CO2060 – Software Systems Design Project

2YP – Project Workflow & Timeline Submissions

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Project Management and Development Plan

Development Methodology

The development of the *PhD Lifecycle Management System* adopts the Agile **Scrum** methodology to support incremental delivery, stakeholder feedback, and risk mitigation. The project spans two academic semesters, comprising a total of 28 weeks divided into fourteen sprints, each lasting two weeks. Scrum was selected due to its suitability for evolving requirements, continuous validation, and iterative enhancement of complex information systems.

- Semester 1 focuses on delivering a **Minimum Viable Product (MVP)** that supports the core postgraduate research life-cycle.
- Semester 2 extends the MVP into a compliance-ready, scalable, and institution-grade system.

Semester 1: Minimum Viable Product Development

- **Sprint 1 (Weeks 1–2): Foundation and Core Registry**

This sprint establishes the technical foundation of the system, including server provisioning, ERPNext installation, and configuration. Core data entities such as Student, Supervisor, and Faculty are implemented with standardized naming conventions and essential attributes.

- **Sprint 2 (Weeks 3–4): Transactional Records and Compliance Basics**

Transactional entities for Progress Reviews and Thesis Submissions are introduced. Relationships among core entities are established, and audit trails are enabled to track data modifications and ensure accountability.

- **Sprint 3 (Weeks 5–6): Lifecycle Workflow Management**

This sprint implements the PhD lifecycle workflow, defining academic states and permissible transitions. Role-based access control is configured to enforce institutional policies and approval hierarchies.

- **Sprint 4 (Weeks 7–8): Security and Business Logic Enforcement**

Row-level data access restrictions are implemented to ensure privacy and data isolation. Automated business logic updates student status based on academic milestones, while validation rules maintain data integrity.

Sprint 5 (Weeks 9–10): Automation and Notifications

Automated notifications and deadline reminders are configured for key workflow events. Mechanisms are introduced to identify and flag students at risk of delayed progression.

- **Sprint 6 (Weeks 11–12): Reporting and User Acceptance Testing**

Dashboards and management reports are developed to visualize student progress and review status. User Acceptance Testing (UAT) is conducted with faculty stakeholders to validate system functionality and usability.

- **Sprint 7 (Weeks 13–14): MVP Release and Evaluation**

Critical defects identified during UAT are resolved, documentation is prepared, and the MVP is deployed for academic review and evaluation.

Semester 2: System Enhancement and Institutional Readiness

- **Sprint 8 (Weeks 15–16): Ethics and Regulatory Compliance**

Ethics approval workflows are implemented in alignment with university research regulations. The system enforces ethics clearance as a prerequisite for research progression.

- **Sprint 9 (Weeks 17–18): Thesis Examination and Evaluation Management**

This sprint digitizes the thesis examination process, including examiner assignment, report submission, outcome tracking, and graduation eligibility enforcement.

- **Sprint 10 (Weeks 19–20): Auditability and Governance Controls**

Advanced audit logging mechanisms are implemented to record approvals, rejections, and workflow transitions. Long-term data retention policies are configured to support institutional governance and accreditation requirements.

- **Sprint 11 (Weeks 21–22): Advanced Reporting and Analytics**

Analytical dashboards and decision-support reports are developed to provide insights into completion timelines, supervisor workloads, and student progression trends.

- **Sprint 12 (Weeks 23–24): Scalability and Performance Optimization**

System performance is enhanced through load testing, query optimization, automated backup strategies, and security hardening to support faculty-wide deployment.

- **Sprint 13 (Weeks 25–26): Policy Alignment and Documentation**

System workflows are validated against official postgraduate regulations. Comprehensive user manuals and administrative Standard Operating Procedures (SOPs) are prepared.

- **Sprint 14 (Weeks 27–28): Final Validation and Project Closure**

End-to-end lifecycle testing is conducted across multiple student scenarios. Final refinements are applied, and the system is demonstrated as a complete, production-ready academic management solution.

Expected Outcomes

By the end of Semester 1, a secure and functional MVP supporting the core PhD lifecycle is delivered. Upon completion of Semester 2, the system achieves institutional readiness, offering compliance, scalability, auditability, and decision-support capabilities suitable for faculty-level deployment.