IPS Academy, Institute of Engineering & Science

(A UGC Autonomous Institute, Affiliated to RGPV, Bhopal)
Scheme Based on AICTE Flexible Curriculum

Department of Computer Science &Information Technology

Bachelor of Technology (B.Tech.)

VI Semester

Scheme

Sr. No.	Course Type	Course Code	Course Name	Teaching Scheme			Credits
				L	T	P	
1.	PCC	CI11	Internet of Things	2	1	-	3
2.	PCC	CI12	Foundation of Artificial Intelligence and Machine Learning	2	1	-	3
3.	PCC	CI13	Compiler Design	2	1	-	3
4.	PEC	CI01	Professional Elective Course -I	3	-	-	3
5.	HSMC	HS06	Humanities and Social Sciences Open Courses – II	2	-	-	2
6.	IOC	CI01	Interdisciplinary Open Course-I	2	1	-	3
7.	LC	CI12(P)	Foundation of Artificial Intelligence and Machine Learning Lab	-	-	2	1
8.	PROJ	CI03	Minor Project	-	-	4	2
9.	PROJ	CI04	Internship-I	-	-	4	2
10.	LLC	LLC03	Liberal Learning Course –III	-	-	2	1
11.	MLC	MLC04	Intellectual Property Rights	*1	-	-	Audit
12.	PROJ	-	Internship-II	Credit to be added in seventh semester			
Total Academic Engagement and Credits				13	4	12	23
				29			

Note:

Professional Elective Course–I	Interdisciplinary Open Course-I
CI01(a) Data Mining and Warehousing	CI01(a) Operation Research
CI01(b) Advanced Java Programming	CI01(b) Scientific Aptitude
CI01(c) Natural Language Processing	CI01(c) Green Technology
CI01(d) Information Storage Management	CI01(d) Industrial Electronics

- **Humanities and Social Sciences Open Courses (HSMC) – III, HS06 (Any One Course)**
  (a) Industrial Psychology
  (b) Personnel Psychology
  (c) Engineering Economics
  (d) Finance for Engineers
  (e) Stress Management
  (f) Business Communication
- **Liberal learning Course (LLC)-III, LLC03 (Any One Course)**
  (a) Sociology
  (b) Interior Design
  (c) Graphic Design
  (d) Animation
  (e) Corporate Culture

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PCC-CI11	Internet of Things	2L:1T	3 credits

Prerequisite: Analog & Digital Communication

Course Objective

Students will understand the concepts of Internet of Things and can able to build IoT applications.

Course Contents

Module1: **(08hrs.)**

Introduction: Definition, Characteristics of IOT, IOT Conceptual framework, IOT Architectural view, Physical design of IOT, Logical design of IOT, Application of IOT.

Module2: **(08 hrs.)**

Machine-to-machine (M2M), SDN (software defined networking) and NFV (network function virtualization) for IOT, data storage in IOT, IOT Cloud Based Services.

Module3: **(08hrs.)**

Design Principles for Web Connectivity: Web Communication Protocols for connected devices, Message Communication Protocols for connected devices, SOAP, REST, HTTP Restful and Web Sockets. Internet Connectivity Principles: Internet Connectivity, Internet based communication, IP addressing in IOT, Media Access control.

Module4: **(08hrs.)**

Sensor Technology , Participatory Sensing, Industrial IOT and Automotive IOT , Actuator, Sensor data Communication Protocols ,Radio Frequency Identification Technology, Wireless Sensor Network Technology.

Module5: **(08hrs.)**

IOT Design methodology: Specification -Requirement, process, model, service, functional & operational view.IOT Privacy and security solutions, Raspberry Pi & arduino devices. IOT Case studies: smart city streetlights control & monitoring.

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Course Outcome:

1. Understand the key components that makeup an IoT system.
2. Appreciate the role of big data, cloud computing and data analytics in atypical IoT system.
3. Understand where the IoT concept fits within the broader ICT industry and possible future trends.
4. Able to realize the revolution of Internet in Mobile Devices, Cloud & Sensor Networks.
5. Applytheknowledgeandskillsacquiredduringthecoursetobuildandtestacomplete, working IoT system involving prototyping, programming and data analysis

List of Text / Reference Books:

1. Rajkamal,"Internet of Things",Tata McGraw Hill publication,1st Edition,2017.
2. Vijay Madisetti and Arshdeep Bahga, "Internet of things (A-Hand-on-Approach)" 1st Edition, Universal Press,2014.
1. Hakima Chaouchi"The Internet of Things: Connecting Objects",Wileypublication,1 edition,2013.
2. CharlessBell"MySQLfortheInternetofthings",Apresspublications,1st edition,2016.
3. Francis dacosta "Rethinking the Internet of things: A scalable Approach to connecting everything", 1st edition, Apress publications 2013.
4. Donald Norris"TheInternetofThings:Do-It-YourselfatHomeProjectsforArduino, Raspberry Pi and Beagle Bone Black", McGraw Hill publication, 1st edition,2015.

