# Project Scope Baseline

## 1. Project Scope Statement

### 1.1 Product Scope Description

The project is to develop and implement a Library Management System for the Egypt University of Informatics (EUI). The system will automate the library's circulation, cataloging, and patron management processes. It will consist of two primary interfaces:

- **Public-Facing Interface (Online Public Access Catalog - OPAC):**
  - Allows any user to search the library catalog for books.
  - Displays detailed book information based on the MARC record format.
  - Shows the number of available copies for borrowing.
  - Indicates the number of copies held in reserve (20% of total copies).
  - Displays information about supporters and collaborated databases.
- **Administration Interface:**
  - **Circulation Module:** To manage the borrowing and returning of books.
    - Functionality to check out items using a user ID and a book's barcode ID.
    - System validation based on borrowing policies: Students (3 books, 5-day loan), Staff, and semester-long loans for course books.
    - Automated calculation and tracking of late fees.
  - **Cataloging Module:** To manage the library's collection.
    - Functionality to add new books to the system using specified MARC data fields.
    - Process to associate a physical barcode with a digital record.

- **Patrons Module:** To manage user profiles.

    - View user data (major, year) and current borrowing status.

    - Functionality to blacklist users for non-return of items.

  - **Reporting Module:** To provide analytics on library operations.

  - Advanced Search Module: For administrative staff to perform detailed queries.

## 1.2 Project Deliverables

- A fully functional and deployed Library Management System with all features described in section 1.1.

- Technical System Documentation.

- User Manual for Administrative Staff.
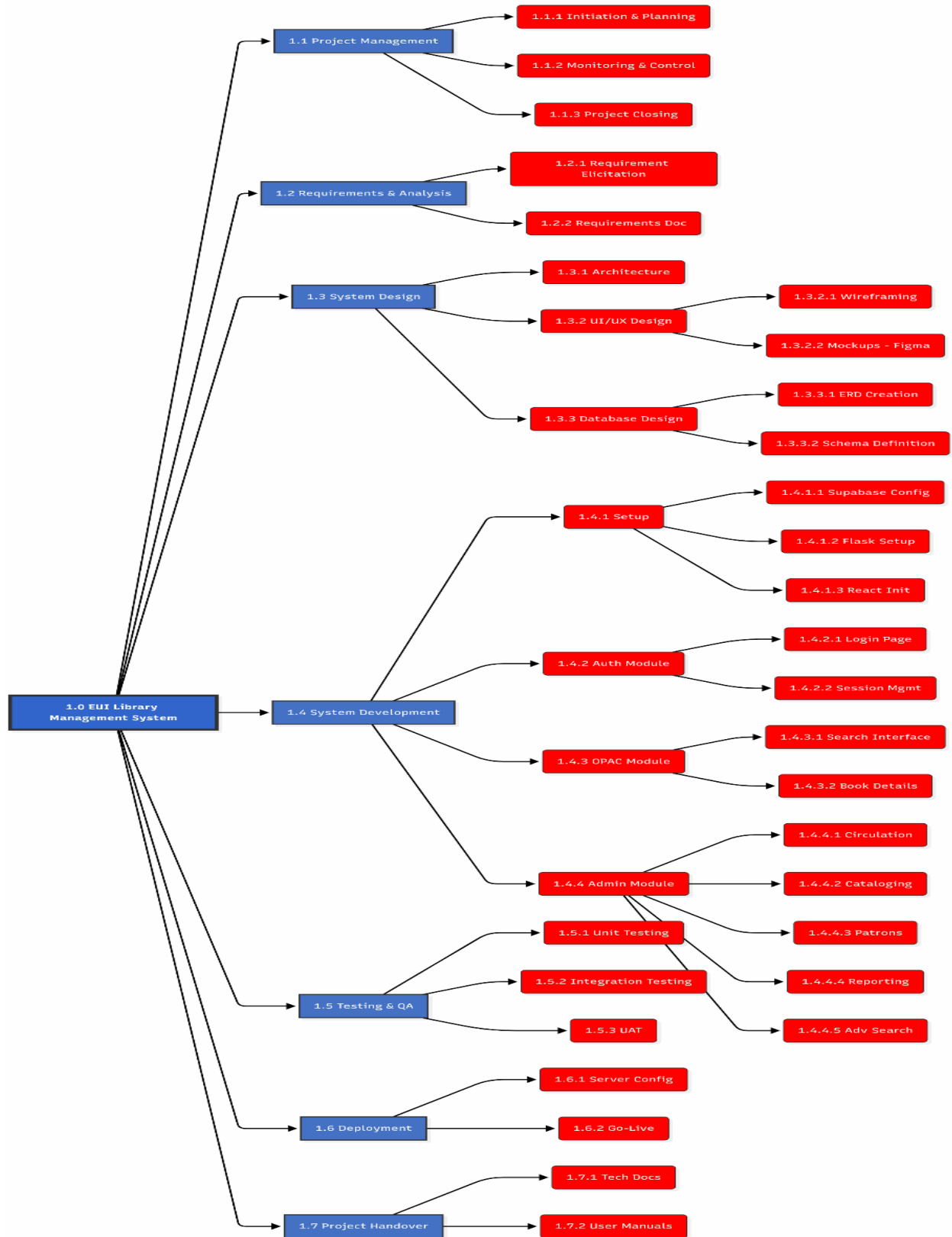
## 1.3 Acceptance Criteria

