilize machine learning algorithms and techniques, such as Simulated Annealing, Explanation Based Learning, and the ID3</p>

	<p>Algorithm, to develop intelligent systems capable of learning and adapting to new situations.</p> <p>CO4: Demonstrate proficiency in using AI development tools and languages, such as Prolog, Lisp, and Java, to implement and experiment with various AI concepts, including expert systems (JESS and RVD), semantic networks, and object-oriented programming.</p> <p>CO5: Analyze and solve complex problems using AI techniques, such as the Wumpus World problem, and implement basic AI algorithms, including Fibonacci Series, Triangle Side Check, List Operations, Arithmetic Mean, and Vowel Check, demonstrating the ability to apply AI principles to diverse problem domains.</p>
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Department	CSE (AIML)
Course Code	PCCCS 494
Title of the Course	Design and Analysis of Algorithm Lab
Nature of Course	Practical
Type of Course	Professional Core Course
Contact Hours	4P
Total Contact Hours	44
Course Outcomes	<p>CO 1: PCC-CS494.1: Divide and Conquer: understand and implement Algorithms like Binary Search, Merge Sort, and Quick Sort, along with solving matrix multiplication and graph problems using this technique.</p> <p>CO 2: PCC-CS494.2: Branch and Bound: Understanding state-space search through solving puzzles like the 15 Puzzle Problem.</p> <p>CO 3: PCC-CS494.3: Backtracking: Proficiency in solving constraint satisfaction problems like the 8 Queen problem and Graph Coloring Problem.</p> <p>CO 4: PCC-CS494.4: Greedy Algorithms: Developing efficient solutions for optimization problems such as the Knapsack Problem and Minimum Cost Spanning Trees.</p> <p>CO 5: PCC-CS494.5: Graph Traversal: Implementing and analyzing BFS and DFS for graph traversal, understanding their applications.</p>

Department	CSE (AIML)
Course Code	PCCAIML 492
Title of the Course	Python II / R Programming Language Lab
Nature of Course	Practical
Type of Course	Professional Core Course
Contact Hours	4P
Total Contact Hours	40
Course Outcomes	<p>CO 1: Gain proficiency in Python programming language, including syntax, data structures, functions, exception handling, and object-oriented programming principles.</p> <p>CO 2: Perform exploratory data analysis, and data visualization using Python libraries such as Matplotlib, Seaborn, and Plotly, to create insightful and visually appealing plots, charts, and graphs for exploring and communicating patterns and trends in data.</p> <p>CO 3: Implement some fundamental supervised and unsupervised machine learning algorithms to solve some real-life problems.</p> <p>CO 4: Develop an understanding of Graphical User Interface (GUI) concepts using popular Python GUI frameworks such as Tkinter, and/or PyQt to develop cross-platform desktop applications with rich graphical interfaces.</p> <p>CO 5: Learn to integrate GUI applications with backend systems and databases such as MySQL, and MongoDB, enabling them to develop interactive applications that interact with data and perform various operations.</p> <p>CO 6: Work on hands-on projects throughout the course, allowing them to apply their knowledge of GUI programming to develop real-world applications.</p>

5TH SEM

Department	CSE (AIML)
Course Code	PCCAIML 501
Title of the Course	Probability and Statistics
Nature of Course	Theory
Type of Course	Professional Core Course
Contact Hours	3L
Total Contact Hours	48
Course Outcomes	<p>CO1: To apply the knowledge of PDEs to solve engineering problems like Heat equation wave equation etc.</p> <p>CO2: Understanding the ideas of basic probability to apply the concept of real-life problems.</p> <p>CO3: Understanding to apply the concept of random variables to interpret and analyze various engineering problems.</p> <p>CO4: Understand the concept of statistics with different characterization of a univariate and bivariate data set.</p> <p>CO5: To acquire knowledge of different statistical tools and techniques for analyzing data samples and drawing inference in Engineering applications.</p> <p>CO6: Design and implement mathematical investigations and projects, including data collection, analysis, and interpretation, and apply appropriate mathematical communication and presentation skills.</p>

Department	CSE (AIML)
Course Code	PCCCS 502
Title of the Course	Operating System
Nature of Course	Theory
Type of Course	Professional Core Course
Contact Hours	3L
Total Contact Hours	37
Course Outcomes	<p>CO 1: Understand the fundamental concepts in Operating Systems including processes, memory management, file systems, and input/output operations, analyze and compare different types of operating systems, evaluating their strengths, weaknesses, and suitability for various computing.</p> <p>CO 2: demonstrate proficiency in implementing different algorithms related to process management, process scheduling, and process synchronization in the operating system.</p> <p>CO 3: Analyze memory management and Apply fragmentation, paging, and segmentation in memory management.</p> <p>CO 4: Incorporate page fault handling, demand paging, and page buffering techniques in the Operating System.</p> <p>CO 5: Demonstrate the storage management techniques through various File Management and Storage management techniques.</p>

