VGURU TECH ACADEMY

Artificial Intelligence (AI) / Machine Learning (ML)

Course Syllabus

Level: Beginner

Part 1: Course Description

This course introduces young learners to the fascinating world of Artificial Intelligence (AI) and Machine Learning (ML). Using age-appropriate tools and methods, students will explore basic concepts and applications of AI/ML in a fun and engaging environment.

Part 2: Student Learning Outcomes & Objectives

Student Learning Outcomes

- Identify AI applications in daily life
- Demonstrate a basic understanding of how AI works
- Create simple AI-based projects

Course Objectives

- Understand the basic concepts of AI and ML
- Recognize AI in everyday life
- Develop foundational programming skills

Part 3: Topic Outline

Prerequisites

- Basic computer skills
- Ability to read and follow simple instructions

➔ Session 1: Introduction to AI
  - ◆ Understanding AI through examples in daily life.

➔ Session 2: Basics of Machine Learning
  - ◆ Exploring how machines learn from data.

➔ Session 3: Introduction to Programming
  - ◆ Learning basic coding concepts using kid-friendly platforms.

➔ Session 4: AI in Games
  - ◆ Exploring AI through interactive games and activities.

➔ Session 5: Voice Recognition
  - ◆ Understanding and experimenting with voice-controlled AI.

➔ Session 6: Image Recognition
  - ◆ Introduction to how AI recognizes images and patterns.

➔ Session 7: Robotics
  - ◆ Basic introduction to AI in robotics.

➔ Session 8: Project
  - ◆ Students create a simple AI-based project.

Level: Intermediate

Part 1: Course Description

Building on foundational knowledge, this course delves deeper into AI and ML concepts, focusing on more complex applications and introducing programming in Python.

Part 2: Student Learning Outcomes & Objectives

Student Learning Outcomes

- Program basic AI/ML models
- Understand data handling and processing
- Develop problem-solving skills using AI/ML

Course Objectives

- Develop intermediate programming skills
- Understand more complex AI and ML concepts
- Create AI/ML projects using Python

Part 3: Topic Outline

Prerequisites

- Completion of Beginner Level or equivalent knowledge
- Basic proficiency in math

- ➔ Session 1: Python for AI
  - ◆ Introduction to Python programming.
- ➔ Session 2: Data Structures
  - ◆ Understanding lists, arrays, and dictionaries in Python.
- ➔ Session 3: Algorithms in AI
  - ◆ Basic algorithms used in AI.
- ➔ Session 4: Data Visualization
  - ◆ Learning to visualize data using Python libraries.
- ➔ Session 5: Introduction to Neural Networks
  - ◆ Basic concepts of neural networks.
- ➔ Session 6: Natural Language Processing (NLP)
  - ◆ Basics of how AI understands human language.
- ➔ Session 7: AI Ethics
  - ◆ Discussing the ethical implications of AI.
- ➔ Session 8: Intermediate Project
  - ◆ Developing a small AI/ML project using Python.

Level: Advanced

Part 1: Course Description

This advanced course is designed for students who have a strong foundation in AI/ML and programming. It covers sophisticated AI/ML concepts and techniques, including deep learning and real-world applications.

Part 2: Student Learning Outcomes & Objectives

Student Learning Outcomes

- Develop and train complex AI/ML models
- Apply AI/ML in real-world scenarios
- Understand and implement deep learning techniques

Course Objectives

- Master advanced AI/ML concepts and techniques
- Apply AI/ML to solve complex problems
- Prepare for further studies or careers in AI/ML

Part 3: Topic Outline

Prerequisites

- Completion of Intermediate Level or equivalent knowledge
- Proficiency in Python programming

- Session 1: Advanced Python for AI
  - Enhancing Python skills for complex AI models.
- Session 2: Machine Learning Algorithms
  - In-depth study of various ML algorithms.
- Session 3: Deep Learning
  - Introduction to deep learning and neural networks.
- Session 4: Computer Vision
  - Advanced techniques in image recognition and processing.
- Session 5: Predictive Analytics
  - Using AI for forecasting and predictions.
- Session 6: Reinforcement Learning
  - Understanding and implementing reinforcement learning.
- Session 7: AI in Healthcare
  - Exploring AI applications in healthcare.
- Session 8: Capstone Project
  - Students undertake a comprehensive AI/ML project.