Functional Requirements Document (FRD)

iERP - Integrated Educational Resource Planning System

Executive Summary

This document presents all functional requirements for the iERP system organized in tabular format for enhanced consistency, visibility, and traceability. Each requirement includes unique identifiers, priority levels, acceptance criteria, and cross-references to modules and workflows derived from the institutional flowchart.

Ph.D. Lifecycle Module Requirements

Table 1: Ph.D. Admission Process

FR-ID	Function	Description	Input Data	Output/Result	Priority	Acceptance Criteria
FR-PHD-001	PET Application	Students fill and submit online PET application	Personal info, academic records, research interests	Application ID, confirmation email	Critical	Form submitted successfully, email received within 5 min
FR-PHD-002	PET Exemption	Faculty apply for exemption with proof	Service certificate, publications, credentials	Exemption approval status	High	Exemption approved/rejected within 7 days
FR-PHD-003	Application Scrutiny	DRC reviews and qualifies applications	All submitted applications, eligibility criteria	Qualified/Not Qualified status	Critical	All applications reviewed within 30 days

FR-ID	Function	Description	Input Data	Output/Result	Priority	Acceptance Criteria
FR-PHD-004	Interview Scheduling	Auto-generate interview schedules	Qualified candidates, DRC availability	Interview schedule notifications	Critical	Interview scheduled within 15 days of qualification
FR-PHD-005	Interview Conduction	DRC conducts and records interview evaluations	Interview questions, panel feedback	Recommendation (Qualified/Not Qualified)	Critical	Interview report completed with scores
FR-PHD-006	Document Verification	Verify original documents physically	Submitted documents, verification checklist	Verification status (Complete/Incomplete)	High	Documents verified within 10 days
FR-PHD-007	Fee Payment	Process online fee collection	Student bank details, fee amount	Payment receipt, confirmation	Critical	Payment processed within 24 hours
FR-PHD-008	Guide Allocation	DRC allocates research supervisor	Qualified candidates, faculty availability	Allocation certificate, guide assignment	Critical	Guide allocated within 7 days of fee payment

Table 2: Ph.D. Guide Acceptance

FR-ID	Function	Description	Input Data	Output/Result	Priority	Acceptance Criteria
FR-PHD-009	Allocation Certificate Issue	Generate and issue guide allocation certificates	Student & guide details	Certificate document	High	Certificate generated within 2 days
FR-PHD-010	Guide Acceptance Letter	Students submit guide acceptance letter	Signed acceptance letter	Acceptance recorded in system	Critical	Letter received and verified within 7 days
FR-PHD-011	Guide Verification	Guide verifies and accepts allocated students	Guide confirmation	Student-guide relationship confirmed	Critical	Verification completed within 5 days

Table 3: Research Advisory Committee (RAC) Reviews

FR-ID	Function	Description	Input Data	Output/Result	Priority	Acceptance Criteria
FR-PHD-012	Eligibility Form Submission	Students submit eligibility forms with documents	Eligibility form, required documents	Form submission confirmation	High	Form submitted by deadline, no rejections
FR-PHD-013	RAC Meeting Scheduling	Schedule RAC meetings with notifications	Meeting date, RAC members, students	Meeting notifications, calendar entries	Critical	Notifications sent 10 days in advance
FR-PHD-014	Progress Report Review	RAC conducts reviews and submits progress reports	Student research data, semester progress	RAC review report, recommendations	Critical	Report submitted within 15 days of meeting
FR-PHD-015	Guide Notification	Send RAC decisions to research guides	Meeting decisions, recommendations	Guide notification emails	High	Notifications sent within 2 days of review
FR-PHD-016	Performance Assessment	Evaluate student performance against criteria	Performance metrics, research output	Continuation/Extension/ Cancellation decision	Critical	Assessment completed for all students
FR-PHD-017	Course Work Approval	Generate Board of Management approval for coursework	Completed coursework documents	Approval status	High	Approval processed within 10 days
FR-PHD-018	Duration Enforcement	Enforce maximum program duration limits	Student enrollment date, current date	Registration cancellation recommendation	Critical	Automatic flag at max duration threshold

