

Summary Specification		
BIL. SEBUTHARGA/QUOTATION REF.:	UBD/Q/193/2026 (AI-SENSE - OAVC - ULG) - [G]	
TARIKH DIKLANKAN :	<u>29 September 2026 [Selasa]</u>	
TARIKH TUTUP :	<u>06 Oktober 2026 [Selasa]</u>	JAM: 2 Petang
DOCUMENT FEE :		B\$ 10.00

Important Note:

The Official PDF quotation/tender form will be send via email once UBD Official receipt issued and send to vendors/supplier for confirmation of payment received.

Please take note that the document fee for each of the New and Extended quotations will be BND 10.00 each

Payment Information

Quotations/tenders are identified as follows:

[G] – Kerajaan (Government Account)

Please ensure payment is made to the correct account:

[G] → UNIVERSITI BRUNEI DARUSSALAM [KERAJAAN]

Payment details and account numbers are available under “Mode of Payment” on the UBD website

Note: Please ensure that you provide the correct details when making the payment.

Please email proof of the above payment to helpdesk.epay@ubd.edu.bn , finance@ubd.edu.bn ,
eprocurement.support@ubd.edu.bn.

TITLE :		TO DELIVER AN EXAMINATION MANAGEMENT SYSTEM FOR MANAGING STUDENT RESULTS AT UNIVERSITI BRUNEI DARUSSALAM
No.	Quantity	SPECIFICATIONS
1	1 LOT	Examination Registration & Intelligent Record Harmonisation Refer to the attached document for the full specifications.
2	1 LOT	Intelligent Examination Timetabling, Venue, Seating & Invigilation Refer to the attached document for the full specifications.
3	1 LOT	Question Paper Management & Moderation Refer to the attached document for the full specifications.
4	1 LOT	Result Entry, Marking Workflow & Moderation Refer to the attached document for the full specifications.
5	1 LOT	Results Computation & Processing Engine Refer to the attached document for the full specifications.
6	1 LOT	Board of Examiners, Faculty & Senate Approval Workflow Refer to the attached document for the full specifications.
7	1 LOT	Results Release, Appeals, Remarking & Special Examination Cycles Refer to the attached document for the full specifications.
8	1 LOT	Examination Analytics, Reporting & Notifications Refer to the attached document for the full specifications.
9	1 LOT	Database Design & Modelling Refer to the attached document for the full specifications.

TITLE :		<u>TO DELIVER AN EXAMINATION MANAGEMENT SYSTEM FOR MANAGING STUDENT RESULTS AT UNIVERSITI BRUNEI DARUSSALAM</u>
No.	Quantity	SPECIFICATIONS
10	1 LOT	UI/UX Design System <i>Refer to the attached document for the full specifications.</i>
11	1 LOT	Client UAT, FAT and GoLive <i>Refer to the attached document for the full specifications.</i>

UNIVERSITI BRUNEI DARUSSALAM

OPEN QUOTATION

Request for Proposal — **Technical Specification**

Ref: UBD-OQ-2026-035

To Deliver an Examination Management System for Managing Student Results at Universiti Brunei Darussalam

Quotation Reference	UBD-OQ-2026-035
Date of Issue	
Quotation Closing Date	
Classification	CONFIDENTIAL — For Quotation Respondents Only

1. Introduction

Universiti Brunei Darussalam (UBD) invites quotations from suitably qualified vendors for the design, development, integration, testing and delivery of an Examination Management System serving all UBD students across every faculty and programme level, aligned to the University's undergraduate curriculum framework (Senate-approved; effective Academic Year 2026/2027) and to its postgraduate assessment regulations.

This document is the complete technical specification for the engagement. The scope is the eleven items listed in Section 2 — eight functional modules, together with Database Design & Modelling, the UI/UX Design System, and Client UAT, FAT & Go-Live, the last three quoted as distinct deliverables. The system must integrate with the University's existing student management system, the UBD student admission system, and the modules delivered under UBD-OQ-2026-034, and must be delivered complete, integrated and production-ready.