Department	CSE (AIML)
Course Code	PCCCS 503
Title of the Course	Object Oriented Programming
Nature of Course	Theory
Type of Course	Professional Core Course
Contact Hours	3L
Total Contact Hours	34
Course Outcomes	<p>CO1: On completion of the course students will be able to Specify simple abstract data types and design implementations, using abstraction functions to document them.</p> <p>CO2: Recognise features of object-oriented design such as encapsulation, polymorphism, inheritance, and composition of systems based on object identity.</p> <p>CO3: Name and apply some common object-oriented design patterns and give examples of their use.</p> <p>CO4: Design applications with an event-driven graphical user interface.</p>

Department	CSE (AIML)
Course Code	PCCAIML 502
Title of the Course	Introduction to Machine Learning
Nature of Course	Theory
Type of Course	Professional Core Course
Contact Hours	3L
Total Contact Hours	30
Course Outcomes	<p>CO1: Students will be able to recall and define the fundamental concepts of machine learning, including supervised and unsupervised learning techniques, feature engineering, artificial neural networks, hidden Markov models, and association rule mining.</p> <p>CO2: Students will be able to explain and differentiate between various regression and classification techniques, model evaluation metrics, ensemble learning methods, and clustering algorithms, demonstrating a clear understanding of their underlying principles and applications.</p> <p>CO3: Students will be able to implement and apply appropriate feature selection mechanisms, train and test classifier models using techniques such as KNN, Naïve Bayes, SVM, and Decision Trees, and perform sequence classification using hidden Markov models and clustering using K-means and hierarchical clustering methods.</p> <p>CO4: Students will be able to describe and discuss the concepts of model assessment and selection, frequent itemset mining using Apriori and FP-Growth algorithms, and comprehend recent trends and case studies in machine learning, demonstrating an understanding of their significance and potential applications.</p> <p>CO5: Students will be able to select and apply appropriate machine learning techniques to solve real-world problems, considering factors such as problem formulation, data preprocessing, model selection, and evaluation, while also being able to interpret and communicate the results effectively.</p>

Department	CSE (AIML)
Course Code	HSMC501
Title of the Course	Introduction to Industrial Management
Nature of Course	Theory
Type of Course	Humanities and Social Sciences including Management
Contact Hours	2L
Total Contact Hours	36
Course Outcomes	CO1: Interpret the given organization structure, culture, climate, and major provisions of factory acts and laws. CO2: Explain material requirement planning and store keeping procedure. CO3: Plot and analyze inventory control models and techniques. CO4: Prepare and analyze CPM and PERT for given activities. CO5: List and explain PPC functions.

Department	CSE (AIML)
Course Code	PECAIML 501C
Title of the Course	Graph Theory
Nature of Course	Theory
Type of Course	Professional Elective
Contact Hours	3L
Total Contact Hours	36
Course Outcomes	CO1: To learn about the vertex, edge, path and cycle. CO2: To learn about connected graph. CO3: To learn about shortest path. CO4: To learn about set covering and matching. CO5: To learn about vertex coloring. CO6: Design and implement mathematical investigations and projects, including data collection, analysis, and interpretation, and apply appropriate mathematical communication and presentation skills.

Department	CSE (AIML)
Course Code	PCCCS592
Title of the Course	Operating System Lab
Nature of Course	Practical
Type of Course	Professional Core Course
Contact Hours	4P
Total Contact Hours	40
Course Outcomes	<p>CO1: Operate UNIX / Linux operating system with various shell commands, including different kernel level activities.</p> <p>CO2: Execute shell scripts to solve basic programming problems and handle the repetitive tasks in a computing system.</p> <p>CO3: Handle and synchronize processes and threads, with and without interrupts.</p> <p>CO4: Designing the programming solution for classical synchronization problem using semaphore.</p> <p>CO4: To employ the concept of pipes for improving the efficiency of an operating system in terms of speed up and throughput.</p>

Department	CSE (AIML)
Course Code	PCCCS593
Title of the Course	Object Oriented Programming & Java Lab
Nature of Course	Practical
Type of Course	Professional Core Course
Contact Hours	4P
Total Contact Hours	40
Course Outcomes	<p>CO1: Students will gain proficiency in utilizing object-oriented programming concepts such as classes, constructors, method overloading, and method overriding.</p> <p>CO2: Students will understand and apply Java's wrapper classes and array data structures in practical programming scenarios.</p> <p>CO3: Advanced Interface Design and Implementation</p> <p>CO4: Proficiency in Package Management and Skills in Multithreaded Programming</p> <p>CO5: Experience in Applet Programming.</p>