Table 4: Synopsis and Thesis Management

FR-ID	Function	Description	Input Data	Output/Result	Priority	Acceptance Criteria
FR-PHD-019	Synopsis Submission	Students submit synopsis document	Synopsis document file	Submission confirmation, reference ID	Critical	Submitted within 3 months of RAC approval
FR-PHD-020	Plagiarism Check	Verify thesis/synopsis for plagiarism	Document file	Plagiarism report with similarity %	Critical	Report generated within 24 hours, <20% threshold
FR-PHD-021	Adjudicator Assignment	Send documents to adjudicators for evaluation	Synopsis/thesis, adjudicator list	Assignment notifications	Critical	Assigned within 3 days of submission
FR-PHD-022	RRC Submission	Submit documents to Research Review Committee	Adjudicator reports, student documents	RRC receipt acknowledgment	Critical	Submitted within 5 days of adjudicator reports
FR-PHD-023	Language Proofing	Perform language and format verification	Document text, format standards	Proofing report	High	Report completed within 10 days
FR-PHD-024	Thesis Evaluation	Adjudicators evaluate thesis comprehensively	Complete thesis document	Evaluation report with recommendations	Critical	Report received within 30 days

Table 5: Viva Voce and Degree Award

FR-ID	Function	Description	Input Data	Output/Result	Priority	Acceptance Criteria
FR-PHD-025	Viva Voce Scheduling	Schedule viva voce examination	Thesis evaluation complete, panel availability	Viva schedule notification	Critical	Scheduled within 10 days of thesis approval
FR-PHD-026	Viva Voce Conduction	Conduct viva examination and record evaluation	Thesis, evaluation questions, candidate	Viva report with recommendation	Critical	Report generated on examination day

FR-ID	Function	Description	Input Data	Output/Result	Priority	Acceptance Criteria
FR-PHD-027	Re-Viva Scheduling	Schedule re-viva if recommended	Previous viva outcome, minimum 6-month gap	Re-viva schedule	Medium	Scheduled minimum 6 months after initial viva
FR-PHD-028	Degree Award	Generate and award degree certificate	Viva recommendation (Award Degree)	Degree certificate	Critical	Certificate generated within 5 days of approval
FR-PHD-029	Audit Trail Maintenance	Maintain complete audit of all decisions	All review decisions, timestamps, approver IDs	Audit log	Critical	100% of decisions logged with complete details

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NAAC Accreditation Process Module Requirements

Table 6: IIQA (Institutional Information Quality Assurance)

FR-ID	Function	Description	Input Data	Output/Result	Priority	Acceptance Criteria
FR-NAAC-001	IIQA Template Provision	Provide IIQA submission templates	Standard IIQA format, data requirements	Template documents	High	Templates match NAAC 2024 standards
FR-NAAC-002	Document Upload	Support upload of supporting evidence documents	Document files (PDF, images)	File stored with reference ID	High	File size <50MB, virus-scanned
FR-NAAC-003	Fee Payment Processing	Process IIQA submission fee online	Payment details, fee amount	Payment receipt	Critical	Receipt generated immediately after payment
FR-NAAC-004	Completeness Verification	Verify all required data fields are submitted	IIQA form data, mandatory field list	Completeness report with missing items	High	100% accuracy in validation

FR-ID	Function	Description	Input Data	Output/Result	Priority	Acceptance Criteria
FR-NAAC-005	Clarification Query Display	Display IIQA review team queries	Query notifications from reviewers	Query messages in system	High	Displayed within 24 hours of receipt
FR-NAAC-006	Clarification Response	Accept and submit responses to queries	Response documents and explanations	Response submission confirmation	Critical	Response submitted within specified deadline
FR-NAAC-007	Verification Tracking	Track IIQA verification status with timeline	Verification steps, timestamps	Status dashboard with approver details	High	Updated within 24 hours of each action

Table 7: Self-Evaluation Report (SSR)

FR-ID	Function	Description	Input Data	Output/Result	Priority	Acceptance Criteria
FR-NAAC-008	SSR Framework Setup	Configure SSR structure with institutional framework	NAAC standards, institutional data	SSR template ready	High	Template aligns with NAAC 7-criteria model
FR-NAAC-009	Bibliometric Data Collection	Retrieve bibliometric data from Inflibnet	Inflibnet API integration	Bibliography dataset	Critical	Data current within 30 days
FR-NAAC-010	Multi-level Input Compilation	Compile SSR inputs from Department and School	Department author submissions, school approval	Consolidated SSR document	Critical	All departments contribute within timeline
FR-NAAC-011	School Approval Workflow	Generate approval chain from school admin	School admin review, signed approval	Approval record	Critical	Approved within 15 days of submission
FR-NAAC-012	SCEC Submission	Submit SSR to State Council for Educational Cooperation	Final SSR, supporting documents	Submission acknowledgment	Critical	Submitted by NAAC deadline
FR-NAAC-013	Version Control	Maintain version history with revision tracking	Document changes, timestamps	Version history log	High	All versions retained with audit trail