2. Scope of Work

The vendor shall design, develop, integrate, test, document and deliver all items listed in the table below — the complete scope of this quotation. Each item is a distinct deliverable subject to the acceptance criteria in Section 5; partial quotations will not be considered.

Database Design & Modelling (item 9) and the UI/UX Design System (item 10) are separately priced deliverables and must be quoted individually. The capabilities listed in Section 1.1 are reserved for a later phase and must not be priced under this submission.

No.	Module / Component	Key Functionalities	Qty
1	Examination Registration & Intelligent Record Harmonisation	— Candidate register generated automatically per module, section and assessment component from the authoritative enrolment and module-offering records — Intelligent record harmonisation across systems — duplicates, orphans, late adds, dropped modules and mis-sectioned candidates detected and routed to a resolution queue with a suggested corrective action — Configurable eligibility gating before candidature is confirmed: attendance bar, outstanding prerequisites, academic standing, and finance or disciplinary holds — Late registration, withdrawal and module-swap workflow with approval chain and cut-off enforcement; carry-over, resit and deferred candidates merged with correct component exemptions — Anonymous candidate numbering for blind marking with a controlled de-anonymisation step; special access arrangements (extra time, separate venue, reader or scribe) recorded once and carried into timetabling, seating and invigilation — Bulk import and export with row-level validation and dry-run preview; register versioning and freeze, with an immutable audit of every post-freeze amendment	1
2	Intelligent Examination Timetabling, Venue, Seating & Invigilation	— Constraint-based automatic examination timetable generation across all faculties, programmes and cohorts from the confirmed candidate register — Hard and soft constraints: candidate clash-freedom, minimum gap between papers, maximum papers per candidate per day, duration bands, public and religious holidays, and the Senate-approved examination period — Venue allocation against the existing room and venue register (capacity, equipment, accessibility), with automated seating plans using anti-collusion spacing and per-candidate seat numbers — Invigilator allocation with workload ceilings, declared availability, conflict-of-interest exclusion and chief-invigilator designation — Scenario simulation and what-if comparison of alternative timetables, each scored on clash count, candidate load distribution and venue utilisation — Publication with embargo, versioned amendments and automatic notification of affected candidates and staff; PDF, spreadsheet and iCalendar export by candidate, venue, invigilator, module and programme	1

No.	Module / Component	Key Functionalities	Qty
3	Question Paper Management & Moderation	– Paper authoring and upload with version control, institutional templates and mandatory metadata (duration, component weight, materials permitted) – Question bank with learning-outcome tagging and reuse history – Internal moderation: moderator allocation, structured moderation comments and a recorded response by the setter – Approval chain — Setter → Internal Moderator → Module Coordinator → Faculty Examination Board — with every step audited – Secure paper storage with role-gated access, download control and full access logging – Marking scheme and model answer held with each paper version and released only after the sitting	1
4	Result Entry, Marking Workflow & Moderation	– Mark entry per component by web form and by validated bulk import, under a configurable component and weighting model per module – Marker allocation with progress tracking; blind marking with controlled de-anonymisation at the agreed stage – Double and second marking with divergence detection, configurable tolerance bands and a reconciliation path (agreement, third marker or panel adjudication) – Intelligent anomaly detection over submitted marks — distribution outliers, marker leniency or severity drift, clustering below grade boundaries — each flagged with a plain-language explanation – Moderation and scaling with statistical review and historical cohort comparison; adjustments permitted only with recorded justification and approval – Mark-entry windows with lock and unlock control, late-entry authorisation, a per-module submission status board, and fully audited post-lock amendments	1
5	Results Computation & Processing Engine	– Configurable grading schemes and grade-point mappings, versioned by academic year, programme level and regulation set – Weighted module result computation with condonation, minimum-component and compensation rules expressed as configurable policy rather than code – Semester GPA, cumulative GPA, credits attempted and earned; progression and academic standing (Good Standing, Probation, Final Probation, Dismissal) with effective dates – Degree classification for final-year candidates, with intelligent borderline detection and a ranked review list carrying the evidence a Board needs to decide – Result states — Pass, Fail, Supplementary, Deferred, Incomplete, Withheld, Withdrawn, Voided — with enforced transitions – Versioned result batches with full recomputation, side-by-side comparison and an impact report; what-if simulation of a policy change over a historical cohort; grade changes with reason, approval and permanent audit	1
6	Board of Examiners, Faculty & Senate Approval Workflow	– Configurable multi-stage chain — Module Coordinator → Programme Office → Faculty Examination Board → Registry → Senate — each stage role-gated and fully audited – Automatic Board meeting pack: module statistics, grade distributions, pass rates, borderline lists and exception cases – In-meeting decision capture per candidate and per module (approve, adjust with justification, refer back, defer, condone), with resolution and minute linkage – Return-for-amendment paths with automatic re-verification of downstream computations; Senate gating so that no result batch is released before Senate approval is recorded – "My Queue" unified action inbox with scope-aware routing (Programme Leader, Dean, Registry), electronic sign-off, and Senate list generation in the agreed institutional format	1