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PCC CI 12	**Foundation of Artificial Intelligence and Machine Learning**	**2L:1T**	**3 credits**

Prerequisite: Engineering Mathematics.

Course Objective:

This course provides a concise introduction to the fundamental concepts in artificial intelligence and machine learning.

Course Contents: (40hrs)

Module 1: (10hrs.)

Artificial Intelligence : Introduction, Various types of production systems, characteristics of production systems, breadth first search, depth first search techniques, other Search Techniques like hill Climbing, Best first Search, A* algorithm, AO* Algorithms and various types of control strategies. Knowledge representation issues, Propositional and Predicate Logic, Monotonic and Non-monotonic reasoning, Forward Chaining and backward chaining in AI

Module 2: (06hrs.)

Machine Learning: Introduction to Machine Learning, Stages of ML, Types of Machine Learning, Cross-validation: K-fold technique , Evaluation metrics: Confusion Metrics, , Over fitting, Under fitting, Linear regression, Decision trees

Module 3: (10 hrs.)

Classification: Logistic Regression, Support Vector Machine, Kernel function and Kernel SVM. Clustering: k-means, KNN, adaptive hierarchical clustering, Association Rules: Content based Collaborative Filtering Based Recommendation

Module 4: (08 hrs.)

Ensemble learning, Types of Ensemble learning, Instance Based Learning, KNN, Application of machine learning in computer vision, Speech Processing, Natural Language Processing,

Module 5: (06hrs.)

Introduction to Neural network, ANN v/s BNN, Types of Neural network, Perceptron Model,, Multilayer Neural Network, Back-propagation algorithm, Introduction to Deep Neural Network. Convolution Neural Network

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Course Outcome:

1. State the overview of Artificial intelligence.
2. Explain The Types Of Learning, linear regression and decision tree.
3. Discuss the various classification techniques and convolution neural network.
4. Explainthe The Ensemble Learning And Clustering techniques.
5. Discuss the recommendation system and Bayes Learning.

List of Text/Reference Books:

1. Rich and Knight,"Artificial Intelligence",TheMcGraw- Hill,.3rdEdition,2008
2. Tom Mitchell, "Machine Learning",McGraw-Hill, FirstEdition, 1997.
3. Ethem Alpaydin,"Introduction to Machine Learning Edition"2,MITPress,ThirdEdition,2014.

Perspectives:

1. Artificial intelligence is the simulation of human intelligence processes by machines especially computer systems.
2. AIistoenablecomputerstoperformintellectualtasksasdecisionmaking,problemsolving, perception, understanding human communication (in any language, and translate among them
3. MachineLearningisanApplicationofAI&givesdevicestheabilitytolearnfromtheir experiences without doing any coding.

Recommendations:

Studentspursuingaconcentrationin**AI&ML**mustalsotakethefollowingconcentration Requirements and electives:

1. Deep &Reinforcement Learning
2. Robotics
3. Embedded System
4. Soft Computing
5. Computational Intelligence
6. Pattern Recognition
7. Data Visualization
8. Web & Information Retrieval
9. Data Science

Studying artificial intelligence & Machine Learning opens a world of opportunities.

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PCC CI 13	Compiler Design	2L:1T	3 credits

Prerequisite: Formal Language and Automata

Course Objective

To explain the different stages in the process of compilation.

Course Contents

Module 1 **(06 hrs.)**

Introduction to compiling & Lexical Analysis Introduction of Compiler, Major data Structure in compiler, types of Compiler, Front-end and Backend of compiler, Compiler structure: analysis-synthesis model of compilation, various phases of a compiler, Single & Multipass Compiler, Lexical analysis: Input buffering, Specification & Recognition of Tokens, Design of a Lexical Analyzer Generator, LEX.