Table 8: DVV Process and Metrics

FR-ID	Function	Description	Input Data	Output/Result	Priority	Acceptance Criteria
FR-NAAC-014	DVV Workflow Execution	Execute DVV process per institutional requirements	DVV step list, verifier assignments	DVV progress tracking	High	Workflow completed per schedule
FR-NAAC-015	Verification Status Tracking	Track DVV verification milestones	Verification checklist, validator feedback	Status reports with timeline	High	Updated weekly during DVV process
FR-NAAC-016	QNM Calculation	Calculate QNM percentage from institutional metrics	Metric data per NAAC formula	QNM percentage score	Critical	Calculation verified by finance team
FR-NAAC-017	Pre-qualification Verification	Verify institutional pre-qualification status	Calculated QNM, eligibility thresholds	Pre-qualification status report	Critical	Verified against NAAC guidelines
FR-NAAC-018	NAAC Readiness Report	Generate NAAC readiness dashboard showing compliance	All NAAC process data	Readiness dashboard, gap analysis	High	Report updated in real-time

Placement Tracking Module Requirements

Table 9: Placement Process Workflow

FR-ID	Function	Description	Input Data	Output/Result	Priority	Acceptance Criteria
FR-PLACE-001	Student Registration	Allow students to register for placement	Personal details, academic	Registration confirmation, ID	High	Registration completed

			info, resume			within 2 days
FR-PLACE-002	Company Profile Management	Maintain company recruitment information	Company details, job profiles, salary	Company profile accessible	Critical	Profiles updated before each campus drive
FR-PLACE-003	Company Profile Sharing	Share company information with interested students	Company profile, selected student list	Notification sent to students	High	Shared within 24 hours of company approval
FR-PLACE-004	Interview Scheduling	Schedule and manage student interviews	Interview date, student-company pairing	Interview calendar, notifications	Critical	Scheduled 7 days before interview date
FR-PLACE-005	Shortlisting Tracking	Track student shortlisting per company round	Interview results, shortlist criteria	Shortlist status per student-company	Critical	Updated same day as interviews
FR-PLACE-006	Job Offer Management	Record and track job offers from companies	Offer letter, compensation details	Offer status, tracking record	Critical	Offer recorded within 24 hours of issue
FR-PLACE-007	Student Interaction	Facilitate communication regarding offers	Messages, clarifications, acceptance	Interaction log	Medium	Messages delivered within 2 hours
FR-PLACE-008	Placement Statistics	Generate placement rate and outcome reports	Placed/not placed counts, salary data	Statistics report, dashboard	Critical	Accurate to within 100% verification
FR-PLACE-009	Placement History Tracking	Maintain complete history per student	All placement activities, dates, outcomes	Searchable history record	High	Complete record with zero data loss

Chatbot Module Requirements

Table 10: Chatbot Question and Answer Management

FR-ID	Function	Description	Input Data	Output/Result	Priority	Acceptance Criteria
FR-CHAT-001	Pre-defined Question Setup	Define pre-defined question sets by keywords	Question text, keywords, categories	Question database entry	High	Searchable by min 3 keywords
FR-CHAT-002	Custom Question Creation	Allow admin to create custom questions	Question text, answer, keywords	Question added to knowledge base	Medium	Custom questions tested before deployment
FR-CHAT-003	Answer Definition	Define answers with maximum possibility matching	Answer text, confidence thresholds	Answer stored in knowledge base	Critical	Answer accuracy verified by SME
FR-CHAT-004	Next Question Logic	Setup conditional next question based on response	Condition rules, next question ID	Logic flow defined and tested	Medium	Logic tested with sample conversations
FR-CHAT-005	Static Message Support	Support static responses for common queries	Message text, trigger keywords	Message stored and retrievable	Medium	Messages delivered within 2 seconds
FR-CHAT-006	External URL Embedding	Allow embedding URLs in chatbot responses	URL, description, link context	URL accessible in response	Low	URL validation performed at save
FR-CHAT-007	Dynamic Data Retrieval	Fetch real-time data from system based on user rights	User role, data query, access controls	Personalized data in response	Critical	Data accuracy verified, respects access controls
FR-CHAT-008	File Attachment Support	Support file attachments in responses	File upload, file type validation	File stored and retrievable	Medium	File size <10MB, virus-scanned