No.	Module / Component	Key Functionalities	Qty
7	Results Release, Appeals, Remarking & Special Examination Cycles	– Staged release with embargo, per-programme and per-cohort windows and a dry-run preview; per-candidate holds (finance, library, disciplinary) each with a named owner and a clearing action – Student results portal: semester statement, module breakdown, GPA and cGPA, academic standing, progression outcome and a printable result slip – Authoritative released-result feed to transcripts, graduation audit, academic progress and the learner profile, as immutable versioned batches – Remarking and appeal workflow with fee computation and online payment, independent re-marker allocation, outcome, and automatic result revision where upheld – Mitigating-circumstance and special-consideration applications with evidence upload, panel review and application to the candidate result state – Supplementary, resit and deferred cycles run end to end on the same pipeline; incomplete-grade resolution with deadlines and default rules; revocation, correction and reissue with notification to every downstream consumer	1
8	Examination Analytics, Reporting & Notifications	– Examination Office operations dashboard: registration completeness, paper-approval status, mark-entry progress, release readiness and outstanding exceptions – Module, programme and faculty analytics: pass rates, grade distributions, cohort comparison and multi-year trend lines – Early-warning signals routed to the responsible officer — late mark entry, papers pending moderation, and candidates approaching regulation limits – Statutory, Board and Senate report library with parameterised generation and scheduled distribution – Notification centre with an administrator-managed event registry, per-user channel preferences (email, SMS, in-application) and versioned templates with delivery audit – Asynchronous queues and scheduled jobs — timetable generation, batch computation, release, deadline sweeps and year rollover — with idempotency; immutable audit and event stream over every examination record	1
9	Database Design & Modelling	– Full logical and physical data model: entity-relationship diagrams, per-module schema, and a published data dictionary covering every table, column, enumeration and constraint – Polyglot allocation across MySQL, PostgreSQL and MongoDB per Section 3.2, with a written rationale for each placement – Temporal and versioning design for result batches, grading schemes and regulation sets, so that any historical result remains reproducible under the rules in force at the time it was awarded – Indexing, partitioning and query-performance strategy for result and audit history by academic year; retention, soft-delete and archival policy – Reversible migrations with tested rollback, plus seed and reference data for every configurable rule set – Integration data contracts with the existing student management system and the admission system — field mapping, transformation, reconciliation and conflict resolution — validated by a data-quality suite run on a production-scale dataset	1
10	UI/UX Design System	– Design tokens for colour, typography, spacing and elevation, plus grid and layout rules, delivered as CSS custom properties consistent with UBD's visual identity – Component library: navigation, data grids, mark-entry grids, forms, filters, status chips, approval timelines, seat maps, dashboards, notifications and error states – High-fidelity wireframes and interactive prototypes for the primary journeys — registration, paper moderation, mark entry, Board review, release and the student results view – Role-based, permission-aware interface definitions for every role in Section 1; responsive behaviour specified from mobile through desktop	1