Module 2 **(15 hrs.)**

Syntax Analysis & Syntax Directed Translation Syntax analysis: CFGs, Top down parsing, Brute force approach, recursive descent parsing, transformation on the grammars, predictive parsing, bottom up parsing, operator precedence parsing, LR parsers (SLR,LALR, LR),Parser generation. Syntax directed definitions: Construction of Syntax trees, Bottom up evaluation of S-attributed definition, L attributes definition, Top down translation, Bottom Up evaluation of inherited attributes Recursive Evaluation, Analysis of Syntax, Directed definition.

Module 3 **(6 hrs.)**

Type checking: type system, specification of simple type checker, equivalence of expression, types, type conversion, overloading of functions and operations, polymorphic functions. Runtime Environment: storage organization, Storage allocation strategies, Parameter passing, dynamic storage allocation, Symbol table, Error Detection & Recovery.

Module 4 **(06 hrs.)**

Intermediate code generation: Declarations, Assignment statements, Boolean expressions, Case statements, back patching, Procedure calls Code Generation: Issues in the design of code generator, Basic block and flow graphs, Register allocation and assignment, DAG representation of basic blocks, peephole optimization, and generating code from DAG.

Module 5 **(07 hrs.)**

Introduction to Code optimization: sources of optimization of basic blocks, loops in flow graphs, dead code elimination, loop optimization, Introduction to global data flow analysis, Code Improving transformations ,Data flow analysis of structure flow graph Symbolic debugging of optimized code.

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Course Outcome:

1. Understand the overview of phase of compiler and Lexical analysis.
2. Design and implement various parsing techniques of compiler.
3. Apply type checking for semantic analysis and analyze Run time environment.
4. Design and implement different intermediate code generation techniques.
5. Analyze various code optimization techniques

List of Text / Reference Books:

1.A.V. Aho, R. Sethi, and J.D. Ullman. “Compilers: Principles, Techniques and Tools” , Pearson Education,2nd Edition ,2007.
2.V Raghavan, “Principals of Compiler Design”, TMH Pub.,2017
3.Louden. “Compiler Construction: Principles and Practice”, CengageLearning,1997
4.A. C. Holub. “Compiler Design in C” , Prentice-Hall Inc., 1993.
5.Ronald Mak, “Writing compiler & Interpreters”, Willey Pub.,3rd Edition,2009

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PEC CI 01(A)	**Professional Elective course –I Data mining and warehousing**	**3L:0T**	**3 credits**

Course Objective: Student should understand the value of Historical data and data mining in solving real-world problems.

Course Contents: (40 hrs.)

Module 1: (10 hrs.)
Data Warehousing: Introduction, Delivery Process, Data warehouse Architecture, Data Preprocessing: Data cleaning, Data Integration and transformation, Data reduction. Data warehouse Design: Data warehouse schema, Partitioning strategy Data Warehouse Implementation, Data Marts, Meta Data, Example of a Multidimensional Data model. Introduction to Pattern Warehousing.

Module 2: (08 hrs.)
OLAP Systems: Basic concepts, OLAP queries, Types of OLAP servers, OLAP operations etc. Data Warehouse Hardware and Operational Design: Security, Backup and Recovery.

Module 3: (10 hrs.)
ntroduction to Data & Data Mining: Data Types, Quality of data, Data Preprocessing, Similarity measures, Summary statistics, Data distributions, Basic data mining tasks, Data Mining V/s knowledge discovery in databases. Issues in Data mining. Introduction to Fuzzy set sand fuzzy logic.

Module 4: (08 hrs.)
Supervised Learning: Classification: Statistical-based algorithms, Distance-based algorithms, Decision tree-based algorithms, neural network-based algorithms, Rule-based algorithms, and Probabilistic Classifiers

Module 5: (04 hrs.)
Clustering & Association Rule mining: Hierarchical algorithms, Partitioned algorithms, Clustering large databases–BIRCH, DBSCAN, CURE algorithms. Association rules: Parallel and distributed algorithms such as A priori and FP growth algorithms.

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Course Outcome:

After completion of this course, the students would be able to:

1. Understand the need of designing Enterprise data warehouses and will be enabled to approach business problems analytically by identifying opportunities to derive business.
2. Compare and contrast various methods for storing & retrieving data from different data sources/repository.
3. As certain the application of data mining in various areas and preprocess the given data and visualize it for a given application or data exploration/mining task.
4. Apply supervised learning methods to given data sets such as classification and its various types.
5. Apply Unsupervised learning methods to given data sets such as clustering and its various types. Also apply Association rule mining to various domains.

