

Key Tasks	What to Document	Deliverables
Implement API and Backend Communication	<ul style="list-style-type: none"> - API endpoint definitions (routes, request/response formats). - Backend-to-Python communication flow. - Data storage format and logging mechanisms. - API error handling and debugging strategies. - Testing procedures for API validation. 	<ol style="list-style-type: none"> 1. Functional API with documented endpoints 2. Backend integration with Python for signal handling 3. JSON-based data storage for oscilloscope measurements. 4. API test results verifying request-response functionality.
Develop Authentication System (OAuth Integration)	<ul style="list-style-type: none"> - Chosen OAuth provider and justification. - Authentication flow diagram. - Security considerations (token expiration, refresh mechanisms). - API authorization rules and permissions. 	<ol style="list-style-type: none"> 1. OAuth-based login system operational. 2. Protected API routes requiring authentication. 3. Documented authentication flow and security policies.
Implement Signal Generation and Acquisition	<ul style="list-style-type: none"> - Signal generation methodology and Python scripts. - SCPI command list and expected oscilloscope responses. - Data acquisition process and JSON storage format. - Observed frequency response and amplitude accuracy. 	<ol style="list-style-type: none"> 1. Python script for signal generation. 2. Verified signal transmission and oscilloscope acquisition. 3. JSON file with oscilloscope measurement data.
Build Frontend User Interface (UI)	<ul style="list-style-type: none"> - UI wireframes and component structure. - Frontend-backend API communication flow. - Bode plot implementation details (Chart.js settings, update logic). 	<ol style="list-style-type: none"> 1. Fully functional UI with real-time data visualization. 2. API-integrated frontend components. 3. Documented frontend architecture.

Implement CI/CD Pipeline and Kubernetes Deployment	<ul style="list-style-type: none">- CI/CD pipeline architecture and workflow.- Kubernetes deployment configuration.- Troubleshooting steps for deployment failures.	<ol style="list-style-type: none">1. Fully functional CI/CD pipeline.2. Kubernetes-deployed backend and frontend.3. Deployment documentation.
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