

Summary Specification	
BIL. SEBUTHARGA/QUOTATION REF.:	UBD/Q/114/2026 (AI SENSE-OAVC ULG) - [G]
TARIKH DIKLANKAN :	<u>14 Julai 2026 [Selasa]</u>
TARIKH TUTUP :	<u>21 Julai 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:

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

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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 SOFTWARE MODULES — ACADEMIC PROGRESS, GRADUATION AUDIT, ATTENDANCE, CLASS/TUTORIAL TIMETABLING, TRANSCRIPTS & WORKFLOW
No.	Quantity	SPECIFICATIONS
1		Please refer to the attached document for the full specification

UNIVERSITI BRUNEI DARUSSALAM

AI SEnse Unit

OPEN QUOTATION

Request for Proposal — **Technical Specification**

Ref: UBD-OQ-2026-034

**To Deliver Software Modules — Academic Progress, Graduation Audit,
Attendance, Class/Tutorial Timetabling, Transcripts & Workflow**

Quotation Reference	UBD-OQ-2026-003
Date of Issue	
Quotation Closing Date	
Classification	CONFIDENTIAL — For Quotation Respondents Only

1. Introduction

Universiti Brunei Darussalam (UBD), through its AI SENSE Unit, invites quotations from suitably qualified vendors for the design, development, integration, testing and delivery of the software modules specified in this document, aligned to the University's undergraduate curriculum framework (Senate-approved; effective Academic Year 2026/2027).

This document is the complete technical specification for the engagement. The scope covers seven functional modules — Academic Progress & Advising; Graduation Audit; Attendance Tracking (Web); Class / Tutorial / Practical Timetabling; Transcript Request, Issuance, Verification & Online Payment; the Dynamic Approval-Workflow Engine & Unified Action Queue; and Notifications, Communications & Background Processing — together with the supporting Client UAT, FAT & Go-Live item. Database design & modelling is delivered within each module, and the existing design system is reused; neither is separately priced (see Section 2). The delivered system must integrate with the University's existing student management system and the UBD student admission system, and vendors must deliver all items in Section 2 as a complete, integrated and production-ready system.

1.1 Out-of-Scope Capabilities

The following capabilities are out of scope for this quotation and must not be proposed, designed for, or priced. The system shall nonetheless be built so they can be integrated later without architectural rework — interface boundaries, data contracts and event channels specified in a forward-compatible manner:

- Examination timetabling — venue allocation, seating plans and invigilation duties, including combined scheduling across multiple programme cohorts
- Institution-wide reporting, analytics and administration — system administration, role & permission management, identity governance, system configuration and academic-calendar management
- Integration with locally developed AI / ML inference services
- Staff Record Management — record lifecycle, role assignment and delegation, Letter Wizard / Manager
- Room & Venue Management — catalogue, availability, booking and utilisation analytics

Attribute	Details
System Name	Student Academic Management Modules — Academic Progress & Advising, Graduation Audit, Attendance Tracking (Web), Class/Tutorial/Practical Timetabling, Transcript Request/Verification & Online Payment, Dynamic Approval-Workflow & Notifications
Institution	Universiti Brunei Darussalam (UBD)
Curriculum Framework	Undergraduate Degree Rules & Regulations, Senate-approved January 2026
Target User Roles	Students, Lecturers, Tutors, Programme Leaders, Faculty Administrators, Academic Advisors, Registry, Deans
Delivery Platform	Web application (desktop and mobile-responsive), including browser-based QR attendance capture; deployed on UBD-provisioned infrastructure
System Dependencies	Integrates with the University's existing student management system and the UBD student admission system (OASys). Compatibility with their current schemas and APIs is required.

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 (entity-relationship diagrams, per-module schema, indexing and a data dictionary) is delivered within each module and must conform to the University's existing data architecture; it is not separately priced. The existing UI/UX design system is reused and extended (WCAG 2.1 AA) — no new design system is to be created and it is not separately priced.

The capabilities listed in Section 1.1 are excluded from this scope; vendors must not include design, effort or pricing against them.

