### **Use Case Diagram Overview**

### **1. Admin/Invigilator Use Cases**

#### **UC1: Manage Student Enrollment**

* **Description**: Approve/reject student enrollment after verifying documents.
* **Trigger**: Student submits enrollment documents.
* **Preconditions**:
* System is set up.
* Student has uploaded Form B, ID, fee receipt, and biometric data.
* **Flow**:

1. Admin logs into the system.
2. Navigates to "Pending Enrollments".
3. Reviews student documents.
4. Approves or rejects enrollment.

* **Postconditions**: Student is enrolled (or rejected) and notified via email/SMS.

#### **UC2: Create Exam Session**

* **Description**: Set up an authentication session for a specific course/exam.
* **Trigger**: Exam timetable is published.
* **Preconditions**:
* Admin is logged in.
* Class list with CA marks is uploaded.
* **Flow**:

1. Admin selects "Create New Session".
2. Inputs faculty/school, department, level, course, date, start and end times and venue.
3. System auto-generates the list of eligible students (with CA marks).
4. Session is saved.

* **Postconditions**: Session is active and ready for authentication.

#### **UC3: Upload Class List with CA Marks**

* **Description**: Upload a CSV/Excel file of students and CA marks for a course.
* **Trigger**: Course coordinator provides the class list.
* **Preconditions**:
* Admin is logged in.
* CSV/Excel file is formatted correctly.
* **Flow**:

1. Admin selects "Upload Class List".
2. Uploads the file.
3. System validates and links CA marks to enrolled students.

* **Postconditions**: CA marks are visible in the session dashboard.

#### **UC4: Monitor Authentication Session**

* **Description**: Real-time view of authenticated/flagged students during an exam.
* **Trigger**: Exam session starts.
* **Preconditions**:
* Exam session is active.
* **Flow**:

1. Admin opens the session dashboard.
2. Views real-time list of:  
   * Authenticated students (green).
   * Question Marked students (red) with reasons (e.g., "CA Missing").

* **Postconditions**: Admin can intervene for flagged cases.

#### **UC5: Generate Attendance Report**

* **Description**: Export post-exam attendance report.
* **Trigger**: Exam session ends.
* **Preconditions**:
* Session is closed.
* **Flow**:

1. Admin selects "Generate Report".
2. Chooses format (PDF/Excel).
3. Downloads and shares with the exam office.

* **Postconditions**: Report is archived for future audits.

### **2. Student Use Cases**

#### **UC6: Submit Enrollment Documents**

* **Description**: Upload Form B, ID, and fee receipt to the system.
* **Trigger**: Student wants to enroll for exams.
* **Preconditions**:
* Student has valid documents.
* **Flow**:

1. Student logs into the portal.
2. Uploads scanned documents.
3. Submits for approval.

* **Postconditions**: Documents are pending admin review.

#### **UC7: Enroll Biometric Data**

* **Description**: Register fingerprint/face at a physical kiosk.
* **Trigger**: Enrollment documents are approved.
* **Preconditions**:
* Enrollment is approved (UC1).
* Biometric hardware is available.
* **Flow**:

1. Student visits enrollment kiosk.
2. Scans biometric (e.g., fingerprint) 3 times for accuracy.
3. System confirms enrollment.

* **Postconditions**: Biometric template is stored securely.

#### **UC8: Authenticate for Exam**

* **Description**: Verify identity and eligibility before entering the exam hall.
* **Trigger**: Student arrives for an exam.
* **Preconditions**:
* Exam session is active (UC2).
* Student is enrolled (UC7).
* **Flow**:

1. Student scans biometric at the exam kiosk.
2. System checks:  
   * Biometric match.
   * Valid documents.
   * CA mark eligibility.
3. Displays:  
   * ✅ **Authenticated** (grant access).
   * ❌ **Question Marked** (deny access + reason).

* **Postconditions**: Student is allowed/denied entry; log is saved.

### **Edge Cases**

1. **UC9: Handle Biometric Mismatch**

* **Flow**:  
  1. Student fails biometric scan 3 times.
  2. System prompts for manual ID input.
  3. Admin verifies ID manually.

1. **UC10: Resolve Missing CA Mark**

* **Flow**:  
  1. Student is flagged for "CA Missing".
  2. Admin checks with the course coordinator.
  3. Updates CA mark manually (if error).

### **Key Workflows**

#### **Student Flow**

1. Submit documents (UC6) → Enroll biometrics (UC7) → Authenticate (UC8).

#### **Admin Flow**

1. Approve enrollments (UC1) → Upload CA marks (UC3) → Create session (UC2) → Monitor (UC4) → Generate report (UC5).