ITC 130 – Applications Development in Emerging Technologies

PROJECT X: Automated Attendance Tracking System Requirements Document

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System Overview

The Automated Attendance Tracking System aims to improve the efficiency, accuracy, and security of student attendance monitoring. Utilizing barcode scanning technology, cloud-based storage, and secure access protocols, it offers a dependable solution for educational institutions looking to enhance their attendance management processes.

System Users

The system shall have three primary roles:

- **R00.01** Administrator – Oversees user management and ensures accurate report generation for institutional oversight.
- **R00.02** Instructor – Manages class attendance, records student attendance through barcode scanning, and oversees assigned courses.
- **R00.03** Student – Gains secure access to personal records, including attendance history, through the student portal for self-monitoring and accountability.

1. User Management Requirements

The system shall enable authorized users to manage accounts for both students and instructors in a secure and efficient manner.

- **R01.01** Authorized users shall register instructors by uploading their ID photos, full names, instructor IDs, programs, and faculty details.
- **R01.02** Authorized users shall register students, including their ID photos, full names, student IDs, year levels, programs, and faculty details.
- **R01.03** Authorized users shall have the ability to modify, delete, and review all system records to ensure accurate and organized data.
- **R01.04** Authorized users shall assign one or more devices to an authorized user for attendance recording.
    - **R01.04.01** Each registered device shall be designated to a single instructor.

- **R01.04.02** Approved devices may include:
    - **R01.04.02.01** Mobile phones
    - **R01.04.02.02** Computers
- **R01.05** Authorized users shall register for courses and input relevant course details.
- **R01.06** Authorized users shall assign instructors to courses, specifying the sections they oversee and their corresponding schedules.
- **R01.07** Authorized users shall enroll students in courses, ensuring proper assignment to instructors, schedules, and sections.
- **R01.08** Authorized users shall unregister an instructor's device when necessary to maintain security.
- **R01.09** Authorized users shall locate lost registered devices to prevent unauthorized access.
- **R01.10** Authorized users shall generate reports.
    - **R01.10.01** Reports shall include:
        - **R01.10.01.01** Lists of registered instructors per faculty
        - **R01.10.01.02** List of registered students per faculty
        - **R01.10.01.03** List of registered courses per faculty

2. Attendance Tracking Requirements

The system shall provide a precise and efficient attendance tracking mechanism to ensure reliable student monitoring.

- **R02.01** Authorized users shall record student attendance by scanning barcodes using officially registered devices.
- **R02.02** Authorized users shall update their status as "dropped" in the system if a student accumulates three consecutive absences.
- **R02.03** The system shall automatically generate detailed attendance reports and enable authorized users to download records in CSV format on a monthly basis for analysis and documentation.

- **R02.04** The system shall allow students to:

    - **R02.04.01** View their personal attendance records through a dedicated student portal.

    - **R02.04.02** Track their attendance history and monitor their presence in each enrolled course.

3. Security Requirements

The system shall integrate robust security protocols to safeguard data integrity, confidentiality, and privacy.

- **R03.01** The system shall implement Role-Based Access Control (RBAC) to restrict data access based on user roles and permissions.

- **R03.02** The system shall employ data encryption to safeguard sensitive information and maintain confidentiality.

- **R03.03** The system shall require Multi-Factor Authentication (MFA) for instructor logins to enhance security and prevent unauthorized access.

- **R03.04** The system shall utilize Hypertext Transfer Protocol Secure (HTTPS) with Secure Sockets Layer (SSL) encryption to secure all communications.

4. Infrastructure & Deployment Requirements

The system shall leverage cloud-based solutions to improve scalability, accessibility, and efficient data management.

- **R04.01** The system shall utilize a secure and scalable cloud-based database to store and manage data effectively.

- **R04.02** The system shall be designed for both accessibility and scalability, ensuring seamless performance as user demand increases.

- **R04.03** The system shall operate as a standalone platform without Application Programming Interface (API) integration with other university systems at this stage.

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5. Project Timeline

- **R05.01** The system shall undergo initial checking on **May 15, 2025.**

- **R05.02** The system shall be fully operational and deployed by **May 22, 2025**.

By adhering to these structured requirements, the system will optimize attendance management, strengthen security, and enhance data visualization, enabling more informed decision-making.