**Course Title:** **"Exploring AI & Machine Learning: A Fun Journey for Young Innovators"**  
**Grade Level:** 5–6  
**Duration:** 12–15 sessions (60 minutes each)  
**Focus:** Basic Mathematics, Python Coding, and Introduction to AI/ML Concepts

**Course Outline**

**1. Basic Mathematics for AI/ML**

* **Data Representation**
  + **Activities:**
    - Create colorful bar graphs using class data (e.g., favorite hobbies, pets).
    - Track daily weather (temperature, rainfall) and plot it on a class calendar.
  + **Tools:** Stickers, LEGO blocks, Google Sheets (simplified).
* **Patterns & Averages**
  + **Activities:**
    - Identify patterns in nature (e.g., Fibonacci sequence in flower petals).
    - Calculate class averages for height, test scores, or lunch preferences.
  + **Games:** "Pattern Bingo" (match number/color sequences).
* **Simple Equations**
  + **Activities:**
    - Use LEGO towers to visualize **y = mx + b** (e.g., 2 blocks per floor = y = 2x).
    - Solve puzzles like "If 3 pizzas feed 12 students, how many pizzas for 20?"

**2. Python Coding Basics**

* **Introduction to Python**
  + **Concepts:** Variables, loops, conditional statements (if/else).
  + **Tools:** Trinket.io (kid-friendly Python editor).
  + **Activity:** Write code to print "Hello, AI Explorers!" and calculate simple math problems.
* **Hands-On Projects**
  + **Project 1:** Build a **Number Guessing Game** (Python):
    - The computer generates a random number, and the player guesses until correct.
    - Teaches loops, conditions, and user input.
  + **Project 2:** Create a **Chatbot** (Simplified):
    - Use input() and print() to make a chatbot that answers questions like, "What’s the weather today?"

**3. AI/ML Integration**

* **What is Machine Learning?**
  + **Simplified Definition:** "Teaching computers to learn from data!"
  + **Activity:** Use **Teachable Machine** (Google) to train an AI model to classify images (e.g., cats vs. dogs).
* **Real-World AI Projects**
  + **Project 3:** **Weather Predictor** (Python + Math):
    - Analyze historical weather data (temperature, rainfall) to predict tomorrow’s conditions.
    - Use Python’s matplotlib (simplified) to plot trends.
  + **Project 4:** **Recommendation System**:
    - Design a "Class Playlist" where students vote on songs, and Python suggests popular choices.

**4. Ethics & Responsibility**

* **Discussion Topics:**
  + Bias in AI: "What if a robot only recommends pizza to boys?"
  + Privacy: "Why shouldn’t we share personal info online?"
* **Activity:** Role-play scenarios (e.g., "Should robots grade homework?").

**Example Lesson Plan**

**Session 4: Python Loops & Weather Prediction**

1. **Warm-Up (10 mins):** Review patterns in weather data.
2. **Python Basics (20 mins):** Teach for loops using a "count raindrops" exercise.
3. **Activity (25 mins):** Use Python to predict tomorrow’s temperature based on weekly averages.
4. **Wrap-Up (5 mins):** Discuss how AI uses loops to analyze data.

**Tools & Resources**

* **Coding Platforms:** Trinket.io, Code.org (Python modules), Teachable Machine.
* **Math Tools:** LEGO blocks, weather tracking apps, pattern worksheets.
* **Ethics Resources:** Kid-friendly videos on AI ethics (e.g., YouTube’s "Crash Course Kids").

**Learning Outcomes**

* **Math Skills:** Understand data representation, patterns, and basic equations.
* **Coding Skills:** Write simple Python programs using variables, loops, and conditions.
* **AI/ML Awareness:** Grasp how machines learn from data and make predictions.
* **Ethical Thinking:** Discuss fairness, privacy, and responsible AI use.