IS 636: Structured System Analysis and Design

Deliverable 3: Modeling

Project Title: Enhanced Course Enrollment and Notification System

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Submission Date: 18th April 2024

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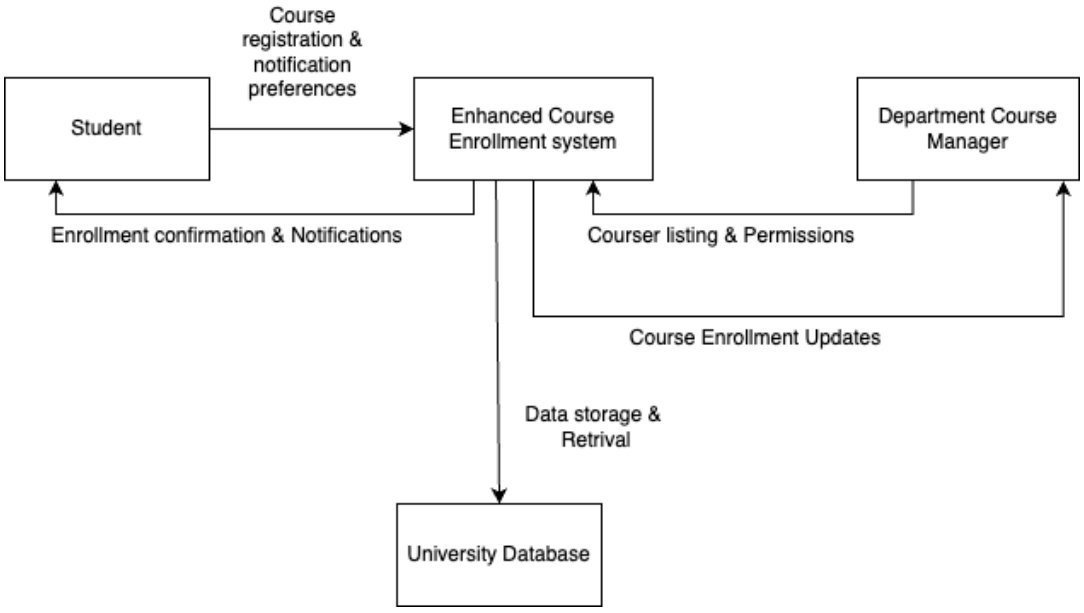
1. Introduction:

The "Enhanced Course Enrollment and Notification System" at UMBC will provide students with a course registration procedure that is both very efficient and transparent. With the use of automated waitlist management and smooth cross-departmental course registration, this initiative seeks to rejuvenate the current enrollment system. This program makes it easy for students to choose their courses, which helps them make the best plans and decisions for their education. Like contemporary, user-friendly digital platforms, the system's design features an easy-to-use interface with real-time notifications about changes in enrollment status and waitlist moves.

The system's integration of these components will enable students to better manage their academic schedules and reduce the typical stress that comes with course registration times. Additionally, the system claims to increase administrative efficiency through the reduction of manual involvement and automation of repetitive processes, which in turn minimizes errors and saves critical time. It also has an interactive feedback system that adjusts to user input to continuously enhance the enrollment procedure in response to real user needs and behaviors. This system is a comprehensive educational tool that guarantees students are well-informed and fully equipped to make the greatest academic choices. It is not just a tool for course registration. In the end, by streamlining the enrollment process, this project helps UMBC fulfill its commitment to academic excellence and student pleasure.