List of Text / Reference Books:

1. Pennington, Steinbach &Kumar, “Introduction to Datamining”, Pearson Edu,2019.
2. Jaiwei Han, Micheline Kamber, “Datamining: Concepts and Techniques”, Morgan Kaufmann Publishers.
3. Margaret H. Dunham, “Datamining: Introductory and Advanced topics”, PearsonEdu.2009.
4. Anahory & Murray, “Data Warehousing i n t h e Real-world”, Pearson Edu. 2009.

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PEC CI 01(B)	**Professional Elective course –I Advanced Java Programming**	**3L:T:P(3 hrs.)**	**3 credits**

Prerequisite: Programming for Problem Solving

Course Objective: The course is designed to provide complete knowledge of Java Object Oriented Programming through and to enhance the programming skills of the students by giving practical assignments to be done in labs.

Course Content:

Module 1: (08 Hrs)

Introduction: Introduction to java Object Oriented Programming, Java Designing Goal, Role of Java Programmer in Industry, Features of Java, Introduction to Java Development Kit (JDK), Java Runtime Environment & Java virtual machine (JVM), Java's Magic Byte code.

Module 2: (08 Hrs)

Object Oriented Programming: Class Fundamentals , Object & Object reference , Object Life time & Garbage Collection,, Constructor & initialization code block, Access Control, Modifiers, methods Nested , Inner Class & Anonymous Classes ,Abstract Class & Interfaces Defining Methods, Method Overloading, Recursion, Dealing with Static Members, Finalize() Method, Native Method. Use of "this " reference, Use of Modifiers with Classes & Methods, Design of Accessors and Mutator Methods.

Module 3: (08 Hrs)

Extending Classes and Inheritance: Use and Benefits of Inheritance in OOP, Types of Inheritance in Java, Overriding Super Class Methods, Use of "super" , Polymorphism in inheritance, Type Compatibility and Conversion Implementing interfaces. Package: Organizing Classes and Interfaces in Packages, Package as Access Protection , Defining Package ,CLASSPATH Setting for Packages.

Module 4: (08 Hrs)

Exception Handling: Exceptions & Errors ,Types of Exception , JVM reaction to Exceptions ,Use of try, catch, finally, throw, throws in Exception Handling ,In-built and User Defined Exceptions, Checked and Un-Checked Exceptions. Thread: Understanding Threads, Thread Life-Cycle, Thread Priorities, Synchronizing Threads.

Module 5: (08 Hrs)

Event Handling: Event-Driven Programming in Java, Event- Handling Process, Event Handling Mechanism, Introduction to JDBC,JDBC Drivers & Architecture, Servlet API and Overview: Servlet Introduction, Servlet Life Cycle(SLC), Types and Servlet Configuration with Deployment Descriptor, Java Server Pages: Introduction to JSP , Comparison with Servlet, JSP Architecture, JSP: Life Cycle, Scripting Elements, Hibernate: Introduction to Hibernate, Exploring Architecture of Hibernate, Object Relation Mapping(ORM) with Hibernate, Hibernate Annotation, Hibernate Query Language (HQL).

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Course Outcome:

1. Describe the object oriented programming concepts using JAVA.
2. Illustrate different types of classes and methods.
3. Apply fundamentals of inheritance and packages.
4. Understanding about exception handling and Threads.
5. Understanding about Event Handling, JDBC, Servlet and Hibernate.

List of Text / Reference Books:

1. Complete Reference J2EE by James Keogh mcgraw publication
2. Core Java, Volume II: Advanced Features by Cay Horstmann and Gary Cornell Pearson Publication
3. Black Book "Java server programming" J2EE, 1st ed., Dream Tech Publishers, 2008. 3. Kathy walrath"
4. Hibernate 2nd edition, Jeff Linwood and Dave Minter, Beginning Après publication

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PEC CI 01(C)	**Natural Language Processing**	**3L:0T:0P(3hrs.)**	**3 credits**

Prerequisite: Engineering Mathematics, Theory of Computation

Course Objective:

To gain the knowledge for developing advanced technology of computer systems like speech recognition and machine translation.

Course Contents:(40hrs)

Module1: (06hrs.)