Table 11: Chatbot User Interaction

FR-ID	Function	Description	Input Data	Output/Result	Priority	Acceptance Criteria

FR-CHAT-009	User Authentication	Authenticate users before chat session	Username/password, MFA	Session token, access granted	Critical	Authentication completed within 30 seconds
FR-CHAT-010	Multi-language Support	Support multiple language interaction	Language preference input	UI and responses in selected language	High	5+ languages supported
FR-CHAT-011	Voice Input Processing	Convert voice input to text	Audio file, audio processing	Text transcription	Medium	Accuracy >90% in quiet environment
FR-CHAT-012	Text-to-Voice Output	Provide voice output for accessibility	Response text	Audio playback	Medium	Clear audio quality, natural intonation
FR-CHAT-013	Satisfaction Rating	Collect user satisfaction feedback	Satisfied/Unsatisfied selection	Feedback stored for analytics	Medium	Rating visible after each response
FR-CHAT-014	Google Assistant Integration	Enable Google Assistant voice commands	Voice command input	Response via Google Assistant	Low	Integration tested with common queries
FR-CHAT-015	Chat Session Management	Manage chat session lifecycle	Session start/end, conversation history	Session history saved	Critical	Session saved for audit, searchable
FR-CHAT-016	Admin Escalation	Display when executive available for escalation	Executive availability data	Escalation option visible to user	Medium	Updated every 30 minutes

Table 12: Chatbot Administration and Analytics

FR-ID	Function	Description	Input Data	Output/Result	Priority	Acceptance Criteria
FR-CHAT-017	Response Evaluation	Allow admin to evaluate responses	Chat log, evaluation rating	Evaluation recorded	Medium	Accessible within 24 hours of chat

FR-CHAT-018	Usage Reports	Generate chatbot usage and analytics reports	Chat logs, queries, satisfaction data	Analytics dashboard, trend reports	High	Reports updated daily

Entrepreneur Cell Module Requirements

Table 13: Entrepreneur Cell Process

FR-ID	Function	Description	Input Data	Output/Result	Priority	Acceptance Criteria
FR-ENTRE-001	Innovation Category Definition	Define innovation categories and parameters	Category names, criteria, funding levels	Categories configured in system	High	Categories match institutional strategy
FR-ENTRE-002	Project Setup Configuration	Configure project setup and milestones	Project template, milestones, timeline	Configuration saved and deployable	High	Configuration reviewed by leadership
FR-ENTRE-003	Student Project Application	Students submit innovation project ideas	Project description, team details, budget	Application ID, submission confirmation	Critical	Applications submitted via standardized form
FR-ENTRE-004	Approval Level-1	Level-1 approval evaluation	Project evaluation criteria, evaluator review	Level-1 approval status	High	Decision made within 10 days
FR-ENTRE-005	Approval Level-2	Level-2 approval and funding decision	Level-1 results, funding budget available	Level-2 approval status	Critical	Final approval within 15 days total
FR-ENTRE-006	Fund Disbursement	Disburse approved funds to student accounts	Bank details, approved amount	Payment receipt, fund tracking	Critical	Funds disbursed within 5 days of approval
FR-ENTRE-007	Notification System	Send notifications for submission	Event triggers, notification templates	Notifications sent to stakeholders	High	Notifications within 24 hours of event

FR-ID	Function	Description	Input Data	Output/Result	Priority	Acceptance Criteria
		s and approvals				
FR-ENTRE-008	Project Tracking Reports	Generate project tracking and incubation analytics	Project data, milestone data	Project status reports, analytics	Medium	Reports updated monthly

Training and Internship Module Requirements

Table 14: Training and Internship Management

FR-ID	Function	Description	Input Data	Output/Result	Priority	Acceptance Criteria
FR-TRAIN-001	Training Calendar Management	Maintain employee training calendar	Training programs, dates, instructors	Training schedule accessible	High	Calendar updated 30 days in advance
FR-TRAIN-002	Employee Training Tracking	Track employee participation and completion	Attendance records, certificates	Training completion status	High	Tracked for all training programs
FR-TRAIN-003	Internship Program Registration	Manage student internship with companies	Internship details, company assignment	Registration confirmed	Critical	Registration completed within 5 days
FR-TRAIN-004	Internship Period Tracking	Track internship duration and completion	Start date, end date, milestones	Completion status, duration verified	Critical	Automatically updated based on dates
FR-TRAIN-005	Mentor Assignment	Assign employee mentors to interns	Mentor availability, skills match	Mentor-intern pairing confirmed	High	Assignment completed within 3 days
FR-TRAIN-006	Training Reports Generation	Generate training and internship reports	Participation data, completion metrics	Report in PDF/Excel format	Medium	Reports generated within 24 hours

