**Goal:** Learn ML foundations (linear regression + gradient descent) and C++ basics with 2 mini-projects.

**Week 1 – Math Foundations + C++ Basics (~10 hrs)**

* **Day 1 (2h):** Math – Linear equations, slope, intercept, cost function.
* **Day 2 (2h):** C++ – Setup compiler, syntax, variables, data types, input/output.
* **Day 3 (2h):** Math – Gradient descent basics (derivatives, learning rate).
* **Day 4 (2h):** C++ – Conditionals + loops.
* **Day 5 (2h):** C++ – Functions (with simple coding exercises).

**Week 2 – Gradient Descent + Arrays (~10 hrs)**

* **Day 6 (2h):** Math – Gradient descent updates, cost minimization.
* **Day 7 (2h):** C++ – Arrays + strings.
* **Day 8 (2h):** Python – Implement cost function + gradient descent loop.
* **Day 9 (2h):** Python – Plot cost vs iterations (matplotlib).
* **Day 10 (2h):** C++ – Functions + arrays practice.

**Week 3 – Linear Regression + OOP Basics (~10 hrs)**

* **Day 11 (2h):** Python – Linear regression with gradient descent.
* **Day 12 (2h):** Python – Add predictions + plot regression line.
* **Day 13 (2h):** C++ – Intro to classes, objects, constructors.
* **Day 14 (2h):** C++ – OOP example (student class).
* **Day 15 (2h):** Review + practice small coding exercises.

**Week 4 – Projects + Repo Setup (~10 hrs)**

* **Day 16 (2h):** Python – Finalize gradient descent visualizer notebook.
* **Day 17 (2h):** C++ – Build CLI calculator.
* **Day 18 (2h):** C++ – Build OOP project (bank account/student record).
* **Day 19 (2h):** Document projects + add comments.
* **Day 20 (2h):** Push to GitHub + polish README.

✅ **End of Month 1 Deliverables:**

* Python notebook: Gradient descent + linear regression visualizer
* C++ CLI calculator
* C++ OOP example
* Repo with documented code + README