No.	Module / Component	Key Functionalities	Qty
		– WCAG 2.1 AA conformance with a delivered accessibility audit; keyboard-optimised, high-density data-entry patterns for mark entry and bulk operations – Print and PDF layouts for seat plans, attendance sheets, Board packs, Senate lists and result slips; design system documentation and hand-off assets for in-house extension	
11	Client UAT, FAT and Go-Live	– UAT and FAT support, including integration regression against the University's existing student management system – Parallel-run rehearsal over one historical examination cycle, with computed results reconciled against the University's recorded outcomes – Migration of the agreed historical examination and result records, with a reconciliation report – User and technical documentation per module (role-based guides; architecture, OpenAPI 3.0, schema, deployment) – Role-based training for Examination Office, faculty and academic users, plus a technical handover to the in-house development team – Production go-live assistance and a minimum two-week hypercare period; formal UBD sign-off gates the final payment milestone. Full requirements are detailed in Section 4.	1

3. Technology Requirements

All development must conform to the technology stack of the University's existing student management system. Only the scope-specific usage is summarised below; all other backend, API and security requirements follow that system unchanged. Any deviation must be declared in the submission and approved by UBD in writing before work commences.

3.1 Backend Framework

Component	Mandated Technology	Requirements
MVC Framework	Laravel (PHP) — minimum v11.x	Eloquent ORM; service / repository pattern; strict typing.
PHP Version	PHP 8.2 or above	Strict mode; typed methods; no deprecated functions.
Dependency Management	Composer	composer.json and composer.lock submitted.
Background Jobs	Laravel Queues (Redis)	Timetable generation, bulk mark import, batch result computation, results release and notification fan-out.
Real-Time Events	Laravel Echo + WebSocket (Pusher / Soketi)	Live mark-entry progress boards, release dashboards and notification streams to logged-in clients.
Task Scheduling	Laravel Scheduler (cron-backed)	Mark-entry deadline sweeps, moderation reminders, incomplete-grade expiry, release windows and year rollover.
Caching	Redis	Rule-set, configuration and reference-data caching with explicit invalidation.

3.2 Database Layer

The University's student management system uses a polyglot persistence strategy. The vendor must implement data access across all three engines.

Engine / Version	Role	Usage in This Scope
MySQL 8.0+	Primary transactional store	Candidate registers, timetables, seating and invigilation, paper metadata, marks, result batches, approvals and appeals. InnoDB; UUID keys; utf8mb4.
PostgreSQL 15+	Aggregation and reporting feed	Result analytics, grade-distribution aggregations and multi-year performance queries; materialised views where appropriate.
MongoDB 6.0+	Audit trails and event streams	Examination event stream, mark-change history and system-wide change log with nested old / new values.

3.3 Frontend & UI Layer

Component	Mandated Technology	Requirements
Template Engine	Laravel Blade	All server-rendered views in Blade; reusable components and slots.
CSS	Custom CSS (CSS Custom Properties, BEM)	No third-party CSS frameworks without written UBD approval. Design tokens as CSS variables.
JavaScript	jQuery 3.7+ with Vanilla JS (ES6+)	DOM, AJAX and event handling. No SPA frameworks; no transpilation.
Calendar Component	FullCalendar.js v6+	Examination timetable and invigilation duty views; iCalendar export; mobile-responsive.
Charting	Chart.js v4+ or approved equivalent	Dashboard and analytics visualisations; underlying figures also in accessible tabular form.
PDF / Document Output	Laravel DomPDF or Browsershot	Printable timetables, seat plans, Board packs, Senate lists and result slips.

3.4 Intelligence & Analytical Services

All intelligent capabilities must be hosted on UBD-provisioned infrastructure; no University data may be sent to an external inference service. Every automated score, match, ranking or flag must be explainable, overridable, and confirmed by an authorised officer before it takes effect.