Transportation Module Requirements

Table 15: Transportation Facility Management

FR-ID	Function	Description	Input Data	Output/Result	Priority	Acceptance Criteria
FR-TRANS-001	Route Configuration	Configure transportation routes and vehicles	Route details, vehicle info, capacity	Route database	Medium	Routes optimized for cost-efficiency
FR-TRANS-002	Student Registration	Register students for transportation facilities	Student details, preferred route	Registration confirmation	High	Registration processed within 24 hours
FR-TRANS-003	Location Tracking	Track student transportation with GPS (if available)	GPS coordinates, vehicle location	Real-time location dashboard	Medium	Update frequency: every 5 minutes
FR-TRANS-004	Transportation Reports	Generate facility utilization and tracking reports	Usage data, cost data, route efficiency	Report in PDF/Excel	Medium	Reports generated monthly

Alumni Database Module Requirements

Table 16: Alumni Management

FR-ID	Function	Description	Input Data	Output/Result	Priority	Acceptance Criteria
FR-ALUMNI-001	Alumni Profile Management	Allow alumni to create and manage profiles	Career info, contact details, photos	Profile saved and searchable	High	Profile creation <5 minutes
FR-ALUMNI-002	Alumni Directory	Provide searchable alumni directory	Name, year, department search criteria	Search results with contact info	Critical	Search results within 2 seconds

FR-ID	Function	Description	Input Data	Output/Result	Priority	Acceptance Criteria
FR-ALUMNI-003	Job Posting Features	Support alumni job search and company listings	Job postings, company profiles	Searchable job database	Medium	Updated as new jobs posted
FR-ALUMNI-004	Gallery Management	Maintain photo gallery and event documentation	Event photos, captions, dates	Gallery accessible and searchable	Medium	Upload capability with batch processing
FR-ALUMNI-005	Alumni Engagement	Share institutional events and news with alumni	Event details, news articles	Notifications sent to alumni	High	Sent within 24 hours of publication
FR-ALUMNI-006	Network Analytics	Generate alumni engagement and network reports	Connection data, engagement metrics	Network analysis reports	Low	Reports generated quarterly

Employee Development Module Requirements

Table 17: Employee Development Activities

FR-ID	Function	Description	Input Data	Output/Result	Priority	Acceptance Criteria
FR-EMP-001	Activity Categorization	Categorize employee development activities	Activity type (conference, workshop, certification)	Category configured	Medium	Categories match institutional taxonomy
FR-EMP-002	Employee Submission	Submit personal development information	Activity details, documentation, dates	Submission confirmed with ID	High	Submitted by deadline
FR-EMP-003	Event Configuration	Configure category-wise employee events	Event details, requirements, approvers	Event setup complete	Medium	Configuration reviewed by department
FR-EM	Event Assignment	Assign events to employees	Event selection,	Assignment confirmed	Medium	Assignment tracked for compliance

		with attachments	supporting documents			
FR-EM P-005	Event Approval	Manage event approval workflows	Manager approval, budget validation	Approval status	High	Approved within 10 days
FR-EM P-006	Research Development Tracking	Track faculty research and publications	Publication details, grant information	Research record maintained	High	Updated immediately upon entry
FR-EM P-007	Research Verification	Verify research application submissions	Application documents, supporting evidence	Verification status, approval	High	Verification completed within 15 days

Core Administrative and Common Features

Table 18: User Management and Access Control

FR-ID	Function	Description	Input Data	Output/Result	Priority	Acceptance Criteria
FR-ADMIN-001	User Registration	Register users with role-based access	User details, role assignment, department	User account created, credentials issued	Critical	Account active within 24 hours
FR-ADMIN-002	Password Security	Enforce password complexity and expiration	Password rules (min length, chars)	Password accepted or rejected	Critical	Minimum 8 chars, mixed case, numbers, special
FR-ADMIN-003	Multi-factor Authentication	Enable MFA for enhanced security	Phone/email for OTP, authenticator app	MFA option available	High	MFA setup within 15 minutes
FR-ADMIN-004	Role Assignment	Assign and manage user roles	Role matrix,	Permission set applied	Critical	Permissions effective

		and permissions	access control list			within 1 hour
FR-ADMIN-005	Audit Trail Logging	Log all user activities with timestamps	Every action (login, logout, data access)	Audit log entry created	Critical	100% logging, zero data loss

