Firmware and AI Analytics Lab Equipment List

We've included one workstation with a modest GPU capable of running entry-level machine learning tasks (e.g., small to medium neural network models). All prices are approximate in INR and may vary based on location and availability.

S. No.	Item & Quantity	Suggested Product	Approx. Price (INR)	Example Link
1	**Standard Laptop (2)**	Lenovo IdeaPad Slim 3 (Core i3 / 8GB RAM / 256GB SSD)	~35,000 each	Lenovo IdeaPad Slim 3 on Amazon
2	**AI-Capable Laptop/Workstation (1)**	HP Pavilion Gaming / Acer Nitro 5 (Core i5 / 8-16GB RAM / NVIDIA GTX/RTX 1650–3050)	~60,000	Acer Nitro 5 on Amazon
3	**Hardware Debug/Programmer (3 units)**	ST-LINK V2 / J-Link EDU Mini (budget-friendly clone versions available)	~2,000 each	ST-LINK V2 on Amazon
4	**Development Boards (5 units total)**	STM32F103 "Blue Pill", ESP32, or Arduino Uno	~500 each	Blue Pill Board on Amazon
5	**Digital Storage Oscilloscope (1)**	Hantek DSO2D10 (or Rigol DS1054Z if budget permits)	~23220	Hantek DSO2D10 on Amazon
6	**Logic Analyzer (1)**	Saleae Logic (8-channel) clone	~1,500	Saleae Logic Clone on Amazon
7	**Bench Power Supply (1)**	KORAD KD3005D or similar	~3,500	KORAD KD3005D on Amazon
8	**Multimeters (3 units)**	Uni-T UT33 or Mastech	~700 each	Uni-T Multimeter on Amazon

9	**Soldering Station (1)**	YIHUA 936 or Aoyue Basic Station	~2,500	YIHUA 936 on Amazon
10	**ESD Kits (3 sets)**	ESD-Safe Mat + Wrist Strap	~600 per set	ESD Mat & Wrist Strap on Amazon
11	**Prototyping Essentials**	Breadboards, jumper wires, basic components (resistors, capacitors, LEDs, etc.)	~2,000 (bulk)	Breadboard & Components Kit

Approximate Total Cost

1. **2× Standard Laptops/PCs** = 2 × 35,000 = **70,000**
2. **1× AI-Capable Laptop = 60,000**
3. **3× Debug/Programmers** = 3 × 2,000 = **6,000**
4. **5× Development Boards (For Learners)** = 5 × 500 = **2,500**
5. **Oscilloscope (1) = 23220**
6. **Logic Analyzer (1) = 1,500**
7. **Bench Power Supply (1) = 3,500**
8. **3× Multimeters** = 3 × 700 = **2,100**
9. **Soldering Station (1) = 2,500**
10. **3× ESD Kits** = 3 × 600 = **1,800**
11. **Prototyping Essentials = 2,000**

Total = 70,000 + 60,000 + 6,000 + 2,500 + 23220 + 1,500 + 3,500 + 2,100 + 2,500 + 1,800 + 2,000 = ~1,75,120 INR