Student Scheduling System for the UP Baguio Academic Management Information System (AMIS)

Project Proposal

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Project Definition

The Student Scheduling System is a project aimed at enhancing the academic scheduling process for students at the University of the Philippines Baguio (UPB) by integrating an efficient and user-friendly scheduling module within the existing Academic Management Information System (AMIS). This system, which will be native to the AMIS website, will optimize schedule generation and minimize time-related conflicts on class courses, in the hopes of streamlining the student course registration process within the university through student academic planning.

The project aims to allow students to plan, view, manage, and download their semestral schedules while preventing scheduling conflicts from arising and ensuring compliance with curriculum requirements. Additionally, the system will run from any point of the Academic Year, from the bookmarking phase which can be done anytime throughout the semester, during the enrollment period, and until after the change matriculation period.

This further enhancement and optimization of the preexisting AMIS scheduling system aims to address common scheduling challenges, improve academic guidance, and reduce administrative processing times by streamlining the student user experience. It ensures that the existing AMIS scheduling system features, such as timetable generation, are made more user-friendly while adding new features, such as timetable generation during the enrollment phase and bookmarking phase, to improve the overall efficiency of administrative and student burdens during the academic enrollment period.

Business Need

In procuring the updated scheduling user interface for the UPB AMIS site, the need for a clean and clear timetable that all UPB students can easily download after enlistment will be met. Meeting the needs of the client will have a moderate impact on the ease of use of the UPB AMIS website especially during pre-registration and enlistment periods. This updated scheduling system will also provide the students with an easier guide in making their schedules as they go through the enlistment process.

Customer Profile and Existing System

The University of the Philippines Baguio (UPB) is an academic institution that serves as a center for higher learning and research in Northern Luzon. The university encompasses a diverse student population, alongside its faculty and administrative staff in the pursuit of various academic activities under the university. As such, the end-users of the proposed scheduling system will include all students, faculty members, and administrative personnel involved in academic scheduling and enrollment management.

The university's current course scheduling and enrollment system relies on the recently implemented AMIS website, which was developed by UP Los Baños and is currently in the process of being adapted for UP Baguio. This system is still undergoing continuous development and local migration to better accommodate

the specific needs of UP Baguio. It serves as a platform for managing student records, course registration, and academic tracking. Being only recently implemented, the current scheduling process still presents end-user challenges such as the inability to view scheduling conflicts, lack of user-friendly interfaces for timetable generation, and confusing scheduling presentation. The persistence of such issues may result in student inefficiency in course enrollment, and likely faculty and administrative qualms in managing and overseeing the entire enrolment process.

The student scheduling system project thus aims to address these shortcomings by enhancing AMIS with a more intuitive and user-friendly scheduling module that will ensure a more seamless and conflict-free scheduling experience. This system will be developed specifically for UP Baguio's students, faculty, and administrators, of which the primary users are formally identified as:

- **Students:** The largest user group, consisting of undergraduate and graduate students that will use the system to plan and manage their course schedules.
- **Faculty Members:** Professors and lecturers who will monitor their teaching schedules and course assignments.
- **Administrative Staff:** Academic administrators and registrars responsible for managing class schedules and ensuring compliance with curriculum requirements.

The proposed system will be available for access within the AMIS website by the primary users throughout each academic year. The frequency of use of the scheduling system is disclosed as:

- **Frequency of Use:** Depending on each user, the scheduling system will be used primarily during the pre-registration and enlistment period, but may be used before or after these intervals by those who wish to continuously check their schedules or bookmark subjects, as bookmarking will be available year-round.

Critical Constraints

The optimization of the UPB AMIS scheduling system will be guided by intuitive PHP frameworks such as *Laravel* and the open-source javascript library *Nuxt* to comply with the existing network architecture present in the current AMIS site. The set timeline for the optimization and finalization of this student scheduling optimization is projected to take four months, with prototyping and documentation beginning in February 2025 and ending in May 2025.

The life expectancy of the project is ideally set to four or more years, as the scheduling interface will be utilized by the previously identified primary users unless further improved upon or changed by other collaborators of the AMIS team.

Project Deliverables

The only output required from our team is the code and the framework specifications needed to run the updated scheduling interface. The project documentation and system architecture are not explicitly listed as one of the required deliverables at the end of the project. However, the group considers them essential and will compile and prepare them in case the AMIS Team requires them.

Preliminary Requirements

The scheduling system will include a read functionality that will update the timetable on the UPB AMIS website for any changes made within a student's schedule. The scheduling system must reflect any changes within the university's database regarding the bookmarking, enlisting, and removing of subjects either done by a student or an administrator. Overlapping subjects will also be reflected in the updated system to and be shown in an easily distinguishable format. A download feature will also be included that will allow students to download their schedules once the enlistment period has concluded as well as their bookmarked subjects. The system will be updated to present a cleaner and more understandable user interface provided that it stays within the original AMIS colors while also following the university colors. As mentioned above, all functionalities and designs will be created using the preferred framework Laravel, and the javascript library Nuxt. Lastly, all codes used are required to run within the university as the scheduling system will be run using the university's servers and databases.