Introduction to Natural Language Understanding- Levels of language analysis-Syntax, Semantics, Pragmatics, Applications, Ambiguity, Morphology, Parsing with Finite State Transducers, Regular Expressions, Stemmer, Spellingerrors.

Module2: (10hrs.)

Computational Phonology: speech sound, phonetic transcription, text to speech, Pronunciation Variations, Bayesian Method to spelling and pronunciations, Minimum Edit Distance, Weighted Automata, N-grams.

Module3: (10hrs.)

HMM and speech recognition, Viterbi algorithm, Acoustic processing of speech, Feature Extraction, Speech Synthesis; Part-of-Speech Tagging: rule based, stochastic, transformation based.

Module4: (08hrs.)

Syntax Processing: Parsing with CFG, CKY parsing and the Earley parser, Probabilistic parsing; Semantic Processing: Meaning representation, First Order Predicate Calculus. Lexical Semantics: Internal structure of words, thematic roles, Primitive decomposition, WordNet.

Module5: (06hrs.)

Word sense disambiguation; Information Retrieval: Vector space model, Improving user queries; Pragmatic Processing: Discourse; Natural Language Generation, Machine Translation.

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Course Outcome:

1. To tag a given text with basic Language features.
2. To design an innovative application using NLP components.
3. To implement a rule based system to tackle morphology/syntax of a language.
4. Todesignatagsettobeusedforstatisticalprocessingforreal-timeapplications.
5. Tocompareandcontrasttheuseofdifferentstatisticalapproachesfordifferenttypes of NLP applications.

List of Text/Reference Books:

1.D.JurafskyandJ.H. Martin,"SpeechandLanguageProcessing;Processing",PrenticeHall,2000.

2.C.ManningandH.Schutze,"FoundationsofStatisticalNaturalLanguageProcessing",MITPress

3.James Allen."Natural Language Understanding", Addison Wesley,1994.

4.Richard M Reese, "Natural Language Processing withJavall",OReilly Media,2015.

5.TanveerSiddiqui,U.S.Tiwary,"NaturalLanguageProcessingandInformationRetrieval", Oxford University Press,2008

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PEC CI 01 (D)	**Information Storage & Management**	**3L:0T:0P(3 hrs.)**	**3 credits**

Prerequisite: None

Course Objective:

To introduce solutions available for data storage, Core elements of a data center infrastructure, role of each element in supporting business activities.

Course Contents: (40 hrs)

Module 1: (06hrs.)

Introduction to Storage Technology: Data proliferation, evolution of various storage technologies, Overview of storage infrastructure components, Information Lifecycle Management, Data categorization.

Module 2: (12hrs.)

Storage Systems Architecture: Intelligent disk subsystems overview, Contrast of integrated vs. modular arrays, Component architecture of intelligent disk subsystems, Disk physical structure components, properties, performance, and specifications, RAID levels & parity algorithms, hot sparing, Front end to host storage provisioning, mapping and operation.

Module 3: (06hrs.)

Introduction to Networked Storage: JBOD, DAS, NAS, SAN & CAS evolution and comparison. Applications, Elements, connectivity, standards, management, security and limitations of DAS, NAS, CAS & SAN.

Module 4: (06hrs.)

Hybrid Storage solutions; Virtualization: Memory, network, server, storage & appliances. Data center concepts & requirements, Backup & Disaster Recovery: Principles Managing & Monitoring: Industry management standards (SNMP, SMI-S, CIM), standard framework applications, Key management metrics (Thresholds, availability, capacity, security, performance)

Module 5: (10hrs.)

Information storage on cloud :Concept of Cloud, Cloud Computing, storage on Cloud, Cloud Vocabulary, Architectural Framework,Cloud benefits, Cloud computing Evolution, Applications& services on cloud, Cloud service providers and Models, Essential characteristics of cloud computing, Cloud Security and integration.

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Course Outcome:

After the completion of this course, the students will be able to:

1. To Understand the Concept of Information Storage and Data centre Environment.
2. To understand about Data Protection.
3. To Understand Fiber Channel SAN.
4. To describe the different backup and recovery topologies and their role in providing disaster recovery and business continuity capabilities.
5. To Understand Cloud Computing.