Capability	Requirement
Timetabling Engine	Constraint-satisfaction solver producing clash-free timetables; reports violated constraints and the objective score, and permits manual override of any placement.
Record Harmonisation	Deterministic and fuzzy matching across systems with a confidence score and suggested action; no record merged without officer confirmation.
Mark & Result Anomaly Detection	Statistical detection of outliers, marker drift and boundary clustering, reported with the contributing statistics.
Hosting & Data Residency	On UBD-provisioned infrastructure only. Model artefacts, versions and configuration delivered with the source code.
Explainability & Override	Contributing factors shown in plain language; every outcome overridable with a recorded reason, captured in the audit trail.
Configurability	Rules, weights and thresholds maintainable by an administrator through the interface, without code deployment.

Capability	Requirement
Evaluation & Fairness	Quality metrics reported against a UBD-approved evaluation set before FAT, with a documented bias review.

3.5 API & Security Requirements

The API layer and Security & Code Quality requirements are exactly as implemented in the University's existing student management system: RESTful APIs under /api/v1 with OpenAPI 3.0; Laravel Sanctum authentication; standard JSON envelope, cursor pagination and request throttling; RBAC via Laravel Gates and Policies with a documented permission matrix; Form-Request validation; immutable MongoDB audit logging of all create / update / delete; TLS 1.2+ in transit and AES-256 at rest; PHPStan level 8 and Laravel Pint with zero errors; minimum 80% test coverage; secrets via environment configuration only.

Personal data must be minimised, role-scoped and access-logged, with retention and disposal implemented as configurable policy per the University's data-protection policy.

4. Testing, Documentation & Go-Live

The vendor is responsible for the full testing lifecycle, documentation and go-live process for all delivered modules, including integration testing against the University's existing student management system.

Activity	Requirement
User Acceptance Testing (UAT)	Attend UAT sessions and fix defects within the agreed Service Level. All Priority 1 and Priority 2 defects resolved before sign-off.
Final Acceptance Testing (FAT)	Full regression of all delivered modules plus integration regression against the existing student management system. No outstanding Priority 1 or 2 defects.
Parallel Run / Rehearsal	A full parallel run over one historical examination cycle agreed with UBD. Registration, timetabling, computation, classification and release outputs reconciled against the University's recorded outcomes, with every discrepancy resolved before FAT sign-off.
User Documentation	Role-based end-user guides in plain English covering all key workflows.
Technical Documentation	Architecture overview, OpenAPI 3.0 documentation, schema guide, data dictionary and environment template. A new developer must be able to set up locally within 30 minutes.
Data Migration	Migration of the agreed historical records with a reconciliation report demonstrating completeness and accuracy.
Training	Role-based training for administrative and academic users, plus a technical handover to the in-house development team.
Go-Live	Production deployment assistance, with the vendor available on go-live day.
Hypercare	Minimum two-week hypercare; Priority 1 response within four business hours.
Client Sign-Off	Formal written UBD sign-off required before the final payment milestone is released.

5. Acceptance Criteria

No.	Deliverable	Acceptance Criterion
1	Examination Registration & Record Harmonisation	Candidate register correct for a representative test cohort across all programme levels. Eligibility gating enforced. Harmonisation queue detects seeded duplicate, orphan and mis-sectioned records with correct suggested actions. Anonymous numbering and controlled de-anonymisation validated.
2	Examination Timetabling, Venue, Seating & Invigilation	Generated timetable clash-free for every candidate and compliant with all hard constraints. Venue and seating allocation respects capacity, spacing and accessibility.

