**Deliverables Documentation**

**Project Title**: Attendance Tracking System   
**Final Deployment Date**: May 22, 2025  
**Deadline**: May 15, 2025 (Delivered 7 days ahead of final deployment)

**1. System Scope Definition**

* **Deliverables**:
  + System Requirements Document
  + Features and Constraints List
* **Description**: Identified and documented all core functionalities required for the system, including attendance tracking, user authentication, and reporting.

**2. User Role Identification and Access Control**

* **Deliverables**:
  + User Roles & Permissions List
  + Role-Based Access Control (RBAC) Matrix
* **Description**: Defined roles (Administrator, Instructor, Student) with specific access rights. Implemented RBAC to enforce system-level security and role segregation.

**3. Database Schema Design**

* **Deliverables**:
  + Entity-Relationship Diagram (ERD)
  + Database Schema for User, Attendance, Course, and Device Tables
* **Description**: Designed structured schemas to manage users, attendance logs, devices, and course enrollments efficiently.

**4. API Development**

* **Deliverables**:
  + User Management API Endpoints
  + Attendance Tracking API Endpoints
  + API Documentation
* **Description**: Developed secure RESTful APIs for user registration, login, attendance tracking, and course management. Integrated with RBAC policies.

**5. Registration and Authentication System**

* **Deliverables**:
  + Functional Registration Module (Instructor and Student)
  + Profile Photo Upload Capability
  + Multi-Factor Authentication (MFA) Integration
* **Description**: Enabled secure registration and login processes. Instructors use MFA; students upload passport-style ID photos.

**6. Device Management**

* **Deliverables**:
  + Device Registration and Deregistration Module
  + Lost Device Locator Feature
* **Description**: Allowed administrators to register devices per instructor and locate lost or unauthorized devices via dashboard.

**7. QR Code-Based Attendance System**

* **Deliverables**:
  + Barcode Scanner Integration
  + QR Code Generator for Students
* **Description**: Enabled instructors to scan student QR codes in real-time for secure attendance marking, linked to time and GPS data.

**8. Absence Drop Mechanism**

* **Deliverables**:
  + Automated Absence Drop Logic Module
  + Attendance Validation Engine
* **Description**: Developed logic to auto-remove students with three consecutive absences from course enrollment, enforcing academic policy.

**9. Attendance Reports**

* **Deliverables**:
  + Attendance Reports (PDF, CSV Formats)
  + Dashboard View for Admins and Students
* **Description**: Implemented reporting tools for course-wise, student-wise, and instructor-wise attendance visualization and download.

**10. Data Security and Encryption**

* **Deliverables**:
  + Password Hashing & Data Encryption Implementation
  + Secured Database Storage
* **Description**: Applied industry-grade encryption methods to protect user credentials and sensitive attendance data.

**11. System Testing and Optimization**

* **Deliverables**:
  + System Assessment Report
  + Bug Fix and Performance Optimization Log
* **Description**: Conducted system-level testing on May 15, 2025, and resolved identified issues before deployment.

**12. Final System Deployment**

* **Deliverables**:
  + Cloud Deployment (MongoDB Atlas or MySQL)
  + Deployment Documentation
* **Description**: Successfully deployed the final system on May 22, 2025, ensuring it is fully functional, secure, and production-ready.