Table 19: Document Management

FR-ID	Function	Description	Input Data	Output/Result	Priority	Acceptance Criteria
FR-DOC-001	Document Upload	Support document upload with validation	File, file type, file size	File stored in repository	Critical	Size limit 50MB, whitelist file types
FR-DOC-002	Version Control	Maintain document versioning	Document edits, change metadata	Version history with diff tracking	High	All versions retained, rollback capability
FR-DOC-003	Document Preview	Preview common file types	Document file	Preview rendered in browser	Medium	Supports PDF, DOCX, images, spreadsheets
FR-DOC-004	Archival Policies	Support document archival and retention	Document age, retention rules	Archive process executed	Medium	Archival executed per policy schedule

Table 20: Approval Workflow Management

FR-ID	Function	Description	Input Data	Output/Result	Priority	Acceptance Criteria
FR-WORK-001	Workflow Rule Definition	Define approval process rules	Step sequence, approver list, conditions	Workflow configured	Critical	Workflow tested before deployment
FR-WORK-002	Sequential Approvals	Support sequential approval chains	Submission document, approver list	Approval moves through sequence	Critical	Each step completed before next
FR-WORK-003	Parallel Approvals	Support parallel approval steps	Multiple approvers, simultaneous review	All approvals required before next step	Medium	Parallel steps completed within timeline

FR-ID	Function	Description	Input Data	Output/Result	Priority	Acceptance Criteria
FR-WORK-004	Conditional Routing	Route based on criteria evaluation	Condition rules, outcome branches	Routed to correct approver	High	Routing logic 100% accurate
FR-WORK-005	Approval History	Track approval history with details	Each approval action, timestamp, comments	History log maintained	Critical	Complete audit trail, zero modification

Table 21: Notification System

FR-ID	Function	Description	Input Data	Output/Result	Priority	Acceptance Criteria
FR-NOTIF-001	Email Notifications	Send email for workflow events	Event trigger, recipient list, template	Email sent to recipients	Critical	Delivery rate >99%, received within 5 min
FR-NOTIF-002	In-System Notifications	Display in-system notifications	Event message, recipient user ID	Notification displayed in UI	Critical	Displayed within 10 seconds
FR-NOTIF-003	Notification Preferences	Allow users to configure preferences	Notification type selections	Preferences saved	High	Preferences applied immediately
FR-NOTIF-004	SMS Notifications	Optional SMS for critical events	Phone number, SMS template	SMS sent to recipient	Low	Delivery within 5 minutes

Table 22: Reporting and Analytics

FR-ID	Function	Description	Input Data	Output/Result	Priority	Acceptance Criteria
FR-REPORT-001	Standard Reports	Generate module-specific reports	Module data, report template	Report generated in PDF/Excel	Critical	Report accurate to data source
FR-REPORT-002	Dashboard Analytics	Provide dashboard view with KPI metrics	Real-time data, chart data	Dashboard displayed with charts	Critical	Dashboard loads within 5 seconds
FR-REPORT-003	Custom Reports	Support user-defined custom reports	Report criteria, filters, parameters	Report generated per specification	High	Custom report completed within 5 minutes

| FR-REPORT-004 | Export Functionality | Export reports in multiple formats | Report data, format selection | File generated in selected format | High | Export completed within 30 seconds |
| FR-REPORT-005 | Scheduled Reports | Generate and distribute scheduled reports | Report definition, schedule, recipients | Report emailed per schedule | Medium | Report delivered by scheduled time |

Table 23: System Integration Requirements

FR-ID	Function	Description	Input Data	Output/Result	Priority	Acceptance Criteria
FR-INT-001	Inflibnet Integration	Retrieve bibliometric data from Inflibnet	API connection, query parameters	Bibliographic dataset returned	Critical	Data current within 30 days
FR-INT-002	Plagiarism Detection Integration	Check documents via plagiarism service	Document file, integration API	Plagiarism report with similarity %	Critical	Report generated within 24 hours
FR-INT-003	Payment Gateway Integration	Process online payments securely	Transaction details, secure connection	Payment confirmation with receipt	Critical	PCI-DSS compliant, receipt issued immediately
FR-INT-004	Google Assistant Integration	Enable voice access via Google Assistant	Voice command, audio input	Response via voice output	Low	Voice recognition >85% accurate
FR-INT-005	API Interfaces	Provide APIs for external data exchange	Standard REST API, authentication	API endpoints functional and documented	Medium	Response time <500ms, uptime 99%

Table 24: Configuration Management

FR-ID	Function	Description	Input Data	Output/Result	Priority	Acceptance Criteria
FR-CONFIG-001	System Parameter Configuration	Configure system-wide parameters	Parameter name, value, validation rules	Configuration saved and applied	High	Changes effective immediately

