

**SECD 2613: System Analysis and Design**

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Project 1

**Phase 1- Project Proposal and Planning**

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**Case study**

**NexScholar Student Supervisor Management System**

University Technology Malaysia (UTM) has recently adopted NexScholar, a new academic collaboration platform designed to simplify research management and communication. A crucial module within NexScholar is the "Student Supervisor Management System," specifically intended for postgraduate students and their supervisors. The university administration has realized the existing manual processes—email communications, Excel tracking sheets, and informal meetings—are inefficient and problematic.

Currently, postgraduate students select their supervisors themselves; however, this selection process relies heavily on informal communications via email or WhatsApp. Students frequently complain about difficulties in reaching supervisors for guidance, slow feedback on drafts, uncertainty about meeting schedules, and unclear progression milestones.

Supervisors, on their side, struggle to manage communications, track the progression of multiple supervisees, and ensure timely feedback due to fragmented information and manual monitoring. This situation has led to delays in research progress, frustration among students, and even cases of students dropping out of programs.

Although UTM currently uses the Graduate Student Management System (GSMS), it is an outdated platform primarily focused on monitoring student statuses, such as enrollment status and academic standing, but lacks functionalities for actively managing supervisorstudent relationships.

To address these issues, UTM's Faculty of Computing has approached your team as System Analysts to propose a new integrated digital solution as part of NexScholar. The envisioned system should automate and streamline the entire student-supervisor engagement lifecycle from assignment through ongoing supervision until the completion of research.

As a system analyst, please ask relevant questions based on the case study.

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# 1.0 Introduction

# 2.0 Background Study

# 3.0 Problem Statement

# 4.0 Proposed Solutions (include feasibility study – technical, operational, economical - CBA)

# 5.0 Objectives

# 6.0 Scope of the Project

# 7.0 Project Planning

## 7.1 Human Resource

**Project Manager**

The project manager is responsible for overseeing the entire project lifecycle, managing the project schedule, budget, and ensuring effective communication across all teams.

**System Analysts**

System analysts are responsible for gathering system requirements, analyzing the current issues, and defining system functionalities. They act as a bridge between the stakeholders and the development team.

**Software Developers**

The development team includes front-end and back-end developers who are tasked with building the core system functionalities, including supervisor-student communication, scheduling, progress tracking, and feedback systems.

**UI/UX Designers**

UI/UX designers will focus on creating a user-friendly interface, ensuring the platform is easy to navigate and accessible for both students and supervisors.

**Database Administrator (DBA)**

The DBA is responsible for designing and managing the database system, ensuring data integrity, performance, and security.

**Quality Assurance (QA) Testers**

QA testers will perform system testing to ensure the system is free of bugs, secure, and functions according to the specified requirements.

**Security Specialist**

Responsible for implementing security protocols, ensuring compliance with Personal Data Protection (PDP) requirements, and maintaining system confidentiality.

**Academic Advisors**

Academic advisors provide insight into the existing processes and help align system features with real academic needs and university regulations.

**End Users (Students and Supervisors)**

Students and supervisors will be engaged throughout the development process for requirement validation, usability testing, and feedback.

**IT Support Staff**

Post-deployment, IT support staff will manage system maintenance, user support, and troubleshooting.

**Finance Officer**

The finance officer handles budgeting and monitors software development, operational, and maintenance costs.

**Legal and Compliance Officer**

Ensures the system complies with all relevant laws and university data protection regulations, especially in terms of user data processing and storage.