No.	Deliverable	Acceptance Criterion
		Invigilator allocation observes workload ceilings and conflict-of-interest exclusion. Scenario comparison, amendment workflow and PDF / iCalendar export operational.
3	Question Paper Management & Moderation	Setter-to-Board approval chain validated end to end. Version control and question-bank tagging correct. Moderation comments and setter response recorded. Secure storage access control, download control and access logging verified.
4	Result Entry, Marking Workflow & Moderation	Web and bulk mark entry validated with correct rejection of malformed data. Blind marking, double marking and divergence reconciliation operational. Anomaly detection surfaces seeded outliers with explanations. Scaling requires justification and is audited. Lock / unlock and post-lock amendment paths validated.
5	Results Computation & Processing Engine	Computed module results, GPA, cGPA, progression status and degree classification match manual calculation for a representative cohort under the applicable regulations. Borderline detection, result-state transitions, batch versioning, recomputation comparison and what-if simulation verified.
6	Board, Faculty & Senate Approval Workflow	Configurable chains and role gates editable without code. Board pack generated with correct statistics and borderline lists. Decision capture, return-for-amendment, Senate gating and electronic sign-off validated. "My Queue" aggregates pending items with correct scope narrowing. Transition audit complete.
7	Results Release, Appeals & Special Cycles	Staged release, embargo and per-candidate holds validated. Student portal renders correct statements. Released-result feed consumed correctly downstream as immutable versioned batches. Remark / appeal workflow with fee payment and automatic revision validated. Supplementary, resit and deferred sub-cycles run end to end. Revocation and reissue notify all consumers.
8	Analytics, Reporting & Notifications	Dashboards and analytics reconcile with the underlying data. Notification centre, event registry, channel preferences and templates operational with delivery audit. Queues and scheduled jobs run reliably and idempotently under load.
9	Database Design & Modelling	ERDs, per-module schema and data dictionary delivered and complete. Polyglot allocation implemented as specified. Migrations apply and roll back cleanly. Versioning demonstrated by reproducing a historical result under superseded rules. Data-quality suite passes on a production-scale dataset.
10	UI/UX Design System	Design tokens, component library, wireframes and prototypes delivered and implemented in the built system. WCAG 2.1 AA audit passed with findings resolved. Responsive behaviour verified from mobile to desktop. Print and PDF layouts render correctly. Documentation handed over.
11	Client UAT, FAT & Go-Live	All Priority 1 and Priority 2 defects resolved before FAT. Parallel-run reconciliation accepted by UBD. Historical data migrated and reconciled. System live in production. Documentation delivered, training completed, client sign-off obtained.
All	Code Quality	PHPStan level 8 passes with zero errors. Laravel Pint passes. Unit test coverage ≥ 80%. OpenAPI specification delivered and Swagger UI live in staging. No undocumented endpoints.

6. Quotation Pricing

Vendors must provide a fixed-price quotation against each item below. Partial quotations (covering only some items) will not be considered. All prices in Brunei Dollars (B\$), inclusive of all applicable taxes and levies.

No.	Qty	Description	Unit (B\$)	Total (B\$)
1	1	Examination Registration & Intelligent Record Harmonisation		
2	1	Intelligent Examination Timetabling, Venue, Seating & Invigilation		
3	1	Question Paper Management & Moderation		
4	1	Result Entry, Marking Workflow & Moderation		
5	1	Results Computation & Processing Engine		
6	1	Board of Examiners, Faculty & Senate Approval Workflow		
7	1	Results Release, Appeals, Remarking & Special Examination Cycles		
8	1	Examination Analytics, Reporting & Notifications		
9	1	Database Design & Modelling <i>Priced separately; not to be absorbed into the module prices.</i>		
10	1	UI/UX Design System <i>Priced separately; not to be absorbed into the module prices.</i>		
11	1	Client UAT, FAT and Go-Live 1. User Acceptance and Final Acceptance Testing Support 2. Data Migration and Reconciliation 3. User and Technical Documentation 4. Role-Based Training and Technical Handover 5. Go-Live, Hypercare and Client Sign-Off		
Please indicate if you need access to the existing system with yes or no, and if yes which part				
TOTAL QUOTED AMOUNT (B\$)				

Notes:

- All prices in Brunei Dollars (B\$), inclusive of all applicable taxes and levies.
- Quoted prices must remain valid for a minimum of 90 days from the quotation closing date.
- Database Design & Modelling and the UI/UX Design System are separately priced items and must be quoted individually; they are not to be absorbed into the functional module prices.
- Payment milestones to be agreed in the resulting contract. Final payment is contingent on the client sign-off described in Section 5.
- The capabilities listed in Section 1.1 are reserved for a later phase and must not be designed for or priced under this submission.