- All modules described in the Product Scope Description have been developed, tested, and deployed.

- The system can successfully perform all core functions as defined, without error.

- Dr. Yasser Abdou provides formal, written sign-off on the final delivered system.

## 1.4 Out of Scope Requirements

To prevent scope creep, the following are explicitly excluded from the project scope:

- **Acquisitions Module:** The system will not manage the process of purchasing new books.

- **Financial System Integration:** The system will not process payments.

- **Mobile Application:** No native mobile application will be developed.

- **Hardware Provisioning:** The project does not include procuring servers, barcode scanners, or printers.

# 2. Work Breakdown Structure (WBS)

1.0 EUI Library Management System

- **1.1 Project Management**
  - 1.1.1 Project Initiation & Planning
  - 1.1.2 Project Monitoring & Control
  - 1.1.3 Project Closing
- **1.2 Requirements & Analysis**
  - 1.2.1 Requirement Elicitation
  - 1.2.2 Requirements Documentation
- **1.3 System Design**
  - 1.3.1 Architectural Design (React/Flask/Supabase Integration)
  - 1.3.2 UI/UX Design
    - 1.3.2.1 Wireframing
    - 1.3.2.2 High-Fidelity Mockups (Figma)
  - 1.3.3 Database Design
    - 1.3.3.1 Entity Relationship Diagram (ERD) Creation
    - 1.3.3.2 Schema Definition
- **1.4 System Development**
  - 1.4.1 Environment & Database Setup
    - 1.4.1.1 Supabase Configuration
    - 1.4.1.2 Flask API Environment Setup
    - 1.4.1.3 React Project Initialization
  - 1.4.2 Authentication Module
    - 1.4.2.1 Login Page Development
    - 1.4.2.2 User Session Management
  - 1.4.3 Public OPAC Module
    - 1.4.3.1 Search Interface Page
    - 1.4.3.2 Book Details & Availability Page
  - 1.4.4 Administration Module

- ■ 1.4.4.1 Circulation Page (Check-in/Check-out)

- ■ 1.4.4.2 Cataloging Page (Add/Edit Books)

- ■ 1.4.4.3 Patrons Management Page

- ■ 1.4.4.4 Reporting & Analytics Page

- ■ 1.4.4.5 Advanced Search Page

- **1.5 Testing & Quality Assurance**

  - ○ 1.5.1 Unit Testing (Python/JS)

  - ○ 1.5.2 Integration Testing (Selenium)

  - ○ 1.5.3 User Acceptance Testing (UAT)

- **1.6 Deployment**

  - ○ 1.6.1 Server Setup & Configuration

  - ○ 1.6.2 System Go-Live

- **1.7 Project Handover**

  - ○ 1.7.1 Technical Documentation

  - ○ 1.7.2 User Training & Manuals

## 3. WBS Dictionary

WBS Element ID:  1.1.1
**Element Name:** Project Initiation & Planning
**Description of Work:** The work required to define, prepare, and authorize the project. This includes the development of foundational project documents such as the stakeholder register, all management plans (scope, schedule, etc.), and the establishment of the initial project baselines. This work package concludes with formal approval from the project sponsor to proceed.
**Acceptance Criteria:** The Project Management Plan and all associated baselines are completed and formally signed off by the project sponsor.

