Traceability Matrix

Appendix A: Final Requirement Traceability Matrix

Req. ID	Description	Categories	Type(s) FR/NFR	Status
R1	User authentication with secure password hashing and session management.	Integrity	**FR**	Satisfied
R2	Admin page to manage dashboard, courses, and user information.	Functionality	**FR**	Satisfied
R3	Timetable generation with hard constraints on room, teacher, and student allocations.	Functionality	**FR**	Satisfied
R4	Scalability to support 50,000 monthly users and database growth options.	Performance	**NFR**	Satisfied
R5	Security measures including rate limiting, MFA, and encrypted data.	Security	**FR**	Partially Satisfied
R6	AI Assistant functionality for information retrieval and database modifications.	Functionality	**FR**	Satisfied
R7	Admin can export	Data Visualisation	**FR**	Satisfied

	timetables in Excel format for sharing purposes.			
R8	System supports responsive design for various screen sizes.	UI/UX	**NFR**	Satisfied
R9	Data consistency between admin updates and displayed timetable.	Cross-Platform	**NFR**	Satisfied
R10	Error handling to display user-friendly messages during issues.	UI/UX	**NFR**	Partially Satisfied
R11	Automatic timetable generation with no student or staff clashes.	Functionality	**FR**	Satisfied
R12	Admin can manually modify timetables and notify stakeholders of changes.	Functionality	**FR**	Satisfied
R13	Support for filtering and viewing times tables based on various criteria.	Functionality	**FR**	Partially Satisfied
R14	Data backup and recovery to prevent data loss in case of technical failures.	Integrity	**FR**	Satisfied
R15	Access control management for setting different	Security	**NFR**	Partially Satisfied

	permissions based on admin roles.			
R16	Audit logging of admin actions to enhance traceability and accountability.	Security	**NFR**	Satisfied
R17	Timetable optimization feedback for admins to assess constraint satisfaction level.	Functionality	**FR**	Satisfied
R18	Real-time updates on timetable changes to ensure immediate reflection across the system.	Performance	**NFR**	Satisfied
R19	API integration capability for future data exchanges with external systems.	Functionality	**FR**	Partially Satisfied