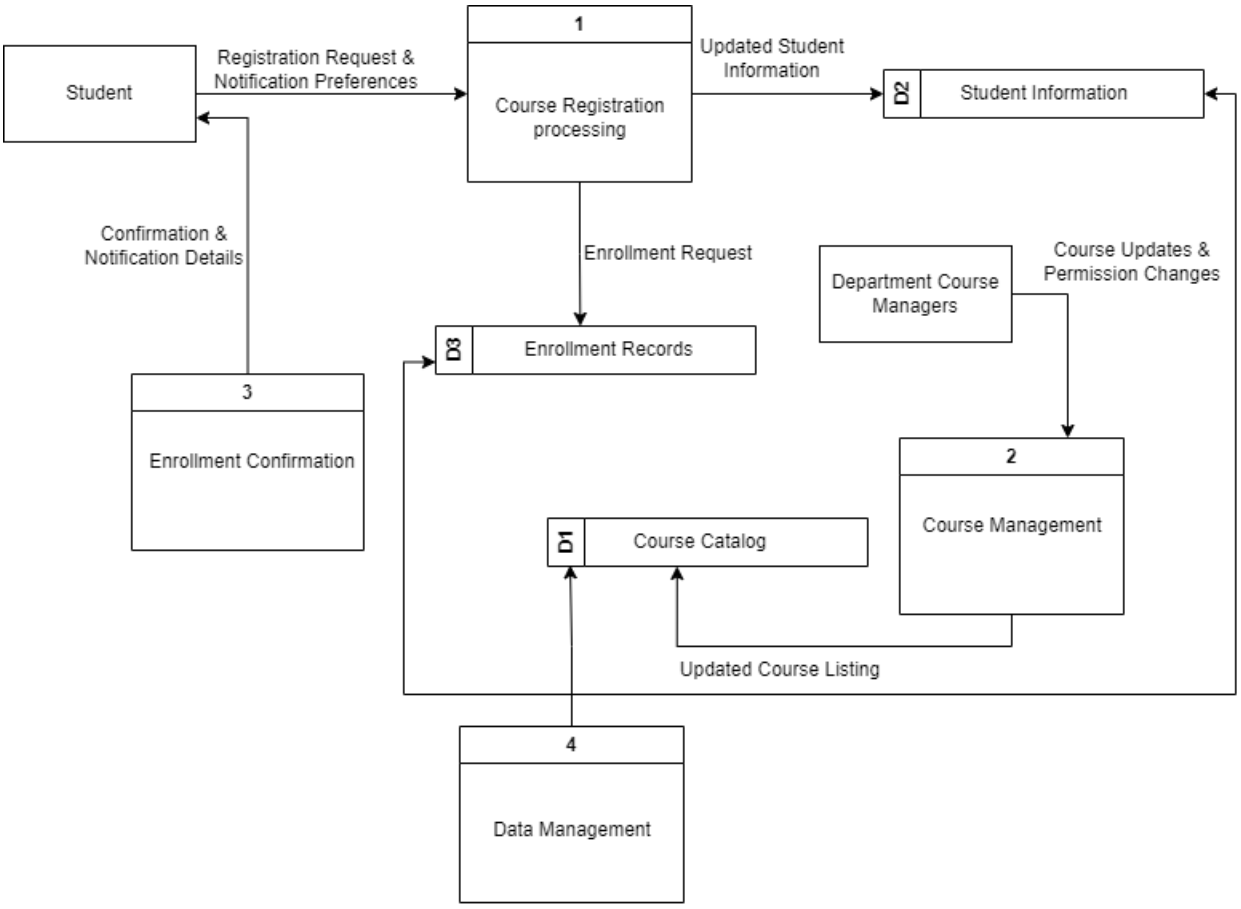
2. Context Level Diagram:



The Enhanced Course Enrollment System's context-level diagram offers a condensed summary of the communications between students, department course supervisors, and the university database.

Through the system, students enter their preferences for how they would like to register for courses and receive information about their enrollment status. To manage enrollments, the core system processes these inputs and communicates with department course managers, who supply course listings and authorization. Serving as a go-between, it notifies students of their enrollment or waitlist status and connects to the university database to store and retrieve pertinent information. With a system designed to expedite course registration and enhance the UMBC academic experience overall, this ensures a smooth operation where students are informed promptly, and course supervisors have access to up-to-date enrollment information.