**WBS Element ID:**  1.1.2
**Element Name:** Project Monitoring & Control
**Description of Work:** The ongoing process of tracking, reviewing, and regulating the progress and performance of the project. This includes managing changes to the scope baseline, schedule, and costs; monitoring risks; and

communicating project status to stakeholders as defined in the communication plan.

**Acceptance Criteria:** Project performance is tracked against the baseline, and status reports are delivered to stakeholders according to the communication plan.

**WBS Element ID:** 1.1.3
**Element Name:** Project Closing
**Description of Work:** Formally complete and close the project. This involves obtaining final acceptance of the product from the sponsor, archiving project documents, documenting lessons learned, and releasing the project team.
**Acceptance Criteria:** Formal project sign-off is received from the sponsor, and a final project report is delivered and archived.

**WBS Element ID:** 1.2.1
**Element Name:** Requirement Elicitation
**Description of Work**: The process of gathering detailed requirements for the Library Management System. This includes conducting interviews with stakeholders, analyzing existing documentation (MARC records), and clarifying all functional and non-functional requirements for the system.
Acceptance Criteria: All requirements are gathered from stakeholders and understood by the project team.

**WBS Element ID:** 1.2.2
**Element Name:** Requirements Documentation
**Description of Work:** Documenting the elicited requirements in a clear, concise, and unambiguous format. This documentation will serve as the input for the System Design phase and will be used to validate the final product against the initial requirements.
Acceptance Criteria: The requirements documentation is complete and has been reviewed and agreed upon by the project team and key stakeholders.

**WBS Element ID:** 1.3.1
**Element Name:** Architectural Design
**Description of Work:** Define and document the overall system architecture. This involves creating the blueprint for how the React frontend, Flask backend, and Supabase infrastructure will interact. It includes specifying API endpoints, data flow, and the overall software structure to ensure a scalable and maintainable system.
Acceptance Criteria: An architectural design document is created, reviewed, and approved by the project's technical lead.

**WBS Element ID:** 1.3.2.1

**Element Name:** Wireframing
**Description of Work:** Create low-fidelity sketches and wireframes in Figma for all system pages (Login, OPAC, Circulation, etc.) to establish the layout and user navigation flow before detailed design begins.
**Acceptance Criteria:** Wireframes for all core pages are completed and approved by the UI lead.

**WBS Element ID:** 1.3.2.2
**Element Name:** High-Fidelity Mockups
**Description of Work:** Develop detailed, colored, and interactive design prototypes in Figma based on the approved wireframes. These mockups will serve as the visual guide for the frontend developers.
**Acceptance Criteria:** The final UI mockups are reviewed and approved by the project manager and sponsor.

**WBS Element ID:** 1.3.3.1
**Element Name:** Entity Relationship Diagram (ERD) Creation
**Description of Work:** Analyze the data requirements (MARC records, Patron data, Circulation rules) and design the logical relationships between data entities. This involves drawing the ERD to visualize tables and foreign key relationships.
**Acceptance Criteria:** An accurate ERD covering all system data is documented.

**WBS Element ID:** 1.3.3.2
**Element Name:** Schema Definition
**Description of Work:** Define the specific data types, constraints, and indexing requirements for the Supabase (PostgreSQL) database based on the ERD.
**Acceptance Criteria:** A finalized database schema document is ready for implementation.

**WBS Element ID:** 1.4.1.1
**Element Name:** Supabase Configuration
**Description of Work:** Initialize the Supabase project, configure the PostgreSQL database tables based on the design schema, and set up Row Level Security (RLS) policies.
**Acceptance Criteria:** The Supabase dashboard is active, tables are created, and the connection strings are available.

**WBS Element ID:** 1.4.1.2
**Element Name:** Flask API Environment Setup
**Description of Work:** Set up the Python environment, install Flask and necessary dependencies (drivers for Supabase), and create the basic folder structure for the backend API.

**Acceptance Criteria:** A "Hello World" API endpoint returns a success response from the local Flask server.

**WBS Element ID:** 1.4.1.3
**Element Name:** React Project Initialization
**Description of Work**: Initialize the frontend project using React, install dependencies (UI libraries, router, Supabase client), and set up the basic routing structure.
**Acceptance Criteria:** The React application builds and runs locally without errors.