Functional Requirements

The scheduling system aims to provide a seamless way of managing the class schedules through the UPB AMIS website. The system will automatically update the student timetables to reflect any changes that may occur due to the bookmarking, enlisting, or removal of subjects. If there are overlapping subjects, the system will detect and highlight them with a different color or format for easy detection. A drop-down menu will be created to differentiate the student's official schedule during the semester and the bookmarked subjects that the student wishes to take for the next semester. A download button will also be made available to give the students the option of downloading their schedules, both for their regular semester schedule and their bookmarked subject schedules that is to be saved as an image file. The scheduling system will be developed using Laravel for backend operations and Nuxt.js for the front end to ensure a responsive and smooth user experience.

User Interface

Given that the system will run natively within AMIS, the project's user interface relies solely on the environment of the Enlistment Module in the Student Portal section of the AMIS site. The proposed improved scheduling system will feature a cleaner and more intuitive interface designed for students to view their

schedules more easily. To distinguish the difference between bookmarked subjects and finalized subjects within the schedule, the interface will be split through the implementation of a dropdown menu. An additional feature that contributes to the user interface will be the color-coding of subjects for easier identification, with overlapping subjects having a separate color code from non-conflicting ones. The color scheme of the user interface should still follow the university colors and the initial color palette or scheme deployed in the AMIS website to maintain consistency.

Target Environment

The Student Scheduling System for the UPB AMIS is designed to operate efficiently within the university's existing IT infrastructure. The system will be seamlessly integrated into the AMIS platform, ensuring consistency with other academic and administrative modules while maintaining high performance and accessibility for all users.

The system will be hosted on the UPB AMIS server, which will provide a stable and secure environment for data storage and system operations. To support peak enrollment periods, the system will utilize a load-balanced architecture capable of handling high user traffic. Additionally, database servers optimized for rapid query execution and real-time updates will ensure that students and faculty experience minimal delays when accessing the system. The system will be accessible across various user devices, including desktops, laptops, tablets, and mobile phones, allowing users to interact with the platform from different locations with ease.

In terms of software requirements, the system will be developed as a web-based application, using modern web technologies to enhance user experience and system efficiency. The database engine will utilize an XML database along with others to ensure fast and reliable storage and retrieval of data. The backend will be built using Laravel, an intuitive PHP framework that aligns with the existing AMIS network architecture. The front end will be developed using Nuxt.js, an open-source JavaScript framework that enhances responsiveness and performance. Additionally, the system will run on the university's server to maximize stability and security.

Performance and resource constraints have been carefully considered in the development of the system. The platform must be able to support at least 1,500 concurrent student users during peak enlistment periods without experiencing significant performance degradation. The expected response time for the system is under a minute on both normal load conditions and peak usage. Additionally, it will be scalable to accommodate future growth in the student population and increased system demands over time.

Given the critical nature of academic scheduling, the system is required to be available 24/7, particularly during key periods such as enrollment, pre-registration, and schedule adjustment windows. To minimize disruptions,

scheduled maintenance will be performed during off-peak hours, and automatic mechanisms will be implemented to ensure continuous operation even in the event of server failures.

Moreover, the seamless interaction of the scheduling system is another essential aspect of the system's design. Since it will be fully integrated into AMIS, it must seamlessly interact with existing student records, course databases, and faculty assignment systems.

Summary of Customer Priorities and Expectations

The primary goal of this project is to create a student scheduling system that will provide the students and the administrators with an efficient, user-friendly, and intuitive way of managing class schedules using the UPB AMIS website. This system is expected to provide a system that updates the created timetable whenever there are changes made, such as bookmarking, enlisting, or removing subjects. A key priority of this project lies in handling the overlapping subjects and in providing a drop-down menu to offer different timetables for the official class schedule in the current semester and the bookmarked schedule intended for the next semester. Additionally, the users are provided with a way to download their timetables for both the semester's official schedule and the bookmarked schedule to be saved as an image file. The user interface is expected to follow the University colors that are consistent with the existing AMIS color pallet to ensure an aesthetically pleasing interface.

Aside from these, performance is an important aspect of the project as the system must be able to handle high traffic during enrollment periods while maintaining the responsiveness of the design. The scheduling system must also be accessible across various devices, to ensure that the students, faculty, and administrators can access the schedule anytime and anywhere. To meet these expectations, the system will be built using Laravel for backend operations and Nuxt.js for the front end, in order to ensure a reliable operation. Most importantly, the system's success will be measured by its ability to provide accurate, real-time updates, and seamless performance during the enrollment period where the usage traffic will be at an all-time high.

Approvals

The following client stakeholders hereby approve the project proposal of the group NoName for the student scheduling system of AMIS.

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