3. Data Flow Diagram Level 0

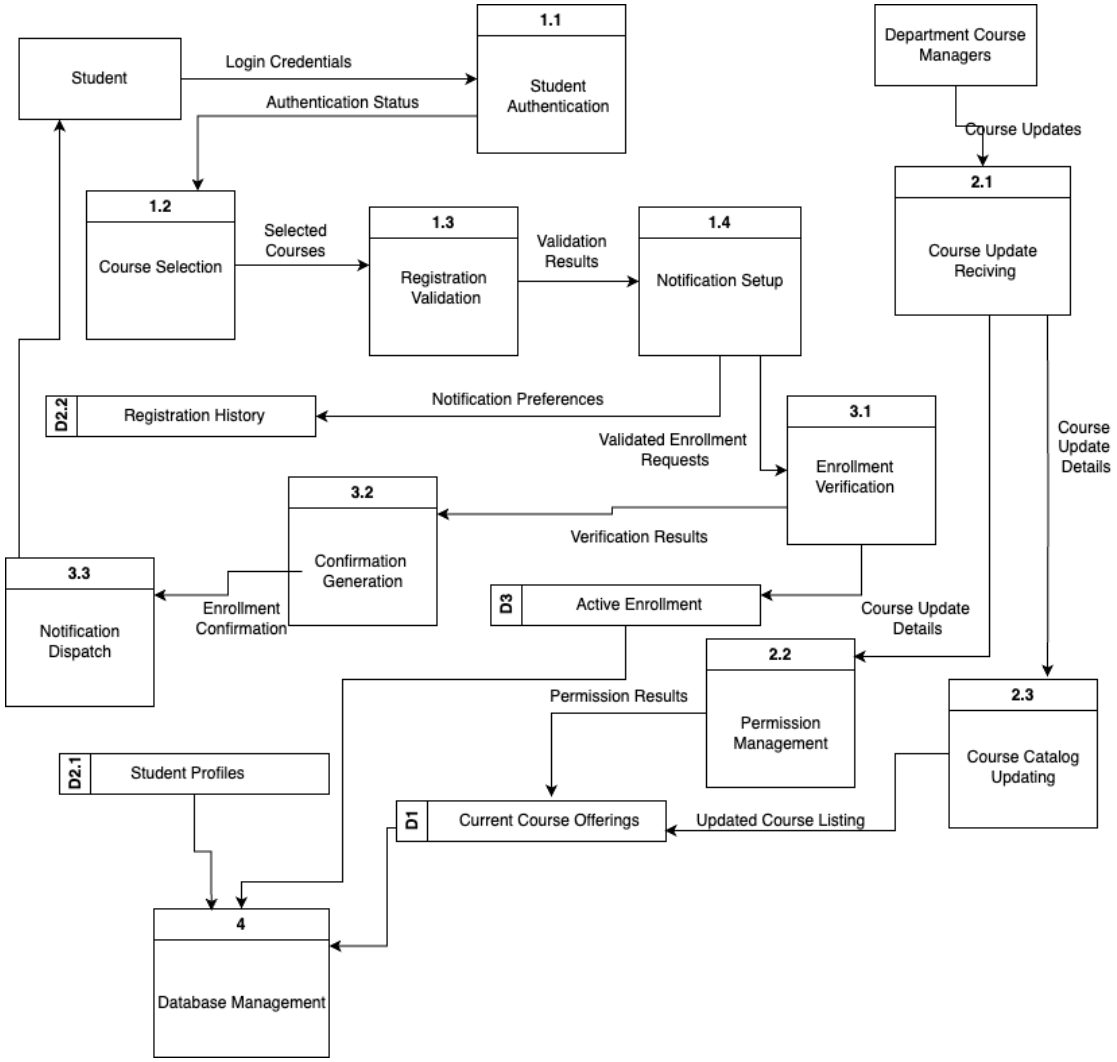


The simplified procedure for registering students for courses at UMBC is shown in the diagram. Students begin this process by submitting their registration and notification preferences. This sets off a series of automated and human processes that include processing course registrations, confirming enrollments, and managing data. These processes are supported by three main databases.

First, while students' registration requests are being handled, the Course Management system is updating the Course Catalog (DB1) with the most recent offerings. The student's enrollment information is entered into the Enrollment Records database (DB3) if the enrollment is successful. The Data Management system is then notified by the revised course listings and student enrollments, guaranteeing that all records are up to date and accurate.