FR-CONFIG-002	Template Management	Manage form, report, communication templates	Template content, variables	Template stored and reusable	Medium	Template variables replaced correctly
FR-CONFIG-003	Workflow Customization	Customize approval chains and processes	Workflow steps, rules, approvers	Customized workflow deployed	High	Customization tested before deployment
FR-CONFIG-004	Multi-Organization Support	Support multiple institutions in single instance	Organization data, separate configurations	Organizations isolated and independent	Medium	Data segregation 100% enforced

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Data Requirements and Entity Master

Table 25: Core Data Entities

Entity	Key Attributes	Purpose	Storage
Student	Student_ID, Name, DOB, Gender, Email, Mobile, Department, Program_Type, Enrollment_Date, Current_Semester, Permanent_Address, Current_Address, Emergency_Contact	Student record management and tracking	Relational database
Faculty	Faculty_ID, Name, DOB, Gender, Email, Mobile, Department, Qualifications, Research_Areas, Expertise, Credentials	Faculty profile and assignment	Relational database
Application	Application_ID, Applicant_ID, Application_Type, Submission_Date, Status, Approval_Status_History, Document_References	Track all submissions and approvals	Relational database
Company	Company_ID, Company_Name, Registration_Number, Contact_Person, Email, Phone, Job_Profiles, Compensation_Details, Last_Visit_Date	Company recruitment information	Relational database
RAC_Meeting	Meeting_ID, Meeting_Date, RAC_Members, Students_Reviewed, Agenda, Meeting_Minutes, Decisions, Timestamp	Research progress evaluation	Relational database
Thesis	Thesis_ID, Student_ID, Title, Submission_Date, Status, Plagiarism_Score, Adjudicator_Reports	Thesis management and evaluation	Relational database with

			document storage

Table 26: Data Relationships

Primary Entity	Related Entity	Relationship Type	Purpose
Student	Faculty	Many-to-One	Student assigned to supervisor
Faculty	RAC_Meeting	Many-to-Many	Faculty participates in RAC meetings
Application	Student	One-to-Many	Student submits multiple applications
Company	Placement	One-to-Many	Company recruits multiple students
Thesis	Adjudicator	One-to-Many	Thesis evaluated by multiple adjudicators

Non-Functional Requirements Summary

Table 27: Performance Requirements

Requirement	Target	Measurement	Acceptance Criteria
Concurrent Users Support	500 simultaneous active users	Load testing with 500+ users	System responds within SLA at load
Page Load Time	3 seconds standard, 5 seconds reports	Response time monitoring	95% of pages load within target
Database Query Response	2 seconds for standard queries	Query execution time logging	95% queries complete within time
Report Generation	<5 minutes for large datasets	Report execution time tracking	Reports complete within 5 minutes
File Upload Time	<30 seconds for 50MB files	Upload speed testing	95% uploads complete within time

Table 28: Security and Compliance Requirements

Requirement	Specification	Implementation	Verification
Authentication	Username/password with password complexity rules	LDAP/AD integration, password hashing	Penetration testing, code review
Authorization	Role-based access control (RBAC)	Role matrix definition, permission matrix	Access audit, test case verification

Data Encryption	SSL/TLS for transit, AES-256 for rest	Transport Layer Security, database encryption	Security audit, encryption verification
Audit Logging	All user actions logged with timestamp	Central audit log, immutable records	Log review, audit trail testing
Compliance	GDPR, FERPA, local data protection	Data privacy by design, consent management	Compliance audit, legal review

Table 29: Availability and Disaster Recovery

Metric	Target	Implementation	Recovery Time
System Availability	99.5% uptime (excluding maintenance)	Redundant servers, load balancing	N/A
Scheduled Maintenance	Weekend windows, 24-hour notice	Maintenance scheduling, notification system	<4 hours maintenance window
RTO (Recovery Time Objective)	4 hours for critical failures	Hot standby, automated failover	4 hours maximum
RPO (Recovery Point Objective)	1 hour maximum data loss	Hourly incremental backups	1 hour maximum

Constraints and Assumptions

Table 30: Project Constraints and Assumptions

Category	Item	Impact	Mitigation
Technical	Legacy system compatibility required	Extended integration testing needed	API wrapper layer design
Regulatory	Indian educational standards compliance (AICTE, UGC, NAAC)	Compliance review required	Governance committee oversight
Budget	Budget limitations may limit integration scope	Prioritize high-value integrations	Phased implementation approach
Infrastructure	Existing server capacity constraints	Performance optimization needed	Cloud infrastructure evaluation
Timeline	12-month implementation target	Aggressive schedule requires good planning	Detailed project roadmap
Assumptions	Users have basic computer literacy	Training program designed	Comprehensive user documentation
Assumptions	Stable internet connectivity at locations	Network assessment conducted	Offline capability design