Department	CSE (AIML)
Course Code	PCCAIML 592
Title of the Course	Machine Learning Lab
Nature of Course	Practical
Type of Course	Professional Core Course
Contact Hours	4P
Total Contact Hours	40

Course Outcomes	<p>CO1: Students will be able to identify and describe the key steps involved in implementing various machine learning algorithms, including decision trees, logistic regression, multilayer perceptron, SVM, K-means clustering, hierarchical clustering, K-mode clustering, association rule mining, and k-nearest neighbour.</p> <p>CO2: Students will be able to implement and apply a wide range of machine learning algorithms using appropriate programming languages and libraries, demonstrating proficiency in coding and debugging skills.</p> <p>CO3: Students will be able to explain the importance of evaluating machine learning algorithms using balanced and unbalanced datasets, and compare the performance of different algorithms, demonstrating an understanding of their strengths, weaknesses, and applicability in various scenarios.</p> <p>CO4: Students will be able to implement advanced machine learning techniques such as Adaboost, Random Forests, and Gaussian Mixture Models using the Expectation Maximization algorithm, showcasing their ability to work with complex algorithms and optimize their performance.</p> <p>CO5: Students will be able to analyze and interpret the results obtained from various machine learning experiments, including classification based on association rules, evaluation of algorithms with balanced and unbalanced datasets, and comparison of different algorithms, demonstrating critical thinking and problem-solving skills.</p>
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6th Semester

Department	CSE (AIML)
Course Code	PCCAIML 601
Title of the Course	Machine Learning Applications
Nature of Course	Theory
Type of Course	Professional Core Course
Contact Hours	2L
Total Contact Hours	36
Course Outcomes	<p>CO 1: Gain a solid understanding of regression and classification algorithms, including linear regression, logistic regression, and decision trees, formulate a machine learning problem, and implement these algorithms to solve the problem.</p> <p>CO 2: Design and implement a Support Vector Machine to solve a classification problem.</p> <p>CO 3: Make use of different boosting techniques in decision tree learning and compare the performances in different supervised learning problems.</p> <p>CO 4: Identify appropriate Machine Learning Algorithms and features depending on the nature of the Learning System.</p> <p>CO 5: Implement different unsupervised learning algorithms, including k-means, PCA, and hierarchical clustering.</p>

Department	CSE (AIML)
Course Code	PCCAIML 602
Title of the Course	Deep Learning
Nature of Course	Theory
Type of Course	Professional Core Course
Contact Hours	3L
Total Contact Hours	36
Course Outcomes	<p>CO1: Remember the key concepts, perspectives, and issues related to deep learning frameworks and fundamental learning techniques.</p> <p>CO2: Understand the structure, operations, and properties of artificial neural networks, including feed-forward networks, activation functions, and multi-layer architectures.</p> <p>CO3: Apply techniques for training neural networks, such as backpropagation, regularization, loss functions, and optimization methods, for risk minimization and model selection.</p> <p>CO4: Understand the concepts and principles of Conditional Random Fields (CRFs), including linear chains, partition functions, Markov networks, belief propagation, training CRFs, Hidden Markov Models, and entropy.</p> <p>CO5: Apply deep learning architectures, such as Deep Feed Forward networks, Convolutional Neural Networks, Recurrent Neural Networks, and Deep Belief Networks, along with regularization techniques and dropouts, for training deep models.</p>

Department	CSE (AIML)
Course Code	PCCAIML 603
Title of the Course	Soft Computing
Nature of Course	Theory
Type of Course	Professional Core Course
Contact Hours	3L
Total Contact Hours	42
Course Outcomes	<p>CO 1: Understand core concepts of soft computing, including fuzzy sets, neural networks, genetic algorithms, and related techniques.</p> <p>CO 2: Demonstrate adeptness in manipulating classical and fuzzy sets, understanding membership functions, conversion methods, and the distinction between classical and fuzzy logic.</p> <p>CO 3: Develop expertise in neural network principles, encompassing artificial neuron modeling, back-propagation learning, and their practical applications in pattern recognition and classification.</p> <p>CO 4: Exhibit proficiency in genetic algorithms, including crossover and mutation techniques, with the ability to apply them effectively in various domains such as optimization, clustering, and pattern recognition.</p> <p>CO 5: Gain proficiency in alternative soft computing techniques like Simulated Annealing, Tabu search, ACO, and PSO, understanding their principles and practical applications in problem-solving scenarios.</p>