Once these procedures are finished, the system updates the Student Information database (DB2) with the new enrollments, causing the students to get enrollment confirmations. With this, the registration process is finished, guaranteeing that students are enrolled in classes that fit their academic schedules and that the college effectively oversees its course offerings.

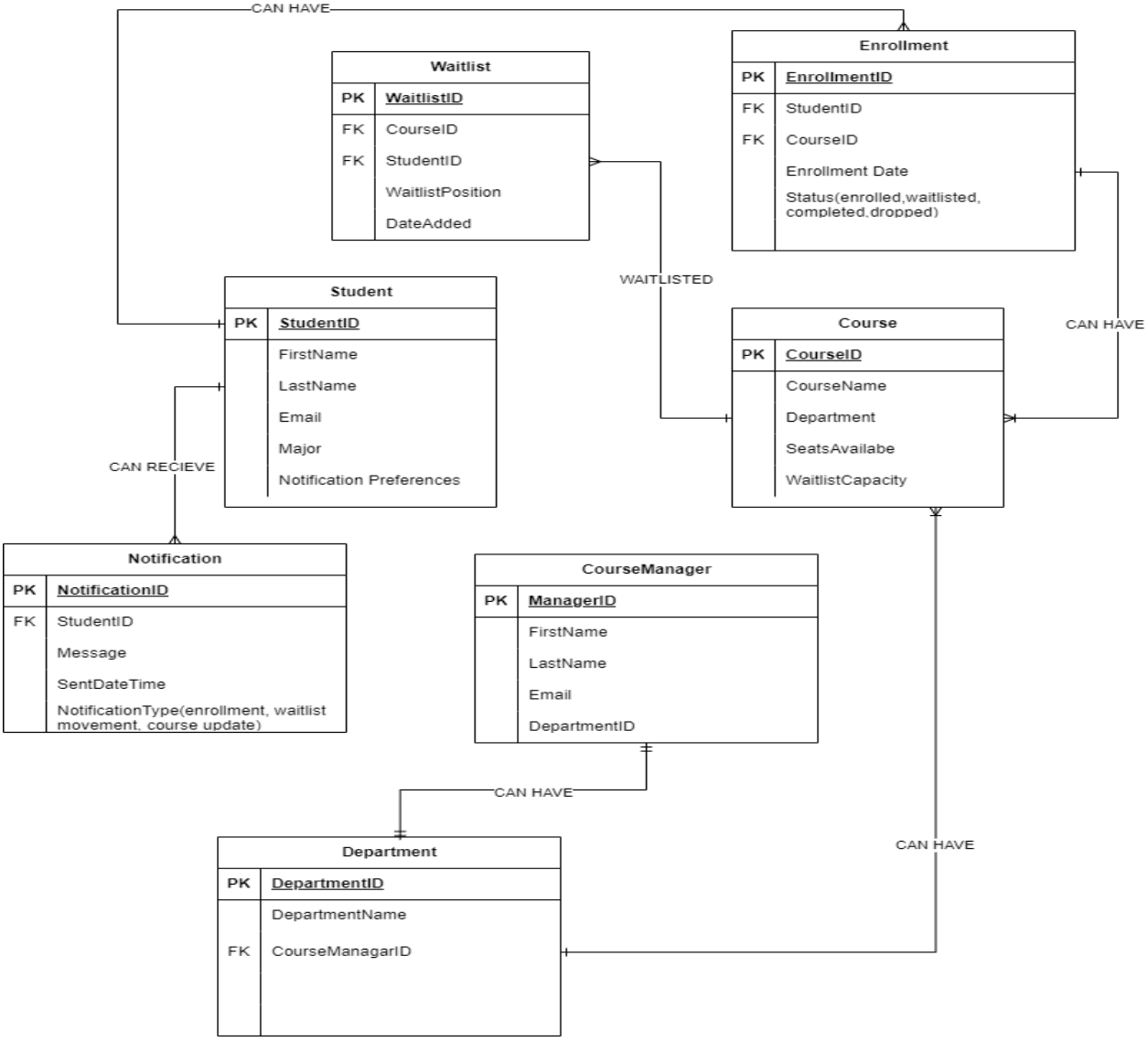
4. Data Flow Diagram Level 1



The student course registration system in UMBC is depicted in the Level 1 Data Flow Diagram (DFD) under consideration. Students choose their courses and log in to start the process. These choices are verified by the system using their previous registration history and the most recent course offerings. The system verifies course availability and imposes enrollment restrictions using the most recent version of the course details, which department course managers update.