Assumptions	Institutional support for change management	Change management plan developed	Stakeholder engagement program
Dependencies	Inflibnet API availability for bibliometric data	Service level agreement verification	Alternative data source identified
Dependencies	Plagiarism detection service provider operational	SLA verification and backup provider	Dual vendor agreement

Implementation Roadmap

Table 31: Phased Implementation Schedule

Phase	Duration	Months	Modules	Key Deliverables	Milestones
Phase 1: Foundation	4 months	1-4	Ph.D. Lifecycle, User Management, Core Admin	System setup, database design, core module development	Design review, development complete, testing start
Phase 2: Compliance & Placement	4 months	5-8	NAAC, Placement, Reporting	NAAC workflows, placement engine, report templates	UAT planning, integration testing, stakeholder review
Phase 3: Enhancement	4 months	9-12	Chatbot, Training, Alumni, Transportation, Entrepreneur, Employee Dev	Full system integration, all features complete	Final testing, go-live preparation, training
Phase 4: Optimization	Ongoing	12+	All modules	Performance tuning, user feedback integration	Post-launch support, continuous improvement

Acceptance and Sign-Off Criteria

Table 32: Functional Acceptance Criteria

Test Category	Acceptance Criteria	Test Method	Pass Criteria

Functional Completeness	All 270+ FRs implemented and tested	Test case execution	Zero critical defects
Workflow Execution	All workflows execute without manual intervention	End-to-end testing	100% workflow completion
Data Accuracy	Report calculations correct, data validated	Data validation testing	100% accuracy verification
Integration Testing	External system integrations function correctly	Integration test suites	All integration tests passed
Module Testing	Each module operates independently and with others	Module test cases	All test cases passed

Table 33: Performance Acceptance Criteria

Performance Metric	Target	Test Method	Acceptance Threshold
Page Response Time	≤3 seconds	Load testing tool	95% pages within 3 sec
Concurrent Users	500 simultaneous	Stress testing	System stable at 500+ users
Database Queries	≤2 seconds	Query profiling	95% queries within 2 sec
Report Generation	≤5 minutes	Report execution timing	Large reports within 5 min
File Upload	≤30 seconds (50MB)	Upload timing test	95% uploads within time

Document Metadata

Table 34: Document Control

Attribute	Value
Document Title	Functional Requirements Document (FRD) - Table Format
Project Name	iERP - INFINITY
Organization	Infinity Infoway Pvt. Ltd.
Document Version	1.0
Created Date	January 09, 2026
Last Updated	January 09, 2026
Next Review Date	March 30, 2026
Classification	Official Project Document
Distribution	Project Team, Stakeholders, Development Team
Total FRs	270+ functional requirements
Total Tables	34 requirement tables

Glossary of Terms

Term	Abbreviation	Definition
Doctoral Research Committee	DRC	Conducts interviews and allocates research supervisors to qualified candidates
Research Review Committee	RRC	Evaluates synopsis and thesis documents from research scholars
Research Advisory Committee	RAC	Conducts periodic reviews of research scholar progress and performance
Pre-Entry Test	PET	Entrance examination and qualification assessment for Ph.D. admission
National Assessment and Accreditation Council	NAAC	Indian institutional accreditation body that evaluates educational institutions
Institutional Information Quality Assurance	IIQA	Data quality verification process for NAAC accreditation submission
Self-Study Report	SSR	Institutional self-assessment document submitted for NAAC accreditation
Document Verification and Validation	DVV	External validation process conducted during NAAC accreditation review
Quantitative Numerical Metrics	QNM	Calculated performance indicators and metrics for NAAC evaluation
Information and Library Network	Inflibnet	Centralized bibliographic database for Indian educational institutions
State Council for Educational Cooperation	SCEC	State-level authority for educational compliance and oversight
Internal Quality Assurance Cell	IQAC	Internal quality management committee for institutional improvement
Enterprise Resource Planning	ERP	Integrated business management software for organizational operations
Web Content Accessibility Guidelines	WCAG	International standards for web accessibility and usability
Requirements Traceability Matrix	RTM	Document mapping requirements to design, development, and test activities
User Acceptance Testing	UAT	Final testing phase involving end-users verifying system functionality
Service Level Agreement	SLA	Contractual commitment specifying service availability and performance targets