### **Work Breakdown Structure**

#### **Project Management (Axel)**

* 1. Define project scope and requirements
  2. Develop and monitor project timeline
  3. Coordinate with team members and stakeholders

#### **Hardware Design**

* 1. PCB Design & Fabrication (Colton)
     1. Initial schematic design for ESP32 compatibility
     2. Layout and routing
     3. Order PCB fabrication (account for lead time)
  2. Enclosure Design (Peter + Aidan)
     1. Define material and dimensions
     2. Design for component fitting (PCB, display, RFID module)
     3. Create a 3D model and prototype (e.g., 3D printing)
  3. Power Relay System (Colton)
     1. Select appropriate relays for 120 VAC switching and USB interlock
     2. Design wiring for safety and functionality
     3. Test relay and interlock function with dummy loads

1. **Firmware Development**
   1. ESP32 Firmware Migration (Kevin)
      1. Analyze and adapt existing Raspberry Pi firmware functions
      2. Develop ESP32-compatible code for RFID, relays, and LED feedback
      3. Set up development environment for testing
   2. Functional Modules
      1. RFID Module Integration (Aidan)
         1. Program RFID handling for access control
         2. Test RFID responses with user cards
         3. Improve RFID training flow
      2. Display & Buttons (Aidan + Peter)
         1. Decide on display type and function
         2. Implement LED and buzzer integration
         3. Develop user interaction logic
      3. Current Sense IC (Colton)
         1. Integrate current-sensing IC into ESP32
         2. Develop code to monitor and report power output levels
2. **Front-End Development**
   1. Admin Dashboard (Aidan/Kevin/Axel)
      1. Extract current data and create representations
      2. Determine additional data to transmit/collect
      3. Add to Makerportal
   2. User Dashboard (Aidan/Kevin/Axel)
      1. Determine what can be shown
      2. Extract data and create representations
      3. Add to Makerportal
   3. General Navigation (Aidan/Kevin/Axel)
      1. Add Nav-Bar
      2. Get more user feedback
      3. Add customizable features (sounds, displays, profiles)

#### **System Integration & Testing (James)**

* 1. Component Integration (PCB, relays, RFID, display)
  2. Firmware and Hardware Testing
     1. Unit testing for each module (e.g., RFID, display)
     2. Integration testing with connected components
  3. Prototype Assembly and Functional Testing
     1. Assemble enclosure with internal components
     2. Run full-system tests for access, power control, and status reporting

**Week 1 Milestone (11/13-11/20):** PCB initial design review, Enclosure design 3D model, ESP32 environment setup, RFID prototype reading.

**Week 2 Milestone (11/21-12/2):** PCB sent for fabrication, power relay and interlock wiring draft, firmware for basic functions, RFID test integration.

**Week 3 Milestone (12/2-12/9):** Begin hardware integration testing, firmware debugging with components, and full-system trial assembly.