A student receives a confirmation and their enrollment in the system is confirmed if their chosen courses are accepted following validation. Students' preferences for notifications are considered at every stage to ensure they are informed. This system's smooth functioning depends on ongoing updates and verifications against three essential databases that monitor course offers, student profiles, and registration histories to guarantee precision and up-to-date record keeping.

5. Entity Relationship Diagram:



The university course enrollment system's Entity-Relationship Diagram (ERD) shows the many entities and their relationships, providing a visual foundation for illustrating the database design. Here is an altered version that is specific to the elements of your ERD, based on the supplied ERD and inspired by the sample text:

A. Student

The people taking part in the courses are represented by this entity. Each student has an associated attribute, such as FirstName, Last Name, Email, and Major, and is uniquely identifiable by a StudentID. Notification Preferences is another part of the entity that specifies how the student wants to be updated about courses, waitlists, and other vital information.

B. Course

This includes every course that is offered by the organization. A distinct CourseID is assigned to each course, which also contains information on the course name, department, and the number of seats that are available (Seats Available) and the waitlist capacity (Waitlist Capacity). This organization is essential for controlling course availability and enrollment.

C. Enrollment

Serving as a bridge between the Course and Student entities, the Enrollment entity records students' involvement in different courses. Enrollment Date, the date of enrollment, StudentID, CourseID, and the enrollment status—"enrolled," "waitlisted," "completed," or "dropped"—are all contained in each enrollment record, which is uniquely identified by an EnrollmentID.

D. Waitlist

In a full course, the waitlist of students is overseen by the Waitlist entity. It is identified by a WaitlistID and records the CourseID, StudentID, WaitlistPosition, DateAdded, and the student's position on the waitlist.

E. Notification

This organization oversees keeping track of messages issued to pupils. It is recognized by a NotificationID and contains the following information: the StudentID, the message content, the send date and time (SentDateTime), and the type of notification (which may pertain to waitlist status, enrollment, or course modifications).

F. Course Manager

The Course Manager entity oversees overseeing course offerings by course managers, who can also be instructors. Every manager is linked to a department by DepartmentID and has their own ManagerID. Their email address, last name, and first name are among their personal details.

G. Department Entity

This is a representation of the institution's many academic departments, each of which has a distinct DepartmentID and DepartmentName. It could be linked to numerous course administrators and numerous courses, acting as a center for the educational system's organizational framework.

Assumptions:

- It is possible for a student to be affiliated with more than one course, suggesting a many-to-many relationship enabled by the Enrollment entity.
- Multiple students may be enrolled in a course, and a waitlist may be used to handle overflows.
- Every course has a department attached to it, and departments might have course supervisors in charge of several courses.
- Students receive notifications for a variety of reasons, such as updates to course materials and modifications to their enrollment status.

6. Conclusion

A comprehensive picture of the academic registration architecture is given by the course enrollment system's documentation, which includes the Entity Relationship Diagram (ERD), Data Flow Diagrams (DFDs) 0 and 1, and Context-Level Diagram. The DFDs provide layered insights; DFD level 0 describes how student inputs prompt updates to courses, enrollments, and databases, and DFD level 1 focuses on the validation of course selections, making sure that the registration reflects the most recent offerings and departmental constraints. The Context-Level Diagram introduces the system's interaction with students and faculty, outlining the exchange of course preferences and status updates. In addition to these flows, the ERD provides a thorough database blueprint that outlines the complex network of organizations involved, including everything from student registration to course administration and divisions. This integrated approach demonstrates a system built for effectiveness, flexibility, and user involvement with the goal of improving the educational experience through streamlined registration procedures and open lines of communication within the organization.