No.	Module / Component	Key Functionalities	Qty
1	Academic Progress & Advising (M09)	– Student academic dashboard: cGPA trend, semester GPA, Module Credits completed by category, modules taken, and progression status (GPA and credit values computed by the University's existing results & assessment system and surfaced here) – At-risk flagging engine (rule-based): cGPA below configurable threshold, consecutive module failures, attendance threshold breach, accumulated incomplete grades — surfaced to advisors and Programme Leaders via the alert feed – Advisor–student assignment: explicit allocation, caseload limits, reassignment workflow and historical advisor list – Advising sessions: scheduling and notes log (session type, attendance, structured notes, action items, follow-up dates) – Academic Improvement Plan (AIP): goals, interventions, target dates, review checkpoints and outcome record; module retake / repeat recommendations with rule-based suggestions and advisor override – Leave of Absence (LOA) request and tracking (justification, evidence, approval chain, effective dates, re-entry conditions) — owns the LOA lifecycle; the University's existing enrolment record consumes the resulting status – Suspension and readmission management with full case history; programme transfer request and approval (eligibility check, faculty endorsements, Registrar approval) – Academic standing history log — Good Standing, Probation, Final Probation, Dismissal — with effective dates and triggering events (standing classified by the University's existing student management system; this module maintains the longitudinal history) – Candidature limit tracking: 5 years (single major), 5 years (double major), 6 years (double degree), with warnings at configurable lead times; Discovery Year deferral and alternative-module management – Programme / major change management (single-change rule within the first three semesters); academic-misconduct case tracking (classification, evidence, hearing outcome, sanction)	1
2	Graduation Audit (M12)	– Automated graduation-eligibility audit per student against the active programme curriculum and the undergraduate degree regulations – Credit & curriculum checks: total Module Credits (minimum 120 MC); module-category requirements (Programme Core, Major Core, Structured and Free Electives); level distribution (≤ 36 MC at Level 1000, ≥ 24 MC at Level 3000) – Standing & progression checks: minimum cGPA threshold; outstanding modules flagged (incomplete, failed, registered-not-taken) – Co-curricular & special-requirement checks: minimum CCA points with category diversity; PAMOR completion plus CITRA points (or UQA-4000 credit); Discovery Year completion (20 MC, with substitution rules for failure); minor-degree completion (20 MC Structured Electives outside the declared major) – Computed graduation status — Eligible, Conditionally Eligible (conditions enumerated), or Not Eligible (reasons enumerated) — and degree classification (First Class, Second Class Upper, Second Class Lower, Third Class, Pass) – Graduation application portal for final-year students with status tracking – Cross-departmental clearance checklist with sign-offs (library, finance, hostel, equipment, alumni registration) – Approval chain Programme Office → Faculty Dean → Registrar (each step audited); Senate graduation-list generation in the agreed format; certificate and testamur data preparation for downstream production	1
3	Attendance Tracking (Web)	– Attendance register auto-instantiated per scheduled block from the approved timetable; one register per session occurrence – Multi-modal capture: instructor mark-in via web console, and time-bound QR / dynamic-token check-in scanned with the student's own device (browser-based, no native app); optional NFC / RFID reader integration	1

