Phase 1: Finalization of System Design (October 1 - October 15)

Review and Finalize System Design

* System Offerings:
  + A refined and finalized system design that's aligned with identified requirements and use cases.
  + A document detailing the system design for reference throughout the project.
* Aim:
  + To ensure that the design is robust, meets the requirements, and is agreed upon by stakeholders.

Sub-task 1: Review initial system design.

* Objective: To evaluate the initial design against the project requirements and identify any gaps or areas for improvement.
* Importance: Ensures that the project starts with a design that meets the identified needs and is ready for the development phase.

Sub-task 2: Conduct meetings with stakeholders for feedback.

* Objective: To gather feedback from stakeholders on the initial design, ensuring it meets their expectations and requirements.
* Importance: Engaging stakeholders early on helps to ensure their buy-in and support throughout the project.

Sub-task 3: Finalize system design document.

* Objective: To complete the system design document, incorporating feedback from stakeholders and ensuring it's ready for the development team.
* Importance: Provides a definitive reference for the development team, ensuring everyone has a clear understanding of the system design.

Phase 2: Development Planning (October 16 - October 31)

Development Environment Setup

* System Offerings:
  + A structured development environment promoting efficiency, collaboration, and quality code.
* Aim:
  + To prepare the technical infrastructure necessary for development work.

Sub-task 1: Set up version control systems.

* Objective: To implement a version control system that tracks changes to the code and facilitates collaboration among developers.
* Importance: Ensures code integrity, provides a history of changes, and supports collaborative development.

Sub-task 2: Configure development tools and frameworks.

* Objective: To set up the necessary tools and frameworks that will be used in the development of the system.
* Importance: Ensures developers have the resources they need to work efficiently and effectively.

Sub-task 3: Establish coding standards and review processes.

* Objective: To define coding standards and establish a process for code reviews.
* Importance: Promotes code quality, consistency, and a collaborative review process.

Task Breakdown and Scheduling

* System Offerings:
  + A clear breakdown of development tasks and a schedule that aligns with project milestones.
* Aim:
  + To provide a clear roadmap for the development team, ensuring everyone understands their responsibilities and deadlines.

Sub-task 1: Define development milestones.

* Objective: To establish major milestones that reflect significant points of progress in the project.
* Importance: Provides a high-level roadmap and helps to track progress against project goals.

Sub-task 2: Assign tasks to development team members.

* Objective: To allocate tasks to team members based on their skills and the project requirements.
* Importance: Ensures that all tasks are covered and that team members have a clear understanding of their responsibilities.

Sub-task 3: Establish a project timeline with deadlines for each task and sub-task.

* Objective: To create a timeline that outlines when each task and sub-task should be completed.
* Importance: Helps to ensure that the project stays on schedule and that all team members are aligned on the timeline.

Phase 3: Core Development (November 1 - November 20)

Backend Development

* System Offerings:
  + Functional backend services and APIs necessary for system operations.
  + Business logic implementation for handling user interactions and data processing.
* Aim:
  + To build a robust backend infrastructure that supports the frontend application and ensures data integrity.

Sub-task 1: Develop services for user registration and application submission.

* Objective: To create backend services that handle user registration, authentication, and application submission processes.
* Importance: Provides the core functionality necessary for users to interact with the system.

Sub-task 2: Implement course management and preliminary matching algorithms.

* Objective: To develop the business logic for managing courses and matching TA applicants to course needs.
* Importance: Forms the basis for one of the system's primary functions—matching TAs with courses based on qualifications and needs.

Sub-task 3: Develop interfaces for reviewing applications and finalizing TA assignments.

* Objective: To create interfaces that allow department staff and TA committee members to review applications and finalize TA assignments.
* Importance: Supports the decision-making process for TA assignments and ensures that it's handled efficiently and effectively.

Frontend Development

* System Offerings:
  + Intuitive user interfaces tailored to the needs of different user roles.
  + Seamless user experience that facilitates easy navigation and interaction with the system.
* Aim:
  + To provide an interactive, user-friendly frontend that enables users to accomplish their tasks with ease.

Sub-task 1: Develop interfaces for TA applicants.

* Objective: To create user interfaces that facilitate the application process for TA positions.
* Importance: Ensures that TA applicants can easily submit their applications and track their status.

Sub-task 2: Create dashboards for department staff and TA committee members.

* Objective: To design and develop dashboards that provide a comprehensive overview of TA applications, course needs, and matching status.
* Importance: Supports efficient management and review of TA applications and assignments.

Sub-task 3: Develop interfaces for instructors for performance assessment and viewing assignments.

* Objective: To create interfaces that enable instructors to assess TA performance and view TA assignments for their courses.
* Importance: Provides the tools necessary for performance assessment and enhances communication between instructors and TAs.

Database Development

* System Offerings:
  + A well-designed database schema that ensures data integrity, consistency, and security.
  + Efficient database interactions supporting system functionality.
* Aim:
  + To develop a database structure that effectively supports system operations and ensures data accuracy.

