

Testing Pack

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- **Login & roles**

- Wrong password is rejected; shows “incorrect username or password.”
- After login, the dashboard matches the role (student/instructor/admin).

- **Student**

- See catalog with code/title/credits/capacity/instructor.
- Register in a section with free seats → success and appears in “My Registrations” and timetable.
- Try to register the same section again → blocked as the “Register” button changes to a “Drop” button
- Try to register in a full section → blocked with “Section full.”
- Drop before deadline → success; appears removed.
- View grades for registered courses and sections (only after course completion)
- Download transcript (CSV or PDF) listing completed courses/grades.

- **Instructor**

- See only their own sections.
- Enter scores (quiz/midterm/end-sem) → saved.
- Compute final grade using the rule in the report → shows final values.
- Try to edit a section they do not teach → blocked with “Not your section.”

- **Admin**

- Create a new student user (username+role in Auth DB; student profile in ERP DB).
- Create a course and a section; assign instructor.
- Toggle Maintenance ON → banner shows; student/instructor can view but cannot change (register/drop, grades blocked with message).
- Toggle Maintenance OFF → normal behavior returns.

- **Password & Auth separation**

- Password hash exists in Auth DB (not the real password).
- ERP DB does not contain passwords.
- Login uses Auth DB, then loads student/instructor profile from ERP DB via the shared user id.

- **Exports (pick at least one)**

- Transcript export (Student) or grade CSV export (Instructor) works and opens.

- **Edge & negative tests**

- Capacity cannot be negative or nonsensical.
- Register/drop after the stated deadline → blocked with message.
- Student cannot view or change another student's data.
- Instructor cannot grade students from another instructor's section.
- With Maintenance ON, student/instructor changes are blocked everywhere (not only on one screen).

- **Data integrity checks**

- Duplicate enrollments (same student+same section) are prevented.
- Removing a section: either blocked when students are enrolled or clearly explained/documented.

- **Security basics**

- Real passwords are never stored; only hashes.
- A Change Password dialog exists (bonus).
- After 5 wrong login attempts, show a warning or temporary lock (bonus).
- Access rules checker is called before any change (we will try to bypass via UI flow).

- **UI/UX checks**

- Buttons and labels are clear; errors are friendly.
- Tables for lists; sorting/filtering is a plus.
- Long actions show “please wait” (even a simple dialog).

- **Performance sanity**

- Catalog list of ~100 courses opens quickly (a few seconds or less).
- App starts without long hangs or crashes.

- **Maintenance & (optional) backup/restore**

- Maintenance toggle flips the settings flag and the UI shows a banner immediately.
- All student/instructor writes are blocked while ON.
- (Bonus) Backup/restore: trigger backup, change a row, restore, and see it revert.

- **Dynamic Grading & Components (Instructor)**

- **Component Validation:** Try to save grade components where the total weight is \neq 100% (e.g., 90% or 110%) → Blocked with "Must equal 100%" message.
- **Negative Input:** Enter a negative score in the "Edit Grades" table → Blocked or validation error shown.
- **Format Handling:** Enter non-numeric text (e.g., "Absent") into a grade cell → Input rejected or handled gracefully without crashing.
- **JSON Persistence:** Change grading components (e.g., add "Project"), save, logout, and login again → The new components persist in the column headers.

Testing Summary: We tested our ERP-system for the various test cases listed above, using the sample input data that we have attached with our submission. We have compiled the result below in tabular format.

Test Category	Test Cases	Status	Key Validations
Authentication & Security	9	PASS	Password hashing, SQL injection prevention, and the "5-strike" account lockout mechanism.
Student Module	7	PASS	Catalog loading, successful registration, and duplicate/full-capacity blocking logic.
Instructor Module	4	PASS	Section isolation (only seeing own courses) and grade entry persistence.
Admin & Maintenance	7	PASS	User creation, Maintenance Mode enforcement (locking writes globally), and Database Backup/Restore.
Data Integrity & Edge Cases	7	PASS	Prevention of negative capacities, invalid date inputs, and cross-student data access.
System Performance & UI	6	PASS	Application load times <2s, Dark Theme consistency, and CSV export functionality.
Dynamic Grading (JSON)	4	PASS	Validation of 100% weight totals and persistence of custom grading components.
TOTAL	44	100%	