No.	Module / Component	Key Functionalities	Qty
		– Per-student attendance states: Present, Late, Left Early, Absent, Excused Absent, Make-up Attended – Excused-absence workflow with supporting-evidence upload, advisor or programme-leader endorsement, and automated state transition – Enforcement linkage to the University's three-absence exam-barring rule (consecutive or cumulative) — read-only signal exposed to the University's existing results & assessment system – Make-up / replacement session recording cross-referenced to the original scheduled block – Bulk import (CSV / spreadsheet) for offline-captured registers with row-level validation and conflict reporting – Aggregations: per-student percentage by module, by semester and by programme; per-session participation rate; per-instructor delivery completeness – Configurable notification triggers on threshold breach (1st, 2nd, 3rd absence) to student, advisor and programme leader – Anti-spoofing controls for QR check-in: rotating short-TTL cryptographic tokens, device / session binding, and replay protection – Immutable audit trail for every create / amend / void action on attendance records – Read API for downstream consumers (academic advising, the existing learner-profile system, future reporting)	
4	Class / Tutorial / Practical Timetabling	– Integrates with the University's existing class & timetable module; this item adds the scheduling and optimisation engine and capabilities not present in that module. Existing timetable views, weekly calendar, PDF / iCalendar export and the amendment workflow are reused rather than rebuilt. – Master non-examination timetable generation across all faculties from the authoritative Module Offering register — placing Lecture, Tutorial and Practical blocks into the teaching week – Multi-section management for high-enrolment modules: parallel sections, alternating-week sections, and rotational practical groupings – Automated room matching against block requirements: seating capacity, equipment inventory, accessibility flags, and faculty-level priority – Lecturer, tutor, and laboratory-supervisor allocation with per-instructor workload ceilings and same-day clash detection – Cross-faculty cohort harmonisation for shared windows: Discovery Year cohorts, elective bands, and CCA reservation slots – Academic-calendar awareness: public holidays, mid-semester breaks, study weeks, and faculty-level non-teaching days – Forward-compatible interface to a future Examination Timetabling capability (out of scope) — this item must not allocate examination slots, examination venues, or invigilation duties	1
5	Transcript Request, Issuance, Verification & Online Payment	– Covers the transcript request, payment, issuance and authenticity layer — distinct from the transcript generation in the University's existing student management system – Authenticated student request workflow: submission → Examination-Office review → optional payment → approval → issuance → secure download – Public alumni (no-login) channel with identity verification by registration number, date of birth and email one-time-password (attempt limits and expiry); opaque status-tracking tokens for applicants – Request scope: complete history, a single semester, or a custom multi-semester subset — validated server-side against released result batches – Delivery methods: in-portal digital PDF, physical pickup, or courier (delivery-address capture and courier surcharge) – Multi-copy issuance with independent, revocable, time-limited download tokens; per-copy download auditing (count, timestamp, IP) and revocation with reason	1

No.	Module / Component	Key Functionalities	Qty
		– Registrar sealing / countersignature of official copies, reflected on the document and the record – Public verification portal: confirm authenticity by reference code or QR identifier — student name, programme, covered semesters, final CGPA, seal and revocation status; rate-limited against scraping – Online payment of fees: card via the institutional gateway (CyberSource Secure Acceptance) and manual bank-transfer with receipt upload and officer verification; server-side fee computation (per-copy, courier surcharge), gateway callbacks, reconciliation and refunds — reusing the platform's existing payment-gateway service – Configurable payment-required vs. fee-exempt modes gating issuance (optional auto-issue on settled payment for digital delivery); append-only event audit on every request and copy	
6	Dynamic Approval-Workflow Engine & Unified Action Queue	– Configurable, database-driven multi-stage approval engine supporting submit → endorse → approve chains of arbitrary length – Per-stage role gating: each stage declares the roles permitted to act, with super-administrator override – Stage attributes: initial, terminal, returnable, active/inactive toggle, ordering, and human-readable chain labels – Administrator Workflow Editor to add, reorder, relabel, re-gate, enable or disable stages without code deployment; lockable workflows for hard-coupled processes – Immutable workflow-transition audit recording every stage change with actor, action, timestamp and notes – Scope-aware routing and queues: Programme Leaders see only their programmes, Deans only their faculty, Assistant Registrars their cover — derived automatically – “My Queue” unified action inbox aggregating every item awaiting the signed-in user across all roles they hold – Return-for-amendment paths with reason capture and re-entry to the chain – Senate-approval gating for workflows that require Senate sign-off before terminal release – Workflow-orphan diagnostics surfacing records whose stage is misconfigured or dead-ended – Reusable across processes (module, programme and offering approval; mark and results pipelines; student requests; admissions; co-curricular activity approval), ensuring a single consistent governance model	1
7	Notifications, Communications & Background Processing	– In-application notification centre with unread badge, read receipts and an urgent-item banner – Administrator-managed notification event-type registry (decisions, reminders, alerts) with category, active state and forced-on rules – Per-student notification preferences across channels (email, SMS, push) with a centralised preference-gate deciding whether and how to deliver – Database-driven email templates with parameter substitution, versioning, soft-delete and an administrator editor – Append-only email audit log of every message rendered and sent; multi-transport mail configuration with failover – Library of transactional emails for decisions, reminders, alerts and system events – In-context messaging: comment threads on student requests between applicants and workflow actors, with email notification on reply – Asynchronous job queue for long-running and high-fan-out work (bulk broadcasts, results generation, waitlist release) with idempotency and failure handling – Scheduled (cron-backed) task suite: current-period synchronisation, attendance-session generation, deadline and reminder sweeps, academic-year-end reminders with automatic calendar rollover, and clean-up of expired records – Delivery of academic and at-risk alerts — generated by the Academic Progress & Advising module (M09) — to a Programme-Leader alert feed, with read / acknowledge and resolution tracking – Real-time event broadcasting to signed-in clients for live dashboards and notification streams	1

