Arduino Course Content Plan

Module 1: Introduction & Setup

Lesson 1: Course Overview – Why Learn Arduino?

📅 Expected release date: June 2, 2025

- Introduction to the Arduino ecosystem (hardware & software).
- Why Arduino is useful for makers, engineers, and students.
- Overview of the course structure, tools, and learning outcomes.

Lesson 2: The Story of Arduino & Real-World Applications

📅 Expected release date: June 6, 2025

- History of Arduino: How and why it was created.
- How Arduino has evolved and its impact on innovation.
- Examples of real-world Arduino applications in robotics, IoT, and automation.

Lesson 3: Getting Started with Arduino IDE & Mind+

📅 Expected release date: June 9, 2025

- Introduction to Arduino IDE and Mind+ (block-based coding for beginners).
- When to use each tool and why both are valuable.
- Writing and uploading a simple program (Blink LED) in both platforms.

Lesson 4: Basic Electronics – Resistors, Breadboards, and Jumper Wires

📅 Expected release date: June 13, 2025

- Introduction to fundamental electronic components.
- Understanding voltage, current, resistance (Ohm's Law).
- Hands-on: Wiring an LED circuit with a resistor.

Module 2: Arduino Programming & Fundamentals

Lesson 5: Understanding Arduino I/O Pins

📅 Expected release date: June 16, 2025

- Digital vs. Analog pins.
- Input vs. Output modes.
- Hands-on: Controlling an LED and reading a button press.

Lesson 6: Arduino Programming Basics – Variables, Loops & Conditions

📅 Expected release date: June 20, 2025

- Key programming concepts in Arduino (C++).
- Using loops, conditions, and variables in real projects.
- Hands-on: Writing a program to blink LEDs in a pattern.

Lesson 7: Using LEDs, Switches, and Buzzers

📅 Expected release date: June 23, 2025

- Introduction to basic input/output modules.
- Hands-on: Creating a sound and light reaction game.

Lesson 8: Debugging with the Serial Monitor

📅 Expected release date: June 27, 2025

- How to use the Serial Monitor for troubleshooting.
- Hands-on: Printing sensor data and debugging code errors.

Module 3: Basic Sensors & Actuators

Lesson 9: Using Potentiometers with Arduino

📅 Expected release date: June 30, 2025

- Understanding variable resistors.
- Hands-on: Controlling LED brightness with a potentiometer.

Lesson 10: Light Sensing with Photoresistors

📅 Expected release date: July 4, 2025

- How a light sensor works.
- Hands-on: Adjusting LED brightness based on ambient light.

Lesson 11: Detecting Sound with the Sound Sensor

📅 Expected release date: July 7, 2025

- How to use the Analog Sound Sensor.
- Hands-on: Creating a clap-controlled light system.

Lesson 12: Using the Shake Sensor

📅 Expected release date: July 11, 2025

- How vibration detection works.
- Hands-on: Triggering an alarm using a shake sensor.

Project 1: Automatic City Lights Model

📅 Expected release date: July 18, 2025

- Project Goal: Build a mini city model with Arduino-controlled streetlights.
- Sensors Used: Photoresistor (detects day/night).
- Real-World Application: Automated street lighting systems.

Module 4: Intermediate Sensors & Modules

Lesson 14: Displaying Data with an I2C LCD Screen

📅 Expected release date: July 21, 2025

- Introduction to I2C communication.
- Hands-on: Displaying sensor values on an LCD screen.

Lesson 15: Infrared Proximity Sensor – Detecting Objects

📅 Expected release date: July 25, 2025

- How IR sensors work.
- Hands-on: Creating a simple object detection system.

Lesson 16: Ultrasonic Sensor – Measuring Distance

📅 Expected release date: July 28, 2025

- How ultrasonic waves measure distance.
- Hands-on: Building a simple security alarm system.

Lesson 17: Measuring Temperature with the LM35 Sensor

📅 Expected release date: August 1, 2025

- Understanding temperature sensors.
- Hands-on: Creating a basic temperature monitoring system.

Lesson 18: Using Relays for High-Power Control

📅 Expected release date: August 4, 2025

- How relays control high-voltage devices safely.
- Hands-on: Turning a lamp on/off with Arduino

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Lesson 19: Controlling Servo Motors

📅 Expected release date: August 8, 2025

- Understanding servo motors and their applications.
- Hands-on: Creating a robotic arm or automated gate.

Project 2: Smart Home Model

📅 Expected release date: August 15, 2025

- Project Goal: Build a smart home from cardboard, integrating multiple sensors.
- Features: Temperature monitoring, motion detection, automatic lighting, alarm system.

Module 5: Wireless Communication & Advanced Projects

Lesson 21: Bluetooth Communication with Arduino

📅 Expected release date: August 18, 2025

- What Bluetooth is and how it works.
- Hands-on: Controlling LEDs with a mobile app.

Lesson 22: Wi-Fi Communication with Arduino

📅 Expected release date: August 22, 2025

- Introduction to IoT (Internet of Things).
- Hands-on: Sending data to the cloud.

Project 3: Turning Arduino into a Web Server

📅 Expected release date: August 29, 2025

- Project Goal: Build a simple web-based IoT system.
- Features: Remote control of actuators, sensor data logging.

Final Lesson: What’s Next?

Lesson 24: Continuing Your Arduino Journey

📅 Expected release date: September 1, 2025

- Recap of everything learned in the course.
- Suggested next steps: Robotics, home automation, IoT, AI with Arduino.
- Where to find resources, communities, and project ideas.