**WBS Element ID:** 1.4.2.1
**Element Name:** Login Page Development
**Description of Work:** Develop the User Interface for the login screen in React and integrate it with Supabase Authentication to handle user sign-in for administrative staff.
**Acceptance Criteria:** A user can successfully log in with valid credentials and is redirected to the dashboard.

**WBS Element ID:** 1.4.3.1
**Element Name:** Search Interface Page
**Description of Work:** Develop the OPAC search page where users can input keywords (Title, Author, ISBN). This involves creating the React form and the Flask API route to query the Supabase database.
**Acceptance Criteria:** Users can input search terms and the system queries the database without error.

**WBS Element ID:** 1.4.3.2
**Element Name:** Book Details & Availability Page
**Description of Work:** Develop the page that displays full book details (from MARC data) and real-time availability (Total vs. Reserve copies).
**Acceptance Criteria:** Clicking a search result opens a detailed view showing correct metadata and stock status.

**WBS Element ID:** 1.4.4.1
**Element Name:** Circulation Page (Check-in/Check-out)
**Description of Work:** Develop the administrative page for borrowing. Implement logic to validate student limits (Max 3 books, 5 days), calculate fees, and update inventory in Supabase.
**Acceptance Criteria:** Librarian can scan a user and book, and the system successfully processes the loan or rejection based on rules.

**WBS Element ID:** 1.4.4.2

**Element Name:** Cataloging Page
**Description of Work:** Develop the form for adding new books. Ensure all MARC fields can be input and saved to the Supabase database, generating a unique barcode ID.
**Acceptance Criteria:** A new book can be added via the form and immediately appears in search results.

**WBS Element ID:** 1.4.4.3
**Element Name**: Patrons Management Page
**Description of Work:** Develop the interface to view student/staff profiles, their current loans, and borrowing history. Include functionality to blacklist users.
**Acceptance Criteria:** Admin can view a specific user's history and toggle their blacklist status.

**WBS Element ID:** 1.4.4.4
**Element Name:** Reporting & Analytics Page
**Description of Work:** Develop a dashboard page that visualizes library data (e.g., most borrowed books, overdue lists) using charts.
**Acceptance Criteria:** The page loads correct statistical data derived from the database.

**WBS Element ID:** 1.4.4.5
**Element Name:** Advanced Search Page
**Description of Work:** Develop a multi-filter search tool for admins to find specific records based on complex criteria (Date ranges, specific categories).
**Acceptance Criteria:** Admin can filter results by at least 3 simultaneous criteria.

**WBS Element ID:** 1.5.1
**Element Name:** Unit Testing
**Description of Work:** Write and execute unit tests for the Flask API logic and React components to ensure individual code blocks function correctly.
**Acceptance Criteria:** Critical business logic (e.g., late fee calculation) has passing unit tests.

**WBS Element ID:** 1.5.2
**Element Name:** Integration Testing
**Description of Work:** Use Selenium to automate browser actions to test the flow between the React frontend and Flask/Supabase backend.
**Acceptance Criteria:** Automated scripts successfully complete a full "Borrow and Return" cycle.

**WBS Element ID:** 1.5.3
**Element Name:** User Acceptance Testing (UAT)

**Description of Work:** Conduct testing sessions with Dr. Yasser Abdou to validate the system against real-world library scenarios.
**Acceptance Criteria:** The Sponsor signs off that the system meets all business requirements.

**WBS Element ID:** 1.6.1
**Element Name:** Server Setup & Configuration
**Description of Work:** Configure the University-owned server to host the build artifacts of the React app and the running Flask process. Ensure network connectivity to the Supabase cloud instance.
**Acceptance Criteria:** The application is accessible via the university network.

**WBS Element ID:** 1.6.2
**Element Name:** System Go-Live
**Description of Work:** Deploy the final production version, perform final data migration (if any), and open access to users.
**Acceptance Criteria:** The system is live and stable for end-users.

**WBS Element ID:** 1.7.1
**Element Name:** Technical Documentation
**Description of Work:** Compile the final API documentation, Database Schema (ERD), and architecture diagrams into a handover package.
**Acceptance Criteria:** Complete technical documentation is delivered to the client.

**WBS Element ID:** 1.7.2
**Element Name:** User Training & Manuals
**Description of Work:** Create a step-by-step manual for the admin modules (Circulation, Cataloging) to assist library staff.
**Acceptance Criteria:** User manuals are distributed to the library administration.