No.	Module / Component	Key Functionalities	Qty
		– Global, per-channel enable/disable switches for institution-wide communication control	
8	Client UAT, FAT and Go-Live	– User Acceptance Testing (UAT) and Final Acceptance Testing (FAT) support, including integration regression against the University's existing student management system – User and technical documentation per delivered module (role-based guides; system architecture, API / OpenAPI 3.0, schema, deployment) – Production go-live assistance and a minimum two-week hypercare period; formal UBD sign-off gates the final payment milestone – Full requirements for testing, documentation, go-live and hypercare are detailed in Section 4	1

3. Technology Requirements

All development under this quotation must conform to the technology stack of the University's existing student management system. Only the scope-specific usage and the additions for this engagement are summarised below; all other backend, API and security requirements follow the University's existing student management 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, Artisan command structure. Strict PHP typing enabled.
PHP Version	PHP 8.2 or above	Strict mode; type declarations on all methods; no use of deprecated functions.
Dependency Management	Composer	composer.json and composer.lock submitted with all deliverables.
Background Jobs	Laravel Queues — Redis driver preferred	Asynchronous processing for: timetable generation runs, bulk attendance import, graduation eligibility batch runs, and notification fan-out.
Real-Time Events	Laravel Echo + WebSocket (Pusher or Soketi)	Live attendance dashboards, timetable amendment broadcasts, and notification stream to logged-in clients.
Task Scheduling	Laravel Scheduler (cron-backed)	Scheduled jobs for attendance threshold sweeps, graduation eligibility re-evaluation, academic-calendar transitions, and at-risk flagging recomputation.

3.2 Database Layer

The University's student management system employs a polyglot persistence strategy. The vendor must implement data access across all three database engines for the modules in this scope.

Engine / Version	Role	Usage in This Scope
MySQL 8.0+	Primary transactional store	Timetable blocks, attendance registers, advising sessions, graduation-audit cases, transcript requests and payment records. InnoDB; UUID primary keys; utf8mb4 character set.
PostgreSQL 15+	Read-heavy aggregation and reporting feed	Graduation-audit aggregations, advising and attendance dashboards, and longitudinal academic queries; materialised views where appropriate.
MongoDB 6.0+	Audit trails and event streams	Attendance event stream, advising-notes change log, 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. Blade components and slots for reusable elements. No mixing of template engines.
CSS	Custom CSS — CSS Custom Properties (BEM)	No third-party CSS frameworks unless approved in writing by UBD. All design tokens as CSS variables. BEM class naming throughout.
JavaScript	jQuery 3.7+ with Vanilla JS (ES6+)	jQuery for DOM manipulation, AJAX, and event handling. No SPA frameworks for the web layer. Code must run natively in modern browsers without transpilation.
Calendar Component	FullCalendar.js v6+	Mandatory for Timetable views and Attendance session view. Must support iCalendar export and mobile-responsive layout.
PDF / Document Output	Laravel DomPDF or Browsershot (Puppeteer-backed)	Required for printable timetables, transcripts, and graduation-audit reports.

3.4 API & Security Requirements

The API layer and Security & Code Quality requirements are exactly as implemented in the University's existing student management system and are not restated here: RESTful APIs under /api/v1 documented with OpenAPI 3.0 (Swagger); Laravel Sanctum token authentication; the standard JSON envelope, cursor pagination, request throttling and central API-gateway registration; RBAC via Laravel Gates and Policies with a documented permission matrix; Form-Request input validation; immutable MongoDB audit logging of all create / update / delete on academic and attendance records; TLS 1.2+ in transit and AES-256 at rest; PHPStan level 8 and Laravel Pint passing with zero errors; minimum 80% test coverage; and secrets via environment configuration only.

