



INFORMATION TECHNOLOGY  
ENGINEERING

# IT ENGINEERING SEM VI



POSITIVE QUADRANT  
TECHNOLOGIES  
SERVING INFORMATION WORLDWIDE

# AI AND DS - I

Programming & development

Course Curriculum



# AI AND DS - I SEM VI

## **Module 1 : Introduction to AI**

- Introduction to AI
- AI techniques
- Problem Formulation
- Intelligent Agents
- Structure of Intelligent agents
- Types of Agents
- Agent Environments PEAS representation for an Agent

## **Module 2: Search Techniques**

- Uninformed Search Techniques
  - Uniform cost search
  - Depth Limited Search
  - Iterative Deepening
  - Bidirectional search
- Informed Search Methods
  - Heuristic functions
  - Best First Search
  - A\*
  - Hill Climbing
  - Simulated Annealing
- Constraint Satisfaction Problem Solving
  - Crypto-Arithmetic Problem
  - Water Jug
  - Graph Coloring
- Adversarial Search
  - Game Playing
  - Min-Max Search
  - Alpha Beta Pruning
- Comparing Different Techniques

## **Module 3: Knowledge Representation using First Order Logic**



- Knowledge and Reasoning
  - A Knowledge Based Agent
  - WUMPUS WORLD Environment
  - Propositional Logic
  - First Order Predicate Logic
  - Forward and Backward Chaining
  - Resolution
  - Planning as an application of a knowledge based agent
  - Concepts of Partial Order planning
  - Hierarchical Planning and Conditional Planning

### **Module 4: Introduction to DS**

- Introduction and Evolution of Data Science
- Data Science Vs. Business Analytics Vs. Big Data
- Data Analytics
- Lifecycle
- Roles in Data Science Projects



### **Module 5: Exploratory Data Analysis**

- Introduction to exploratory data analysis
- Typical data formats
- Types of EDA
- Graphical/Non graphical Methods
- Univariate/multivariate methods Correlation and covariance
- Degree of freedom Statistical Methods for Evaluation including ANOVA

### **Module 6: Introduction to ML**

- Introduction to Machine Learning
- Types of Machine Learning
  - Supervised (Logistic Regression, Decision Tree, Support Vector Machine)
  - Unsupervised (K Means Clustering, Hierarchical Clustering, Association Rules) Issues in Machine learning
  - Application of Machine Learning Steps in developing a Machine Learning Application