List of Text/Reference Books:

1. G. Somasundaram & Alok Shrivastava (EMC Education Services) editors, "InformationStorage and Management: Storing, Managing, and Protecting Digital Information",Wiley India,2009.
2. Ulf Troppens, Wolfgang Mueller-Friedt, Rainer Erkens, Rainer Wolafka, Nils Haustein, "Storage Network explained : Basic and application of fiber channels, SAN, NAS, iSESI, INFINIBAND and FCOE", WileyIndia.
3. John W. Rittinghouse and James F. Ransome, "Cloud Computing:Implementation, Management and Security", CRC Press, Taylor Frances Pub.1st Edition,2017
4. NickAntonopoulos,LeeGillam,"CloudComputing:Principles,System&Application",Springer.
5. AnthonyT.Velete,TobyJ.Velk,andRobertEltenpeter,"CloudComputing:ApracticalApproach", McGraw-Hill Education (India) PvtLimited,2009
6. Dr.KumarSaurabh , "Cloud Computing : Insight into New Era I", Wiley India Pvt. Limited,2011.

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LC-CI12(P)	**Foundation of Artificial Intelligence and Machine Learning Lab**	**L:0T:2P (2hrs)**	**1 Credits**

Course Content:

Module 1:
Artificial Intelligence: Introduction, Search Techniques: breadth first search, depth first search techniques, other Search Techniques like hill Climbing, Best first Search, A* algorithm, AO* Algorithms and various types of control strategies.

Module 2:
Machine Learning: Types of Machine Learning, Evaluation metrics: Confusion Metrics, Over fitting, Under fitting, Linear regression, Support Vector Machine (SVM).

Module 3:
Classification: Logistic Regression, Clustering: k-means, KNN, adaptive hierarchical clustering.

Module 4:
Decision trees, Evaluation parameters, Confusion Matrix, Natural Language Processing,

Module 5:
Introduction to Neural network, Introduction to Deep Neural Network. Convolution Neural Network.

Course Outcome:

1. State the overview of Artificial intelligence.
2. Explain The Types Of Learning,linear regression and SVM.
3. Discuss the various classification and clustering techniques such as logistic regression and K-means.
4. Explain the decision tree and evaluation parameters.
5. Discuss the Neural network and deep neural network.

List of Text/Reference Books:

1. Rich and Knight,"Artificial Intelligence",The McGraw- Hill,.3rdEdition,2008
2. TomMitchell,"Machine Learning",McGraw-Hill, FirstEdition, 1997.
3. EthemAlpaydin,"IntroductiontoMachine Learning Edition"2,MITPress,ThirdEdition,2014.

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List of Experiments:

1. Write a program of any uninformed search technique.
2. Write a program of any informed search technique (A*/AO*).
3. Write a program to perform binary classification using Linear Regression.
4. Write a program to classify any data using Support Vector Machine.
5. Write a program to perform multiclass classification using Logistic Regression.
6. Write a program to group the data using K-means clustering.
7. Write a program to classify the data using Decision Tree.
8. Write a program of Confusion Matrix to evaluate any Model.
9. Write a program of Perceptron based Neural Network.
10. Write a program of Convolutional Neural Network.

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PROJ-CI03	**MINOR PROJECT**	**L:T:4P (4hrs)**	**2 Credits**

Objectives:
To carry out a small scale project to develop hands-on experience of working in a project. During the course, the student will also develop knowledge of application development platforms and tools (Java /C# dotnet / Visual C++/PHP /Python or any platform of current trend). The students will learn working as a team and basic collaboration and project management skills. The student will also learn about formulating project documentations.

1. **Project ideas and proposal guidance (4 hours)**
2. **Application development (10 hours)**
    1. Visual programming (object oriented)
        1. Language basics
        2. Frameworks and APIs
    2. Programming basics and design patterns
3. **Project management, team work and collaboration(6 hours)**
    1. Project management techniques
    2. Collaborative development environment
4. **Project guidance & Project work (20 hours)**
5. **Project documentation guidance (3 hours)**

Course Outcome:

1. Understanding the problem identification process and design a proposal for particular problem handling.
2. Design a solution model using any programming language.
3. Learn about different types of project management techniques.
4. Develop a complete project with deployment.
5. Learn about team work and documentation process.

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ROJ-CI04	**INTERNSHIP-I**	**L:T:4P (4hrs)**	**2Credits**

Course Outcome:

1. To explore career alternatives prior to graduation..
2. To develop communication, interpersonal and other critical skills in the job interview process..
3. To assess interests and abilities in their field of study.
4. To identify, write down, and carry out performance objectives related to their job assignment..
5. To integrate theory and practice.