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)	Vendor must attend UAT sessions, respond to defect reports, and deliver fixes within the agreed Service Level. All Priority 1 (Critical) and Priority 2 (High) defects resolved before UAT sign-off.
Final Acceptance Testing (FAT)	Full regression test of all delivered modules and integration regression against the University's existing student management system. Vendor must resolve all outstanding Priority 1 and Priority 2 defects before FAT sign-off is granted.
User Documentation	End-user guides for each delivered module covering all key workflows in plain English — suitable for non-technical staff and students.
Technical Documentation	System architecture overview, API documentation (OpenAPI 3.0), database schema guide, deployment guide, and environment configuration template. A developer unfamiliar with the codebase must be able to set up a local environment within 30 minutes.
Go-Live	Vendor must provide production deployment assistance and be available on go-live day for immediate support.
Hypercare	Minimum two-week hypercare period post go-live. On-call response time no more than four business hours for Priority 1 issues.
Client Sign-Off	Formal written sign-off from the client (UBD) required before the final payment milestone is released.

5. Acceptance Criteria

No.	Deliverable	Acceptance Criterion
1	Academic Progress & Advising (M09)	Student dashboard, at-risk flagging, AIP, LOA, suspension / readmission, candidature tracking, and academic standing history all validated. Approval chains operational. Misconduct case tracking validated.
2	Graduation Audit (M12)	Auto-audit returns correct status across a representative test cohort. Approval chain Programme Office → Faculty Dean → Registrar validated. Senate list generation and degree-classification computation verified against manual calculation.
3	Attendance Tracking (Web)	All capture channels operational (instructor web mark-in, browser-based QR / dynamic token, optional NFC). State transitions correct. Excused-absence workflow validated end-to-end. Three-absence exam-barring signal correctly exposed to the University's existing results & assessment system. QR anti-spoofing (rotating short-TTL tokens, replay protection) validated. Audit trail immutable and queryable.
4	Class / Tutorial / Practical Timetabling	Timetable correctly assembled from approved module offering blocks. Lecturer view, room occupancy view, and per-student view all functional. PDF and iCalendar exports working. Amendment workflow and audit trail confirmed. No allocation of examination slots, examination venues, or invigilation duties (those are reserved scope).
5	Transcript Request, Issuance, Verification & Online Payment	Student and alumni request flows validated end-to-end (alumni OTP identity verified). Scope selection, delivery methods, multi-copy tokens, sealing and revocation operational. Public verification portal returns the correct authenticity result and is rate-limited. Online payment (card via gateway and manual bank transfer) transacts and reconciles in sandbox; issuance gated on a settled or waived fee.

No.	Deliverable	Acceptance Criterion
6	Dynamic Approval-Workflow Engine & Unified Action Queue	Configurable stages and role gates editable via the Workflow Editor without code. "My Queue" aggregates pending items per role with correct scope narrowing. Transition audit complete; return-for-amendment and Senate-gating paths validated.
7	Notifications, Communications & Background Processing	Notification centre, event-type registry and per-student channel preferences operational. Database email templates render and are logged. Scheduled jobs and queues run; the at-risk alert engine produces the Programme-Leader feed. Preference-gated suppression verified.
8	UAT, FAT & Go-Live	All Priority 1 and Priority 2 defects resolved before FAT. System live in production. Mobile application released to both stores. User and technical documentation delivered. 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	Academic Progress & Advising (M09)		
2	1	Graduation Audit (M12)		
3	1	Attendance Tracking (Web)		
4	1	Class / Tutorial / Practical Timetabling <i>Excludes Examination Timetabling (out of scope).</i>		
5	1	Transcript Request, Issuance, Verification & Online Payment		
6	1	Dynamic Approval-Workflow Engine & Unified Action Queue		
7	1	Notifications, Communications & Background Processing		
8	1	Client UAT, FAT and Go-Live 1. User Acceptance Testing Support 2. Final Acceptance Testing Support 3. User and Technical Documentation 4. Mobile Application Store Release Support 5. Go-Live 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.
- The capabilities listed in Section 1.1 (examination timetabling; reporting, analytics and administration; AI / ML integration; staff record management; room & venue management) are out of scope and must not be priced under this submission.
- Payment milestones to be agreed in the resulting contract. Final payment is contingent on the client sign-off described in Section 5.