Sub-task 1: Design database schema.

* Objective: To design a database schema that aligns with the system's data requirements.
* Importance: Forms the foundation for data storage, retrieval, and management throughout the system.

Sub-task 2: Implement database interactions within backend services.

* Objective: To develop the necessary code for interacting with the database, ensuring accurate data retrieval, insertion, and updates.
* Importance: Enables the backend services to interact with the database effectively, ensuring data integrity.

Sub-task 3: Ensure data integrity and security.

* Objective: To implement measures that ensure data integrity and security, such as validation checks and encryption.
* Importance: Protects sensitive data and ensures that the data within the system remains accurate and consistent.

Phase 4: Testing and Quality Assurance (November 21 - November 27)

Unit and Integration Testing

* System Offerings:
  + Identification and resolution of bugs or issues.
  + Verification that individual components and integrated parts work as intended.
* Aim:
  + To ensure that the system functions correctly at both the component and integrated levels.

Sub-task 1: Write and execute unit tests.

* Objective: To develop and run unit tests that verify the functionality of individual components.
* Importance: Ensures that each component behaves as expected, identifying any bugs or issues.

Sub-task 2: Write and execute integration tests.

* Objective: To develop and run integration tests that verify the interactions between different parts of the system.
* Importance: Ensures that integrated components work together seamlessly.

Sub-task 3: Identify and fix any bugs or issues.

* Objective: To address any bugs or issues identified during testing, ensuring a high-quality, reliable system.
* Importance: Ensures the system is ready for performance, security testing, and eventually deployment.

Performance and Security Testing

* System Offerings:
  + Verification that the system meets performance benchmarks and security standards.
* Aim:
  + To ensure the system is ready for deployment in a production environment, meeting non-functional requirements.

Sub-task 1: Conduct performance testing.

* Objective: To test the system under various loads to ensure it meets performance benchmarks.
* Importance: Ensures the system can handle real-world usage scenarios and remains responsive under load.

Sub-task 2: Conduct security testing.

* Objective: To identify and address any security vulnerabilities within the system.
* Importance: Ensures the security of user data and system operations, building trust with users.

Phase 5: Deployment Preparation (November 28 - November 30)

Deployment Planning

* System Offerings:
  + A detailed deployment plan that outlines the steps for moving the system to the production environment.
  + A prepared production environment ready for deployment.
* Aim:
  + To ensure a smooth transition from the development and testing phases to live deployment.

Sub-task 1: Review and finalize the deployment plan.

* Objective: To review the deployment plan, ensuring it's comprehensive and ready for execution.
* Importance: Minimizes deployment risks and ensures that all stakeholders are aligned on the deployment process.

Sub-task 2: Set up the production environment.

* Objective: To prepare the production environment, ensuring it's configured correctly and ready for deployment.
* Importance: Provides a stable environment for the live system, ensuring it operates reliably post-deployment.

Sub-task 3: Conduct a final review with stakeholders.

* Objective: To review the system with stakeholders, ensuring it meets the requirements and is ready for deployment.
* Importance: Gathers final approval from stakeholders, ensuring the system is ready for live use.

Phase 6: Deployment (December 1)

Deployment to Production

* System Offerings:
  + A live system available for end-users in a production environment.
  + Verification of successful deployment through smoke testing.
* Aim:
  + To transition the system from the development stage to a live, operational stage.

Sub-task 1: Deploy backend services.

* Objective: To move the backend services to the production environment, ensuring they operate correctly.
* Importance: Forms the backbone of the live system, supporting frontend operations and user interactions.

Sub-task 2: Deploy frontend application.

* Objective: To deploy the frontend application to the production environment, ensuring it interacts correctly with backend services.
* Importance: Provides the user interface for the live system, enabling users to interact with the system.

Sub-task 3: Conduct smoke testing to ensure successful deployment.

* Objective: To perform basic tests that verify the system operates correctly in the production environment.
* Importance: Provides a final verification that the deployment was successful and the system is ready for use.

Post-Deployment Monitoring and Support (Continuous)

Monitoring and Support

* System Offerings:
  + Ongoing monitoring of system performance and user interactions.
  + Support for addressing any post-deployment issues or bugs.
* Aim:
  + To ensure the system continues to operate correctly and meets user needs post-deployment.

Sub-task 1: Set up monitoring tools.

* Objective: To implement monitoring tools that provide insights into system performance and user interactions.
* Importance: Enables proactive identification and resolution of issues, ensuring a positive user experience.

Sub-task 2: Address any post-deployment issues or bugs.

* Objective: To provide support for addressing any issues or bugs that arise post-deployment.
* Importance: Ensures the system continues to operate correctly and meets user needs.

Sub-task 3: Collect feedback for future improvements.

* Objective: To gather feedback from users and stakeholders for future system improvements.
* Importance: Helps to identify areas for improvement, ensuring the system continues to meet evolving needs and expectations.