Department	CSE (AIML)
Course Code	PCCCS602
Title of the Course	Computer Networks
Nature of Course	Theory
Type of Course	Professional Core Course
Contact Hours	3L
Total Contact Hours	47
Course Outcomes	<p>CO 1: Outline the basic concept of networking, types, networking topologies, and layered architecture.</p> <p>CO 2: Explain the representation of data and signals in data communication.</p> <p>CO 3: Demonstrate the physical layer and data link Layer functioning.</p> <p>CO 4: Examine the MAC sub-layer and its operations.</p> <p>CO 5: Identify the different types of protocols and their functions within a network.</p> <p>CO 6: Design and maintenance of individual networks.</p>

Department	CSE (AIML)
Course Code	PECAIML 601B
Title of the Course	Data Mining
Nature of Course	Theory
Type of Course	Professional Elective
Contact Hours	3L
Total Contact Hours	40
Course Outcomes	CO 1: Understand the functionality of the various data mining component CO 2: Appreciate the strengths and limitations of various data mining models CO 3: Explain the analysing techniques of various data CO 4: Describe different methodologies used in data mining. CO 5: Compare different approaches of data mining with various technologies.

Department	CSE (AIML)
Course Code	OECAIML 601A
Title of the Course	Database Management System
Nature of Course	Theory
Type of Course	Professional Elective
Contact Hours	3L
Total Contact Hours	36
Course Outcomes	CO1: Demonstrate the basic elements of a relational database management system. CO2: Identify the data models for relevant problems. CO3: Design entity relationship and convert entity relationship diagrams into RDBMS and formulate SQL queries on the respect data into RDBMS and formulate SQL queries on the data. CO4: Demonstrate their understanding of key notions of query evaluation and optimization techniques. CO5: Extend normalization for the development of application software's.

Department	CSE (AIML)
Course Code	PCCAIML 691
Title of the Course	Machine Learning Applications lab
Nature of Course	Practical
Type of Course	Professional Core Course
Contact Hours	4P
Total Contact Hours	40
Course Outcomes	<p>CO 1: Implement different machine learning algorithms and techniques using popular libraries and frameworks such as scikit-learn, TensorFlow, or PyTorch.</p> <p>CO 2: Perform data preprocessing, including data cleaning, feature engineering, and dimensionality reduction, data augmentations, to prepare datasets for training machine learning models.</p> <p>CO 3: Understand the need for cross-validation techniques, implement them during experiments, and compare the performance of the machine learning models.</p> <p>CO 4: Formulate machine learning models on diverse datasets, evaluate model performance using appropriate evaluation metrics, and interpret the results to make informed decisions.</p> <p>CO 5: Perform experiments to explore different machine learning algorithms, ensemble algorithms, hyperparameters, and optimization techniques to improve model performance and generalization.</p> <p>CO 6: Work on hands-on projects using machine learning techniques to solve real-world problems, from problem formulation and data collection to model deployment and performance evaluation.</p>

Department	CSE (AIML)
Course Code	PCCAIML 693
Title of the Course	Soft Computing Lab
Nature of Course	Practical
Type of Course	Professional Core Course
Contact Hours	4P
Total Contact Hours	40
Course Outcomes	<p>CO 1: Apply soft computing techniques practically to solve diverse real-world problems across multiple domains.</p> <p>CO 2: Proficiently select and implement suitable soft computing methods to analyze and resolve complex real-life issues in engineering, science, and related fields.</p> <p>CO 3: Evaluate the effectiveness and performance of applied soft computing techniques in real-world scenarios, assessing accuracy and efficiency.</p> <p>CO 4: Gain hands-on experience in implementing and optimizing soft computing algorithms through practical exercises, enhancing problem-solving skills.</p>

Department	CSE (AIML)
Course Code	PCCCS692
Title of the Course	Computer Networks Lab
Nature of Course	Practical
Type of Course	Professional Core Course
Contact Hours	4P
Total Contact Hours	40
Course Outcomes	<p>CO 1: Explain OSI Reference Model and in particular have a good knowledge of different networking commands and IP addressing.</p> <p>CO 2: Observe different networking components.</p> <p>CO 3: Design and test error detection and correction mechanism concepts.</p> <p>CO 4: Apply knowledge of socket programming to implement client-server architecture.</p> <p>CO 5: Develop simple data transmission using networking concepts.</p> <p>CO 6: Analyze the requirements for a given organizational structure and select the most appropriate networking architecture and implement.</p>