## 7.2 Work Breakdown Structure (WBS)

**Level 1: NexScholar Student Supervisor Management System**

**Level 2: Project Phases**

**1. Requirements Analysis**

**1.1 Conduct Stakeholder Interviews**

1.1.1 Interview university administration to gather current challenges.

1.1.2 Collect feedback from students on existing processes.

1.1.3 Interview supervisors for insights on their communication and tracking needs.

**1.2 Analyze Current System**

1.2.1 Review Graduate Student Management System (GSMS).

1.2.2 Identify gaps in the current system, such as inefficiency in communication.

1.2.3 Analyze manual processes (email, spreadsheets) and issues.

**1.3 Define System Requirements**

1.3.1 Document user roles (students, supervisors, administrators).

1.3.2 Define functional requirements (tracking, scheduling, feedback, milestones).

1.3.3 Define non-functional requirements (scalability, usability, security).

1.3.4 Validate and get sign-off from stakeholders.

**2. System Design**

**2.1 Develop System Architecture**

2.1.1 Design the overall structure of the platform (frontend and backend).

2.1.2 Define database schema for student, supervisor, and project tracking.

2.1.3 Ensure system scalability to support a growing number of users.

**2.2 UI/UX Design**

2.2.1 Create wireframes and UI prototypes.

2.2.2 Review the interface with users for feedback.

2.2.3 Finalize UI design specs for development.

**2.3 Database Design**

2.3.1 Create database schema for supervisor-student assignments and project data.

2.3.2 Set up indexing for easy search and retrieval of research data.

2.3.3 Design data security measures, including encryption and backup strategies.

**3. Development**

**3.1 Backend Development**

3.1.1 Develop APIs for student-supervisor matching and management.

3.1.2 Build logic for automatic progress tracking and milestone alerts.

3.1.3 Implement scheduling and communication features (meeting reminders, feedback).

**3.2 Frontend Development**

3.2.1 Implement student dashboard for supervisor management.

3.2.2 Build supervisor dashboard to track student progress and feedback.

3.2.3 Integrate role-based access control for different user types.

**3.3 Integration & Testing**

3.3.1 Integrate frontend with backend APIs for real-time data updates.

3.3.2 Integrate the system with UTM's existing academic tools (e.g., email, scheduling tools).

3.3.3 Conduct unit testing for individual components (student dashboard, supervisor dashboard).

**4. Testing**

**4.1 System Testing**

4.1.1 Perform integration testing to ensure smooth system operation.

4.1.2 Conduct performance testing under expected user load.

4.1.3 Address and fix any issues identified during testing.

**4.2 User Acceptance Testing (UAT)**

4.2.1 Create UAT scenarios based on user requirements (students, supervisors).

4.2.2 Involve a sample group of students and supervisors to validate usability.

4.2.3 Collect feedback and implement changes based on results.

**4.3 Final Quality Review**

4.3.1 Review system logs for errors and security issues.

4.3.2 Confirm data integrity and that the system performs as expected.

4.3.3 Sign off on system readiness for deployment.

**5. Deployment & Training**

**5.1 Training & Support**

5.1.1 Prepare training materials (manuals, FAQs) for students and supervisors.

5.1.2 Conduct training workshops for faculty and staff on system usage.

5.1.3 Provide ongoing helpdesk support post-launch.

**5.2 Go-Live Execution**

5.2.1 Deploy the system to the live environment.

5.2.2 Monitor system performance during the first month of use.

5.2.3 Address critical bugs or issues in real-time.

**5.3 Post-Deployment Evaluation**

5.3.1 Gather feedback from users (students, supervisors).

5.3.2 Evaluate system performance and user satisfaction.

5.3.3 Plan for future upgrades or system improvements based on feedback.

**6. Ongoing Maintenance**

**6.1 System Monitoring & Maintenance**

6.1.1 Perform regular software updates and security patches.

6.1.2 Conduct performance monitoring and optimize system as necessary.

**6.2 User Support**

6.2.1 Provide ongoing user support and troubleshooting for issues.

6.2.2 Regularly update FAQs and help documentation based on user inquiries.

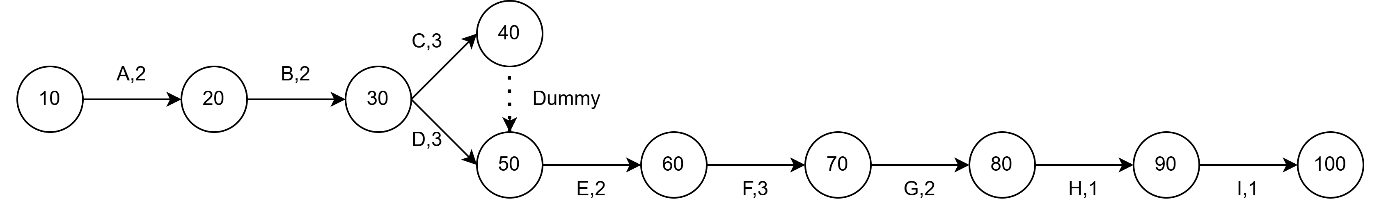
**6.3 Feedback Collection & Improvement**

6.3.1 Collect ongoing user feedback (surveys, forums).

6.3.2 Implement improvements and feature requests in future versions.

## 7.3 PERT Chart (based on WBS)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Node** | **Activity** | **Description** | **Duration (Weeks)** | **Predecessor(s)** |
| A | Requirements Analysis | Stakeholder interviews, document needs, approval | 2 | None |
| B | System Design | Architecture, UI/UX design, database structure | 2 | A |
| C | Backend Development | Database, backend logic, APIs | 3 | B |
| D | Frontend Development | UI implementation, user interaction | 3 | B |
| E | Integration & Internal Testing | Merge frontend/backend, bug fixing | 2 | C, D |
| F | User Acceptance Testing (UAT) | Feedback from real users, usability testing | 3 | E |
| G | Deployment & Training | Launch system, train users, distribute manuals | 2 | F |
| H | Post-Deployment Review | Monitor system, fix launch issues | 1 | G |
| I | Maintenance | Ongoing support, updates | 1 (initial) | H |



## 7.4 Gantt Chart

# 8.0 Benefit and Overall Summary of Proposed System

By addressing the current challenges in postgraduate supervision, the NexScholar Student Supervisor Management System will dramatically enhance the research experience at UTM. Students will benefit from a centralized platform for submitting documents, receiving timely feedback, and tracking their research milestones, leading to better supervision quality and reduced delays. Supervisors will be equipped with effective tools to manage communications, monitor supervisee progress, and coordinate meetings more efficiently. The university as a whole will experience improved research management, greater student satisfaction, and reduced dropout rates, aligning with its digital transformation goals.

The NexScholar Student Supervisor Management System aims to replace outdated manual practices with a fully integrated, user-friendly web platform. Designed with an agile development approach, the system will automate crucial supervision processes such as milestone tracking, meeting scheduling, document sharing, and structured feedback management. Although initial development and implementation will require significant investment, the long-term benefits—such as increased operational efficiency, improved research outcomes, and enhanced academic reputation—far outweigh the costs. The system also ensures tight security, scalability for future expansion, and seamless integration within UTM’s existing NexScholar environment.

Ultimately, the NexScholar Student Supervisor Management System will empower students, supervisors, and administrators by offering a modern, transparent, and efficient approach to postgraduate supervision. Through real-time updates, automated reminders, and centralized data management, the system will foster a more structured and supportive academic environment. It stands as a critical step toward UTM’s vision of achieving excellence in postgraduate education and solidifying its reputation as a leader in digital academic innovation.